IMPACT OF SPONSOR OWNERSHIP ON FIXED-INCOME FUND PERFORMANCE

by

Mohamed A. Ayadi[a], Lawrence Kryzanowski[b] and Mahmood Mohebshahedin[c]

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[a]Ayadi is an Associate Professor, Department of Finance, Operations, and Information Systems, Goodman School of Business, Brock University, St. Catharines, ON, Canada, +1 (905) 688-5550, x3917, e-mail: *mayadi@brocku.ca*

[b]Kryzanowski (corresponding author) is a Professor and Senior Concordia University Research Chair in Finance, John Molson School of Business, Concordia University, Montreal, QC, Canada, H3G 1M8, +1 (514) 848-2424, x2782, e-mail: *lawrence.kryzanowski@concordia.ca*

[c]Mohebshahedin is a Ph.D. Candidate, John Molson School of Business, Concordia University, 1455 De Maisonneuve Blvd W., Montreal, Quebec, Canada H3G 1M8, e-mail: *mmohebsh@jmsb.concordia.ca*

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ABSTRACT

Mutual fund sponsors differ in their ownership structures (public/private, and mutual/stock). We provide evidence that agency issues and managerial abilities are important drivers of performance differences among Canadian fixed-income funds (FIF) differentiated by sponsor and fund types. Those sponsored by all public Banks (all private Professional Associations) exhibit superior (inferior) performances, on average, over those sponsored by Insurers, Financial Cooperatives, and Independents for the Canadian Bond category (over 70% of the Canadian FIF market). In contrast, funds sponsored by Financial Cooperatives strongly outperform the other sponsor types, on average, for the High-yield Bond category (10% of the Canadian FIF market).

Keywords: Performance, bond mutual funds, fund sponsor ownership, agency issues, managerial abilities
JEL Classification: G11, G23, G32.

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1. INTRODUCTION

Fund sponsors are organized under stock- or mutual-ownership structures with the former being predominant.[1] Under the mutual-ownership structure, the fund management company is owned by the fund family or sponsor which manages its own affairs on a cost-recovery basis. Fund sponsors are also either publicly or privately owned with the former being predominant. Agency theory conjectures that different ownership structures are required to effectively control the agency conflicts between managers and owners for different activities (Fama and Jensen, 1983a, 1983b). Thus, agency conflicts associated with different ownership structures of fund sponsors may be associated with differences in fund costs, return performances, and risk-taking behaviors (Bogle, 2010; Ferris and Yan, 2009).

Agency theories predict greater agency problems associated with mutually- versus stock-owned sponsors and with public- versus private-owned sponsors related to factors such as the lack of monitoring and higher operating cost. However, the performance impacts of these differential agency problems may be amplified (or muted) by the abilities of their fund managers. 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.

The empirical evidence for financial firms is mixed. 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. 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, and Cho (1998) demonstrates using simultaneous regressions that firm value affects ownership structure as proxied by insider ownership but not the reverse for a cross section of Fortune 500 manufacturing firms in 1991. Based on the relative under-performance of active equity mutual funds managed by insurance companies, Chen, Yao and Yu (2007) conclude that their efforts to cross-sell

[1] Examples of the latter include Vanguard and TIAA-CREF in the U.S., building societies in the U.K. and Australia, and financial cooperatives in Canada. The Vanguard group is an American investment management company that manages approximately $2.0 trillion as of December 31, 2012 (www.Vanguard.com). Teachers Insurance and Annuity Association – College Retirement Equities Fund (TIAA–CREF) is known as a retirement provider for people who work in the academic, research, medical and cultural fields and has $481 billion in combined assets under management as of June 30, 2012. https://www.tiaa-cref.org/public/assetmanagement/about/news-events/news/pressrelease426.html?tc_mcid=tw_share:

mutual funds aggravate agency problems that erode fund performance. Ferris and Yan (2009) find that agency conflicts between management companies and fund shareholders are more severe for publicly versus privately owned management companies since the former focus more on short-term performance. Other studies also examine fund fees as representative of agency conflicts between fund sponsors and shareholders (Adams *et al.*, 2012; Cao *et al.*, 2008; Greene *et al.*, 2007).

As illustrated more fully in section 3 of this paper, the literature on the relation between mutual fund performance (benchmark-adjusted returns and/or costs) and sponsor ownership is rather sparse (especially for non-equity mutual funds) or somewhat dated. Since these studies focus on the agency effects of the greater agency issues associate with public versus private ownership (Ferris and Yan, 2009) or mutual versus stock ownership (Mayers and Smith, 1992) but not on their interplay, these studies do not examine the relation between mutual fund performance and sponsor ownership for various pair-wise combinations of these two dimensions of sponsor ownership. The Canadian fund environment provides an interesting laboratory for such tests due to the differences in institutional characteristics (discussed more fully in section 2) but also due to the richness in sponsor types (stock or mutual) and whether or not the sponsors are publicly traded. This includes not only the Banks (all with public stock ownership), Insurers (primarily public stock ownership) and Independents (mixed public/private stock ownership) but two major types of member-owned or directed 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[2] 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.

Thus, our paper tests whether different fund sponsors like Member-Fins, Banks, Insurers and Independents have different investment or pricing behaviors that differentiate their fund performances (as measured, for example, by risk-adjusted alphas and fees) due to differences in agency problems and the abilities of their fund managers. Since these sponsors have different ownership structures (public/private, and mutual/stock), service pricing strategies, and possibly investment abilities, we expect to find differences in sponsor-specific fund performances. We study this issue using the five-factor model used by Ayadi and Kryzanowski (2011) to estimate the risk-adjusted performances of Canadian bond mutual funds controlling for the type of bond mutual fund, public or private and mutual or stock ownership of the sponsor. To perform our tests, we build a dataset over the period 2000-2011 using information from two data vendors (Fundata and Morningstar) augmented by hand-collected data from industry and individual

[2] The Desjardins Group is the leading cooperative financial group in Canada with assets of nearly $196.7 billion, and financial assets placed with it as asset manager of nearly $30.9 billion as at December 31, 2012 (Desjardins, 2012).

fund reports, and specific fund news in the financial press, SEDAR and various websites. For example, given the amount of missing data in the data available from the two data vendors, we hand-collect a good portion of the data on fund characteristics such as fund size and fund fees from annual reports and other filings deposited by the funds at SEDAR.

In our cleanest test of the impact of agency problems, we find that mutual funds under different sponsorship charge their investors different fees to provide investment advisory services. Consistent with the findings of Ferris and Yan (2009), we find that fees for the funds of public sponsors are, on average, significantly higher than those for private ones. When both public/private and mutual/stock ownership are jointly considered, we find that fixed-income funds sponsored by Banks (all with public stock ownership) have the lowest expense ratios, and fixed-income funds sponsored by Member-Fins (all with private mutual ownership) have the highest expense ratios.

In a test where it is somewhat more difficult to separate the impact of agency problems and fund manager abilities on fund performance, we find that mutual fund sponsorship has an effect on the risk-adjusted alpha performances of fixed-income mutual funds. Funds sponsored by Banks, Insurers, Independents, and Member-Fins (member owned or controlled financial entities) exhibit different risk-adjusted alphas based on both net and gross returns for Canadian fixed-income funds. Our results show that mutual funds sponsored by Banks (all with public stock ownership) outperform funds sponsored by Independents, Insurers, and Member-Fins (all with private mutual ownership) within samples of funds which consist of almost 70% of the Canadian bond market (Canadian Bond investment objective). In contrast, funds sponsored by Member-Fins outperform funds sponsored by Independents, Banks and Insurers within samples of funds with a High-yield investment objective (that represent 10% of the whole market) based on both net and gross alphas. The outperformance of Banks over funds sponsored by other sponsor types based on net alphas for funds with a Canadian Bond investment objective is consistent with the funds sponsored by Banks having the lowest expense ratio.

The remainder of the paper is organized as follows. The next section presents some institutional details on Canadian mutual funds. The third section formulates testable hypotheses based on the possible drivers of sponsor-specific differences in performances and fees of mutual funds. In the fourth section, we introduce the sample used in our analysis. Sections five and six describe the methodology and discuss the results, respectively. Specifically, we test the effect of two potential drivers of sponsor-specific differences on investment performances and fees; namely, agency issues and superior human resources as captured by the managerial abilities of managers. All our panel-regression inferences are based on clustered standard errors as in Petersen (2009), and we refer to weakly significant, significant and strongly significant for significance at the 0.10, 0.05 and 0.01 levels, respectively. Section seven contains some further robustness checks. Section eight concludes the paper.

2. INSTITUTIONAL SETTING FOR MUTUAL FUNDS IN CANADA

Mutual funds in Canada 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).[3] Unlike in the U.S. and most other countries,[4] 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 manager 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.

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.[5] 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 performance. A fund family or complex is a group

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[3] 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).

[4] 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).

[5] 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).

of funds with the same brand name that are managed by the same fund sponsor who is often also the trustee, distributor and promoter of the funds within the family.[6]

3. HYPOTHESES BASED ON THE POSSIBLE DRIVERS OF SPONSOR-SPECIFIC DIFFERENCES IN FUND PERFORMANCES

In this section, we present our hypotheses about potential drivers of sponsor-specific differences in fund performances. Before doing so, we provide a stylized description of ownership within a mutual fund complex (Berkowitz and Qiu, 2003). Mutual funds are entities whose portfolio decisions are made by portfolio managers who are chosen by a managing company (sponsor) that controls the mutual fund complex. The sponsor is paid a percentage of the NAV (net asset value) of the mutual fund (called the management expense ratio, *m*, or MER) to administer, monitor and market the mutual fund. The MER times NAV is used to cover the wages (W_{PM}) of fund managers to compensate for their portfolio selection efforts and other operational costs (C_{PM}). The residual (m×NAV minus W_{PM} and C_{PM}) belongs to the owners of the sponsor. The shareholders or unit holders of each mutual fund have a claim to NAV minus the management expense ratio times NAV, or [(1-m)×NAV]. Any material differences in the agency relations between the parties involved in a mutual fund ownership structure or in the abilities of their portfolio managers can affect fund performance. Although the registration of mutual funds and individuals selling any type of securities are the responsibility of provincial security commissions in Canada,[7] no regulatory rules that are sponsor-specific that could affect the findings reported herein were identified.

3.1 Potential Agency Problem Drivers of Sponsor-specific Differences in Fund Performances

Two types of agency problems can occur in our stylized mutual fund ownership structure. The first potential agency problem (type-one) can occur between a fund's shareholders and its sponsor in terms of the fund fees including management expense ratios and the administrative costs of the fund.[8] The second potential agency problem (type-two) can exist between the fund sponsor and the fund managers. Similar to the assumption in most of the literature (e.g., Berkowitz and Qiu, 2003), we implicitly assume at this point that there is an exact contract between these two parties and that this type of agency problem does not affect fund performances. We conjecture that fund sponsors with greater type-one agency issues due to the

[6] 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).
[7] http://www.csa-acvm.ca/
[8] According to Berkowitz and Qiu (2003), administrative fees (the difference between the MER and the management fee ratio) are indicators of excess perquisite consumption by fund managers.

choice of ownership structures will have lower performances (i.e., administrative costs, management expense ratios or MER, and benchmark-adjusted alphas), ceteris paribus.[9]

Agency theories predict greater agency problems for mutual- versus stock-owned funds due to slacker monitoring and higher operating costs. Qian (2011) argues that investor vigilance should exhibit cross-sectional variability among funds and time-series persistence for the same fund if the funds of different fund sponsors attract and retain different clients and these clients differ in their investment monitoring. The findings of James and Karceski (2006) for open-end equity funds are consistent with the hypothesis that agency costs associated with the efficacy of delegated monitoring lead to less monitoring and worse overall performance. Thus, our first hypothesis in its alternative form (H_A^1) is that mutual fund performance (alphas or fees) is superior for stock- versus mutual-owned fund sponsors given no differences in the abilities of their fund managers. Ferris and Yan (2009) examine fund fees (management expense ratios plus 1/7 of total load charges),[10] number of funds a fund family acquires, and fund performances for both public and private fund sponsors. They conjecture that agency conflicts between fund sponsors and fund shareholders are more severe for public versus private sponsors because public fund sponsors follow excessively short-term objectives due to their diffused ownership, mandatory disclosure requirements such as annual and quarterly reports, and their existence in secondary markets. Consistent with their conjecture, they find that funds with public sponsors have higher fund fees and lower return performances. Thus, our second hypothesis in its alternative form (H_A^2) is that mutual fund performance is superior for private- versus public-owned funds.

The purest test of the first hypothesis examines the performances of funds for stock- versus mutual-owned fund sponsors whose ownerships are solely public or solely private, and the purest test of the second hypothesis examines the performances of funds for public versus private sponsors whose ownerships are solely stock or solely mutual. In contrast, the expectations for Banks (all public and stock owned) versus Member-Fin or Member-Prof (all private and mutually owned) is indeterminate since Banks are expected to face greater agency issues on the public/private ownership dimension but lower agency issues on the stock/mutual ownership dimension. Thus, which ownership dimension leads to greater agency issues can only be addressed empirically.

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[9] Based on an equilibrium paradigm, Demsetz and Lehn (1985) argue that ownership structure (i.e., diffusion of share ownership) and firm profitability are not related since each firm establishes the most efficient long-run ownership structure. If the set of agency problems differ for various sponsor types given their ownership differences (i.e., stock/mutual or public/private), then it is unclear what economic forces (if any) would ensure an equilibrium relation between sponsor ownership structures and fund performances at various points in time, especially for sponsors engaged in a multitude of different financial activities like banks or sponsors that are member-based entities.

[10] Many other studies consider fund fees as representative of agency conflicts between fund management companies and shareholders (Adams *et al.*, 2012; Cao *et al.*, 2008; Greene *et al.*, 2007).

3.2 Investment Abilities of Sponsors

Different investment abilities and styles could be alternative drivers of sponsor-specific differences in the mutual fund performances (Davis, 2001; Chan *et al.*, 2002). Frye (2001) concludes that she finds little difference between the risk-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.

Our third hypothesis in its alternative form (H_A^3) is that mutual fund performances will be better for funds with managers with higher investment abilities. We use risk-adjusted alphas of gross returns (net returns plus1/12th of a fund's expense ratio) to assess the investment abilities of managers within the mutual fund context. [11] To control for the effect of investment objectives on the performances of sponsors, we conduct tests for samples of individual funds with the same investment objectives.

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 information from industry and individual fund reports, and specific fund news in the financial press, SEDAR and various websites.[12] We use individual fund data (TNA-weighted averages of the share classes of each fund) to examine our hypotheses since sponsor information and portfolio holdings are common across all fund classes and using share class data can lead to errors in the interpretation of the results. The sample excludes institutional funds and consists of all 545 fixed-income funds (322 Canadian Bond, 102 Short-term Canadian bond, and 121 High-yield) regardless of when they began and whether or not they are still active at period end to ensure no survivorship bias. 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 (e.g., Canadian Bond), sponsor type (e.g., Banks) and sponsor ownership (public or private) are found in Panel C of Table 1.[13]

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

[12] We choose our sample over the period 2000-2011 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. We also hand-collect a good portion of the data on fund size and fund fees from the annual reports and other filings deposited by the funds at SEDAR.

[13] 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.

[Please place table 1 about here.]

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 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 1 reports statistics on the cross-sectional distributions for the three major investment objectives 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 132 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 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 the 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.

5. DOES SPONSORSHIP MATTER?

5.1 Performance Benchmark Model

The performances of individual funds are examined using a benchmark model with a multi-factor structure. The use of gross (in addition to net) returns allows for tests of whether bond fund managers possess skills to generate alphas that cover their costs, since all passive benchmark returns exclude management-related expenses and taxes.

Our empirical investigations use the five-factor model used by Ayadi and Kryzanowski (2011) which is similar to the Reg-6 model of Blake *et al.* (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.[14] 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. Table 2 shows that most of the bond indices exhibit symmetric patterns with fatter tails than are suggested by the normal distribution.

[Please place table 2 about here.]

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 version of this model is:

$$r_{i,t} = \alpha_{i0} + \sum_{k=1}^{5} \beta_{ik} I_{kt} + u_{i,t},\ t = 1, \dots, T_i,\ i = 1, \dots, N \quad (1)$$

where $r_{i,t}$ and I_{kt} denote the excess returns on fund *i* based on either net or gross returns (i.e., net returns plus1/12th of a fund's expense ratio) and on index *k* between *t*-1 and *t*, respectively. α_{i0} is the alpha or benchmark-adjusted average return on fund *i* based on either net or gross returns, 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 benchmark-adjusted average return specific to fund *i* in month *t*. The least squares method is used to estimate benchmark-adjusted performances since all the benchmark models are linear and exactly identified.[15]

5.2 How Does Sponsorship Affect Fund Alphas?

In this section, we examine the relationship between factor risk-adjusted performances of samples of individual funds differentiated by sponsor type and fund type controlling for common fund characteristics like size, age, and fund flows. We estimate the performances (alphas) of individual funds aggregated over

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

[15] With at most 24 observations for each fund in each two year period, the saturation ratio is too low (i.e., 24/12 or 2) to obtain dependable results using one or more instrumental variables 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).

their share classes based on net then gross fund returns using the five-factor benchmark model. The section concludes with a summary of its major findings.

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.[16] Fund type "T1" refers to Canadian Bond; "T2" refers to Canadian Short-term Bond; and "T3" refers to High-yield Bond.

5.2.1 Methodology

We first compute the benchmark-adjusted monthly excess returns or alphas using the $\hat{\beta}_{ikt}$ for month t for each fund that are estimated using equation (1) and the returns for the past 24 months:[17]

$$FundRTN_{it} = (r_{it}) - (\sum_{k=1}^{5} \hat{\beta}_{ikt} I_{kt}) \quad (2)$$

where all the terms are as previously defined. Some summary statistics for the risk-adjusted monthly excess gross and net returns for the individual funds (not) differentiated by fund type are presented in Table 3. With regard to benchmark-adjusted returns, while the cross-sectional means and medians of the time-series means and medians of the individual funds in the total sample (All) are positive using gross returns (Panel A of Table 3), they become negative using net returns (Panel B of Table 3). Furthermore, only the cross-sectional means and medians of the time-series means and medians of the individual funds in the Canadian Bond sample (All) are negative using gross returns (Panel A of Table 3), and only the cross-sectional means and medians of the time-series means and medians of the individual funds in the High-yield Bonds sample are positive using net returns (Panel B of Table 3).[18]

[Please place table 3 about here.]

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[16] "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-Fin) depends on whether they are organized as an association or part of a financial entity.

[17] Brennan *et al.* (1998) propose that calculating benchmark-adjusted returns based on equation (2) eliminates any bias caused by errors in the estimation of factors loadings.

[18] Ayadi and Kryzanowski (2011) also calculate the benchmark-adjusted returns based on net and gross returns for the Canadian fixed income market for the 1984-2003 period. The benchmark-adjusted returns for all funds with a Canadian High-yield investment objective based on net and gross returns are -0.2238 and -0.0710 for 1984-2003 respectively.

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

$$FundRTN_{it} = a + b_1 S_{2it} + b_2 S_{3it} + b_3 S_{4it} + b_4 MER_{it-1} + b_5 Size1_{it-1} + b_6 Size2_{it-1}$$
$$+ b_7 Size3_{it-1} + b_8 LnAge_{it-1} + b_9 Flow_{it-1} + b_{10} LagFundRTN_{it-12} + \varepsilon_{it} \quad (3)$$

where S_1, S_2, S_3 and S_4 are sponsorship dummies which take a value of 1 if the fund sponsor belongs to respectively the Independent, Bank, Insurer, and Member-Fins categories and 0 otherwise. One-month lag MER controls for the effect of the management expense ratio on the fund's alpha (Carhart, 1997; Gil-Bazo and Ruiz-Verdu, 2009). Many studies examine the effect of size on the performance of funds (Chen *et al*. 2004; Pollet and Wilson, 2008; Grinblatt and Titman, 1994). To control for the effect of size, we use the piece-wise linear relation approach to better examine if there are any scale (dis)economies associated with fund size. In each period, we obtain the cross-sectional percentile ranks (Size) for our sample of mutual funds based on their sizes. Then, we transform Size into three categories: lowest 30%, mid 40%, and highest 30% as follows: Size1=min [Size, 0.3], Size2=min [Size-Size1, 0.4], and Size3=min [Size-Size1-Size2, 0.3]. We use the one-month lag of these variables to control for the effect of size on the dependent variable. Cohen *et al.* (2003) apply the same technique to alleviate the multicollinearity problem associated with Size and Size^2 that still remains even when these metrics are demeaned or centered.[19]

We also control for the one-month lag in the natural logarithm of the age in months of a fund (LnAge) based on the fund launch date (e.g., Falkenstein, 1996; Chen *et al*., 2004; Barber *et al*., 2005; Yan, 2008; Aggarwal *et al.*, 2010), fund flow lagged one month (Flow) as proposed by Sirri and Tufano (1998), and FundRTN lagged 12-months (e.g., Grinblatt and Titman, 1994; Brown and Goetzmann, 1995; Carhart, 1997). In particular, fund flow is calculated as $FLOW_t = [TNA_t - TNA_{t-1}(1 + R_t)]/TNA_{t-1}$, where R_t and TNA_t are the return and total net asset value of the fund at time *t*. Fund flow is defined as the net growth in fund assets beyond reinvested investment returns. We also considered the effect of public versus private sponsors by running regression 3 for funds sponsored by private Independent (S_1), private insurers (S_3), all private Member-fins (S_4) and among funds sponsored by public Independent (S_1), all public Banks (S_2), and public Insurers (S_3). This approach allows us to alleviate the potential multicollinearity problem that may occur by using a public/private dummy variable in our model.[20]

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[19] Other studies use a piecewise-linear specification to determine the fund flow-performance relationship (Sirri and Tufano, 1998; Goetzmann, Ingersoll and Ross, 2003; Huang, Wei and Yan, 2008; Ferreira *et al.*, 2013).

[20] Since we use monthly data in regression 3, there is a high correlation between the public/private dummy variable and both the Bank and the Member-Fin dummy variables. This issue is addressed herein by running regression 3 over the samples of funds sponsored by public and private sponsors separately.

Based on the summary results summarized in Panel C of Table 3, the cross-sectional means and medians of the time-series means and medians of the individual fund MER 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 2.002% and 0.081% for High-yield Bonds, 1.797% and 0.063% for Canadian Bonds and 1.659% and 0.066% for Short-term Canadian Bonds, respectively.[21] 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 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.

5.2.2 Differentiated fund performances based on panel regressions

In this section, we examine the average risk-adjusted performances and their differences for the individual funds by sponsor type and fund type (investment objective). We estimate all regressions first using random-effects specifications (as in Caprio, Laeven and Levine, 2007), and then in section 7 using Fama-MacBeth regressions as a test of robustness. Based on the Breusch and Pagan (1979) multiplier test of a random-effects specification versus a pooled OLS specification, we reject for all our samples the null that the pooled OLS specification should be used. 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 has inefficiency in estimating the effects of variables 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

[21] The results are calculated for the Canadian Bond fund category after deleting the three years of MER data (2000-2003) for the Trans-Canada Bond fund that was anomalous.

by Independents migrate to other sponsor types over the time period examined herein.[22] While various approaches have been proposed to adjust the fixed-effects specification for this severe limitation, the fixed-effects vector decomposition approach of Plümper and Troeger (2007) remains controversial (e.g., Greene, 2011).

For the reasons subsequently provided, we rejected the use of the Hausman-Taylor specification although a Hausman test based on the difference between the fixed-effects (FE) and Hausman-Taylor (H-T) estimators rejected the null and thus suggested that we consider a Hausman–Taylor model where only some of the variables may be correlated with the individual effects. Hausman and Taylor (1981) split X (time-varying regressors) and Z (time-invariant regressors) into two sets of regressors such that X_1 and Z_1 (with k_1 and g_1 regressors, respectively) are assumed exogenous and not correlated with alpha (individual effect) and u (pure error term), while X_2 and Z_2 (with k_2 and g_2 regressors, respectively) are endogenous due to their correlations with alpha (individual effect) but not with u. While the application of the H-T estimator circumvents the problem of X_2 and Z_2 variables being potentially correlated with u, it requires that we can identify variables of type 1 that are surely not correlated with the random effects, which is not the case for our chosen regressors. Furthermore, the H-T estimator is more efficient than its FE counterpart only if the model is identified in the sense that there are at least as many time-varying exogenous regressors X_1 (time-varying regressors) as there are individual time-invariant endogenous regressors Z_2 (individual time-invariant regressors such as the sponsor type dummies), which means that for our data set that we need to identify at least three time-varying exogenous regressors for X_1. Furthermore, a technical note from the Stata manual (2009, pp. 171-174) illustrates that weak instruments have serious consequences on the estimates produced by the Hausman-Taylor estimator for error-components models so that the estimate of the coefficient on Z_2 is three times larger than its true value, and its standard error is rather large. It concludes (p. 172): "Without sufficient correlation between the endogenous variable and its instruments in a given sample, there is insufficient information for identifying the parameter. Also, given the results of Stock, Wright and Yogo (2002), weak instruments will cause serious size distortions in any tests performed." We find that such is the case for our data set when we compare, for example, the output from the H-T specification with that from the Fama-MacBeth estimations and observe that both the magnitudes and significance of the various variables vary widely based on the choice of which variables are deemed to be surely endogenous or exogenous.

We follow the guidance proposed by Petersen (2009) to check whether our data have fund and time effects. A fund (time) effect is present when the standard errors clustered by fund (time) are much (a

[22] In our data sample, two funds separately sponsored by Independents and by Member-Fins change their sponsor type to Insurers (S_3).

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. Based on these examinations, we conclude that our data have a fund effect.

Table 4 reports the coefficient estimates for panel regression (2) over the whole period 2000-2011.[23] Since we have four dummy variables in regression (2) and we need to compare all possible pairs of sponsor types, we run the panel regression (2) four times to obtain a column of results reported in Table 4. Each time, one of the sponsor dummy variables is omitted (referred to as being "out") to prevent the dummy variable multicollinearity trap and to facilitate interpretation by ensuring that the intercept represents the average alpha related to that dummy variable. The coefficients of the other dummies represent the average alpha differences compared to that of the dummy variable which is not included in the regression. As an example, dummy variable S_1 is first excluded and regression (2) is estimated including S_2, S_3 and S_4 in Panel A of Table 4.

[Please place table 4 about here.]

When we consider all funds irrespective of their investment objectives (two columns headed by "Undifferentiated" in Panel A of Table 4), we find no significant net or gross alphas by sponsor type and that the relative outperformance of funds sponsored by Banks (S_2) compared to that for funds sponsored by Independents (S_1) is significant based on net alphas and weakly significant based on gross alphas. However, the alpha outperformance of funds sponsored by Banks (S_2) over those sponsored by the other two sponsor types is not significant at conventional levels. We also observe net alpha performance that is weakly significant for Insurers (S_3) over Independents (S_1). We then examine how these results not differentiated by fund type change if we only consider funds with publicly owned sponsors. Based on the columns headed by "Undifferentiated" in Panel A of Table 5, we now observe positive net and gross alphas for all fund sponsors. They are highly significant for Banks (S_2) (all public) and public Insurers (S_3), and only the gross alphas are (weakly) significant for public Independents (S_1). We also observe a significantly positive difference in the average net alphas that favors the Banks (S_2) (all public) over the public Independents (S_1). We then examine how these results not differentiated by fund type change if we only consider funds with privately owned sponsors. Based on the columns headed by "Undifferentiated" in Panel A of Table 6, we now observe significant average negative net and gross alphas for all private fund sponsor types, and no significant differences in the average net and gross alphas between pairs of private

[23] While the R-square values reported in Table 4 are lower than those reported in Ferreira *et al*. (2013) for non-US equity funds for the 2000-2007 time period, our results are for Canadian bond (not equity) funds. While they also include the impact of any dislocation from the global financial crisis (GFC), we show in a subsequent section that accounting for the GFC has no material impact on our major findings reported herein.

fund sponsor types. Thus, the insignificant but positive average alphas by sponsor type undifferentiated by fund type and public/private sponsor ownership is a netting of the significantly positive average alphas of public sponsor types and the significantly negative average alphas of private sponsor types.

[Please place tables 5 and 6 about here.]

To control for the effect of investment objectives (fund type) on the alpha performances of sponsors, we run the same panel regressions separately for funds with the same investment objectives. Based on the two columns headed by "Cdn" in Panel A of Table 4, we observe that the Canadian Bond funds sponsored by Banks (S_2) significantly outperform their counterparts sponsored by Independents (S_1), Insurers (S_3), and Member-Fins (S_4) based on the average net alphas. We then test whether these results are explained by not restricting the sponsors to those that are publicly owned for this investment objective. Based on the columns headed by "Cdn" in Panel A of Table 5, we observe that funds sponsored by Banks (S_2 and all public) exhibit weakly significant, average net-return outperformance over funds sponsored by public Insurers (S_3) for this investment objective. We then test whether these results are explained by not restricting the sponsors to those that are privately owned for this investment objective. Based on the columns headed by "Cdn" in Panel A of Table 6, we observe that all of the average net and gross alphas are negative and highly significant for Member-Fins (S_4 and all private), private Independents (S_1) and private Insurers (S_3), and that there are no significant differences between their average net and gross alphas. To determine if the average performance of the Independents (S_1) is caused by the inclusion of the professional-member-based sponsors (Member-Prof), we split S_1 into Member-Prof and the remainder. We then run the same set of panel regressions for this investment objective (T1 or Canadian Bond). Based on untabulated results for both gross and net alphas, we find that the performance of funds sponsored by Member-Prof for T1 is, on average, highly significant and negative, and inferior (not significantly) to the average performances of all the other sponsor types, with the exception of gross alphas where the under-performance is only weakly significant.[24] Similarly, we find that the funds with Member-Prof (all private) sponsors underperformed (but not significantly) funds with private S_1 (without Member-Prof) sponsors, private S_3 sponsors and private S_4 sponsors for fund type T1.[25]

Consistent with expectations, the results reported in the two columns headed by "Short-term" in Panel A of Table 4 show that no single fund sponsor type outperforms all the other sponsor types for funds with a Canadian Short-term investment objective (T2). However, the under-performance of the average fund sponsored by Insurers (S_3) compared to that for Independents (S_1) based on both net and gross alphas is

[24] The tabulated results are available from the authors (Table I.11 of our Internet Appendix).
[25] The tabulated results are available from the authors (Table I.12 of our Internet Appendix).

weakly significant as is its under-performance compared to that for Banks (S_2) based on gross returns. According to Morningstar, funds with a Canadian Short-term investment objective should have most of their investments in investment grade fixed-income securities in a way that the average credit qualities of their portfolios as a whole are investment grade (at least BBB or equivalent rating) and their investments in High-yield fixed-income securities should not exceed 25% of their portfolio holdings. While we did not expect to find significant superiority in the average return performances among sponsors of Canadian Short-term Bond funds since their portfolio holdings include low risk and short-term securities, the weakly significant relative inferiority of the average funds sponsored by Insurers was a surprise.[26] Based on the two columns headed by "Short-term" in Panel A of Table 5, we observe no significant absolute or relative performances based on both net and gross alphas for this investment objective when we restrict the included sponsors to those that are publicly owned.[27]

Based on the two columns headed by "High-yield" in Panel A of Table 4, we find that the average performances based on both net and gross alphas for all sponsor types is positive but is statistically significant (weakly) over that for Member-Fins (S_4). We also observe that the average High-yield Bond fund sponsored by Member-Fins (S_4) significantly outperforms the averages of those sponsored by Independents (S_1), Banks (S_2) and Insurers (S_3) based on both net and gross alphas. Based on the two columns headed by "High-yield" in Panel A of Table 5, we observe no significant absolute or relative performances based on both net and gross alphas for this investment objective when we restrict the included sponsors to those that are publicly owned.

Thus, the average fund sponsored by Banks (S_2) has higher net alphas than the average funds sponsored by Independents (S_1), Insurers (S_3) and Member-Fins (S_4) for funds with a Canadian Bond investment objective which account for almost 70% of the total fixed-income fund market in Canada. On the other hand, the average fund sponsored by Member-Fins (S_4) outperforms the averages of the other sponsor types for both net and gross alphas for funds with High-yield Bond investment objectives which account for only about 10% of the total fixed-income fund market in Canada. So far, our results are consistent with our second hypothesis that at least part of the reason some mutual fund sponsor types have superior average alpha performances over other sponsor types is due to their managers displaying better than average investment performance. The superior average alpha performance of Member-Fins (S_4) over the other sponsor types is obtained for both net and gross alphas for funds with a High-yield investment objective. According to the first hypothesis, the results for this measure of agency issues (average alpha

[26] http://www.morningstar.ca/globalhome/industry/fundindices.asp?changeprtl=y&id=8013.

[27] Since sufficient data are not available for private funds with Canadian Short-term and High-yield investment objectives, Table 6 does not include the results related to those fund types.

performances) suggest that Banks (S_2) and Member-Fins (S_4) as fund sponsors potentially have lower agency issues than Independents (S_1) and Insurers (S_3) as fund sponsors.

We can also draw further inferences about any agency issues associated with fund sponsors by further comparing the average performances based on net versus gross returns that are reported in Table 4. When we consider all funds irrespective of their investment objectives (based on the columns headed by "Undifferentiated" in Panel A of Table 4), we find that the average fund by sponsor type has net and gross alphas which are not significantly different from zero. We also find that the average managers for all sponsor-type categories (except Insurers) with Canadian Short-term Bond investment objectives just produce enough returns to cover their fees. In contrast, none of the managers of the funds for all sponsor-type categories show enough ability, on average, to cover their fees for the Canadian Bond fund category. Almost all of the managers of the funds for all sponsor-type categories exhibit enough ability, on average, to beat the benchmark before and after considering fees for funds with a High-yield Bond investment objective.

Regression (2) includes a number of control variables whose estimates are reported in Panel B of Tables 4, 5 and 6. The first control is for the effect, if any, of mutual fund fees on fund alphas. In general, the empirical evidence on the relation between mutual fund fees and alphas is mixed. Chen *et al*. (2004) find no relation between the two for a US sample of funds. Some other studies find a negative relation between mutual fund fees and fund performances based on net alphas (Carhart, 1997) and gross alphas (Gil-Bazo and Ruiz-Verdu, 2009). Consistent with the results of Carhart (1997), we find a negative relation between expense ratios (MER) and mutual fund net alphas which is significant when we include funds irrespective of their investment objectives. We also examine the relationship between gross alphas and fund fees since we expect that fund fees reflect at least to some extent the abilities of fund managers. It follows that there should be a positive relation between gross alphas and fees. Unlike the findings of Gil-Bazo and Ruiz-Verdu (2009) for equity funds and Gutierrez, Maxwell and Xu (2009) for bond funds but consistent with our expectation, we obtain a positive (but not significant) relation between the expense ratios and gross alphas. The results are consistent for all the fund types based on investment objectives except for Canadian High-yield Bond funds.

Although some studies (e.g., Grinblatt and Titman, 1989, 1994) find mixed empirical results for the relation between fund size and alphas, recent studies support the diseconomies of scale among equity mutual funds particularly in the US market. Chen *et al*. (2004) estimate a negative relation between lagged fund size and alphas due to the effect of illiquidity and organizational issues. Yan (2008) includes trading costs and illiquidity as the main drivers of scale diseconomies in the US market.

We conjecture that the relation between fund size and alphas could be insignificant based on the findings of Gutierrez, Maxwell and Xu (2009) for U.S. bond funds or even negative based on the different

relations reported in the literature between trade costs and trade sizes for equities and bonds. While Bernhardt *et al*. (2005) cite many studies that find a positive relation between trade size and trade costs for stocks, various authors (e.g., Bessembinder, Maxwell and Venkataraman, 2006) report a negative relation between trade size and costs for corporate bonds.

We consider the effect of mutual fund size on their alphas using a piece-wise relation formulation, which essentially avoids the multicollinearity problem that occurs when quadratic or higher-order terms are included in the regressions.[28] Based on this approach, we find no significant relation between lagged bond fund size and both net and gross alphas when we consider all funds irrespective of their investment objectives (fund types). These findings reflect the relatively smaller size of Canadian mutual funds compared to those in the US, and are consistent with the findings of Gutierrez, Maxwell and Xu (2009) for U.S. bond funds.

Fund age is another control variable that we consider in regression (2) which represents a fund's longevity and experience. If we believe that older funds are more experienced and face lower costs, we expect them to have better alphas. On the other hand, young funds are more eager to perform and increase their size and they may not face the organizational problems which older funds may encounter. Thus, the effect of age on fund alphas can be in either direction and can only be determined empirically. Considering funds with a Canadian Bond investment objective, we find a significantly positive relation between the natural logarithm of fund age and net and gross fund alphas.

According to Gruber (1996) and Zheng (1999), funds with positive flows perform better than funds with negative flows since investors distinguish funds with skilled managers and invest their money in those funds. Consistent with these two studies, we find a positive and strongly significant relation between lagged flows and both net and gross fund alphas even after controlling for the investment objectives of the funds (except for those with a Canadian High-yield investment objective). These results imply that investors may be able to detect more capable managers in the Canadian bond market.

Many papers find strong performance persistence among funds with past poor performances within the US mutual fund market (Grinblatt and Titman, 1994; Brown and Goetzmann, 1995; Carhart, 1997). Based on the results reported in panel B of Table 4, we find strongly significant and negative alpha persistence for the average fund categorized as having a Canadian bond investment objective and weakly significant and negative alpha persistence for the average fund categorized as having a High-yield investment objective. In contrast, the average fund with a Canadian Short-term investment objective shows strongly significant and positive alpha persistence.

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[28] To control for the effect of size, we also considered using other variables like demeaned size and the square of it. Our results show multicollinearity in the regressions using these variables. Therefore, we rely on piece-wise formulations to overcome problems with multicollinearity.

6. HOW DOES SPONSORSHIP AFFECT FUND FEES?

As shown above, the average alpha performances of funds sponsored by Independents (S_1), Banks (S_2), Insurers (S_3), and Member-Fin (S_4) differ even after considering various control variables. In this section, we test whether the fees that investors are charged differ by fund types and sponsor types. Based on Berkowitz and Qiu (2003), we also examine whether different sponsors have meaningful differences in administrative fees (MER minus management fees) as a proxy for higher agency-related issues. We also test management expense ratios (MER) by which fund sponsors (management companies) charge their shareholders. Higher fees reduce the net returns to shareholders and may enrich management companies. Thus, the magnitude of fees (such as MER) provides further evidence on the existence of agency issues within fund sponsors.

6.1 Methodology

To examine whether sponsor types charge their investors significantly different fees and given that fees exhibit some variability annually but little monthly, we estimate the following panel regression using annual data:

$$FundFees_{it} = a + b_1 S_{2it} + b_2 S_{3it} + b_3 S_{4it} + b_4 Size1_{it-1} + b_5 Size2_{it-1} + b_6 Size3_{it-1} + b_7 LnAge_{it-1} + b_8 PerfRank_{it-1} + b_9 LnNumFund_{it-1} + e_{it}, \quad (4)$$

where S_2, S_3 and S_4 are sponsorship dummies which take a value of 1 if the fund sponsor belongs to respectively the Bank, Insurer, and Member-Fins categories and 0 otherwise. $Size1, Size2\ and\ Size3$ are three categories (lowest 30%, mid 40%, and highest 30%, respectively) of a piece-wise relation between fees and one year lagged size as explained earlier. $LnAge$ is measured as the natural logarithm of the age of a fund (years) lagged by one year. $PerfRank$ is the percentile ranking of each fund's alpha in each year for the funds with the same investment objective. The reason behind including this variable is that higher fees might be justifiable when funds have outstanding realized performance (Ferris and Yan, 2009). $LnNumFund$ is the natural logarithm of the number of funds that the fund management company manages in the last year to check whether we have economies of scope in fees within mutual funds as proposed by Berkowitz and Qiu (2003).

Based on untabulated results, the mean and median cross-sectional annual numbers of funds based on the means of the time series of annual values for the individual funds are similar at 3.0 and 2.7 for Canadian Bond funds, 3.3 and 3.0 for Short-term Canadian Bond funds and 3.2 and 2.9 for High-yield Bond funds, respectively. They are less similar for the mean and median cross-sectional annual numbers of

funds based on the medians of the time series of annual numbers for the individual funds (specifically, 3.4 and 2.9 for Canadian Bond funds, 3.7 and 3.4 for Short-term Canadian Bond funds and 3.7 and 3.2 for High-yield Bond funds).

We use the random-effects panel regression specification based on the rationale and tests discussed in section 5.2.2, and the Fama and MacBeth (1973) approach (the latter as a robustness check) to estimate equation (4). Consistent with our risk-adjusted return data, the fees data exhibit a fund effect based on the methodology proposed by Petersen (2009) that was discussed in section 5.2.2. As for our alpha performance comparisons in section 5 of this paper, we run the panel regression (4) several times in order to compare the fees of all possible sponsor types where each type takes turns being the comparison ("out") benchmark.

6.2 Differentiated Fund Fees based on Panel Regressions

The two columns headed by "Undifferentiated" in Panel A of Table 7 reports the coefficient estimates for regression (4) for two different dependent variables, Management Expense Ratio (MER) and Administrative Fee (AdminFee), for the total sample of individual funds irrespective of their investment objectives. We observe that both MER and AdminFee are positive and highly significant for the four sponsor types. When we use MER as the dependent variable, funds sponsored by Banks (S_2) have the lowest average MER (significantly and strongly) compared to the average MER for funds sponsored by Independents (S_1), Insurers (S_3) and Member-Fins (S_4). Funds sponsored by Independents (S_1) also have strongly significant and lower average MER compared to the average MER for funds sponsored by Insurers (S_3) and Member-Fins (S_4). Using administrative fees as the dependent variable, we find that Banks (S_2) have strongly significant lower average administrative fees than funds sponsored by Independents (S_1), Insurers (S_3), and Member-Fins (S_4). We then test whether these results are explained by not restricting the sponsors to those that are publicly owned. Based on the columns headed by "Undifferentiated" in Panel A of Table 8, we observe that both types of fees remain positive and significant for the three sponsor types with some public sponsor ownership. We also observe that Banks (S_2) (all public) continue to have the significantly lowest MER and AdminFee among the public sponsor types, and that public Independents (S_1) have significantly lower MER and insignificantly higher AdminFee than public Insurers (S_3). We then test whether these results are explained by not restricting the sponsors to those that are privately owned. Based on the columns headed by "Undifferentiated" in Panel A of Table 9, we observe that both types of fees remain positive and significant for the three sponsor types with some private sponsor ownership. The only significant finding is that private Independents (S_1) have significantly lower MER than Member-Fins (S_4) (all private). Further untabulated test results suggest no significant fee differences between the funds sponsored by private and public Insurers (S_3), and that the

funds sponsored by public Independents (S_1) exhibit higher expense ratios compared to their private counterparts (S_1).[29]

[Please place tables 7, 8 and 9 about here.]

As for the alphas in section 5, we run the same panel regressions separately for the individual funds with the same investment objectives (fund type). Based on the two columns headed by "Cdn" in Panel A of Table 7, we observe that funds sponsored by Banks (S_2) have the lowest average MER and AdminFee that are significant except for the AdminFee comparison with Insurers (S_3). Changes from the comparisons undifferentiated by fund type that were previously discussed are the significantly lower average MER for Member-Fins (S_4) compared to Insurers (S_3), and the significantly higher average AdminFee for Member-Fins (S_4) compared to either Insurers (S_3) or Independents (S_1). When we consider the average fees for sponsors with at least some public ownership as reported in the two columns headed by "Cdn" in Panel A of Table 8, we observe only one material change from the findings not differentiated by public/private ownership. Specifically, the higher average AdminFee for public Insurers (S_3) compared to that for Banks (S_2) (all public) is no longer significant. Similarly, when we consider the average fees for sponsors with at least some private ownership as reported in the two columns headed by "Cdn" in Panel A of Table 9, we observe that the higher average AdminFee for Member-Fins (S_4) (all private) compared to private Independents (S_1) is now significant.

Based on the two columns headed by "Short-term" in Panel A of Table 7, we find that funds sponsored by Banks (S_2) still have lower and strongly significant average fees than the funds sponsored by Independents (S_1), Insurers (S_3) and Member-Fins (S_4), and that funds sponsored by Insurers (S_3) have strongly significant and higher average MER than funds sponsored by Independents (S_1). We find no significant differences based on the average AdminFee among funds classified by their sponsor types for this investment objective. When we consider the average fees for sponsors with at least some public ownership as reported in the two columns headed by "Short-term" in Panel A of Table 8, we observe only one material change from the findings not differentiated by public/private ownership. Specifically, the higher average AdminFee for public Insurers (S_3) compared to that for Banks (S_2) (all public) is no longer significant.

Based on the two columns headed by "High-yield" in Panel A of Table 7, we find that funds sponsored by Banks (S_2) still have lower average MER than the funds sponsored by Independents (S_1), Insurers (S_3) and Member-Fins (S_4) but that the difference is no longer significant for the comparison with the Independents (S_1). Banks (S_2) also still have lower average AdminFee than the funds sponsored by the

[29] The tabulated results are available from the authors (Table I.10 of our Internet Appendix).

other three sponsor types but that the difference moves from strongly to weakly significant for the comparison with the Independents (S_1) and becomes insignificant for the comparison with the Insurers (S_3). When we consider the average fees for sponsors with at least some public ownership as reported in the two columns headed by "High-yield" in Panel A of Table 9, we observe a few material changes from the findings not differentiated by public/private ownership. Specifically, the higher average MER and AdminFee for public Independents (S_1) compared to that for Banks (S_2) (all public) moves from being strongly significant to significant, and the lower average MER for public Independents (S_1) compared to that for public insurers (S_3) moves from being highly significant to being insignificant.

In summary, we find that funds sponsored by Banks (S_2) almost always have the lowest average fees (both MER and AdminFee) even after we control for fund type. Relating our results to our first hypothesis, the funds sponsored by the Banks (S_2) appear to exhibit the lowest agency issues since they have the best average alpha performance and the lowest average fees in by far the largest segment of the fixed-income fund market.

We now discuss the estimates for the various controls included in regression 4 that are reported in Panel B of Tables 7, 8 and 9. Consistent with prior studies on mutual funds (Carhart, 1997), we find that individual fund MER are significantly and negatively related with relative fund investment performance for all but the sample of Canadian High-yield funds. Based on the piece-wise linear approach to control for the effect of size on fund fees, we find that MER generally are not related with fund size. This result is consistent with Chen *et.al* (2004) who report no relationship between expense ratios and net and gross alphas for equity funds. However, we do find a significant relation between the AdminFee and the relatively largest funds that is positive and negative for funds in the Canadian Short-term Bond and Canadian High-yield categories, respectively, which appears to be attributable to the public sponsors. Based on the conjecture of Berkowitz and Qiu (2003) that differences in AdminFee (MER minus management fees) is a proxy for higher agency-related issues, this suggests that agency-related issues are significantly higher and lower for the relatively largest Canadian Short-term Bond and Canadian High-yield funds, respectively.

We also control for the effect of fund age measured as the natural logarithm of the number of years a fund has been in existence to capture potential managerial experience effects on mutual fund fees. Khorana *et al*. (2009) find that the relation between fund age and fees is not stable and depends on the model used to measure this relation. The results in Panel B of Tables 7, 8 and 9 do not show any relationship between the two types of fund fees and the natural logarithm of fund age for our various samples of individual funds.

Following Berkowtiz and Qiu (2003) who find economies of scope for a sample of Canadian equity mutual funds, we examine whether economies of scope exist for fund fees for our samples of bond funds.

We find a weakly significant positive relation between NumFund (the natural logarithm of the number of funds managed by investment companies) and their fees only for funds with a Canadian Bond investment objective that only persists for AdminFee when we confine our sample to funds with public sponsors.

7. SOME FURTHER ROBUSTNESS TESTS

We further examine the robustness of our results using Fama-MacBeth regressions. For performance comparisons among individual funds using regression (2), we correct the standard errors obtained for the Fama-MacBeth estimates using the method first used by Pontiff (1996) and subsequently used by Cornett *et al*. (2008), Irvine and Pontiff (2009), amongst others. The adjusted versions of the coefficient estimates and their standard errors are obtained by regressing the time-series of the parameter estimates on an intercept term where the residuals are modeled as a sixth-order autoregressive process. 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.

The untabulated results from the Fama-MacBeth regressions generally confirm the above results from the panel regressions.[30] When our sample includes all funds irrespective of their investment objectives, funds sponsored by Banks (S_2) significantly and strongly outperform others, on average, based on both net and gross alphas. For funds with a Canadian Bond investment objective, the Fama-MacBeth regressions show that funds sponsored by Banks (S_2) significantly and strongly outperform the others, on average, based on both net and gross alphas.[31] For funds with Canadian Short-term and Canadian High-yield investment objectives, the Fama-MacBeth regressions results are minimally different from those reported earlier for the panel regressions. The funds sponsored by Insurers (S_3) have significantly higher alphas than funds sponsored by Independents (S_1), Banks (S_2) and Member-Fins (S_4) for funds with a Canadian Short-term investment objective.

We also run regression (4) using the Fama-MacBeth (1973) approach using yearly 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).[32] Generally, the untabulated results using the Fama-MacBeth regressions confirm the earlier panel regression results.[33] Funds sponsored by Banks (S_2)

[30] The tabulated results are available from the authors (Panel A of Table I.1 of our Internet Appendix).
[31] The tabulated results are available from the authors (Panel B of Table I.1 of our Internet Appendix).
[32] We used this approach due to the number of years of data available and the lower level of autocorrelation in the yearly fees.
[33] The tabulated results are available from the authors (Table I.2 in our Internet Appendix).

and Member-Fins (S_4) have the lowest and the highest MER that are strongly significant among all the individual funds even after we control for fund type.

Since our sample time period covers the global financial crisis (GFC), we check whether it has an effect on our results. Ait-Sahalia *et al*. (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 global financial crisis. We also run our regressions (2) and (4) with 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 are qualitatively similar to the results over the entire period examined previously for both the panel and Fama-MacBeth regressions.[34] The untabulated results of the panel and Fama-MacBeth regressions for both types of fees over the pre-GFC period are almost the same as those over the entire period examined previously.[35]

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 alphas and fees for different fund and sponsor types.[36] As expected, the sponsor type results are similar to those obtained earlier without a GFC dummy variable (see the earlier Tables 4 and 7). Since the coefficient of the GFC dummy variable is negative and significant when MER is the dependent variable,[37] this supports the conjecture that Canadian fixed-income funds (except those with a High-yield investment objective) 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.

8. CONCLUSION

Our results show that the funds sponsored by Banks outperform, on average, the funds sponsored by the other three sponsor types based on net alphas for funds with a Canadian Bond investment objective which accounts for almost 70% of the Canadian fixed-income fund market. Funds sponsored by Banks also have the lowest average fees (MER and administrative) for all investment objective categories (fund types),

[34] The tabulated results are available from the authors (Tables I.3 and I.4, respectively, in our Internet Appendix).
[35] The tabulated results are available from the authors (Tables I.5 and I.6, respectively, in our Internet Appendix).
[36] The tabulated results are available from the authors (Tables I.7 and I.8, respectively, in our Internet Appendix).
[37] The tabulated results are available from the authors (Tables I.7 and I.8, respectively, in our Internet Appendix).

which is consistent with our first hypothesis in its alternative form that mutual fund performance is superior for stock- versus mutual-owned funds.

The average outperformance of funds sponsored by Banks does not apply to all fund type categories. Consistent with our second hypothesis, funds sponsored by Member-Fins (with all private and mutually-owned sponsors) strongly outperform, on average, funds sponsored by Banks (all public), Insurers (dominated by public), and Independents (more public than private) based on both gross and net alphas for funds with a High-yield Bond investment objective, which accounts for only 10% of the Canadian fixed-income fund market. Our results show that the superior, on average, net and gross alpha performances of funds sponsored by Member-Fins compared to the other three sponsor types is because their managers appear to have better investment abilities, on average, for funds with High-yield Bond investment objective. The gross alpha finding is consistent with our third hypothesis in its alternative form that mutual fund performances based on gross alphas will be superior for funds with managers with higher investment abilities. However, Canadian fixed income funds sponsored by Member-Fins have significantly higher fees than those of other sponsor types. This is consistent with the notion that mutually-owned funds have high agency and operation costs because of their lack of market monitoring (i.e., the monitoring of their fund sponsors).

We find that the relation between fund alphas or fees with sponsor ownership cannot be predicted for the combination of some dimensions of sponsor ownership structure (namely, public sponsors with stock ownership versus private sponsors with mutual ownership). Thus, funds sponsored by Banks (all stock owned and public) outperform (underperform) funds sponsored by Member-Fins (all mutual owned and private) for funds with a Canadian Bond (High-yield) investment objective.

Why do investors continue to invest in the funds sponsored by Independents and Insurers given that they have lower average performances and higher average costs compared to funds sponsored by other types of entities? Given the small differences in the average monthly 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 *et al*., 2010; Capon *et al*., 1996). Another possibility is that the funds categorized by sponsor type might be catering to client markets that differ by, for example, the size of their average fund investments.

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Table 1. Summary statistics for the returns of individual fixed-income funds and portfolios

This table reports summary statistics (including unadjusted kurtosis) for the returns (in %) for Canadian fixed-income funds using monthly data for the 132 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 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 cooperatives). Panel B reports each portfolio's average monthly TNA in billions of dollars for each sponsor type. It also includes 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 % (MGNT) 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.

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**	0.355	0.381	0.152	-0.537	0.786	-1.35	7.478
	Std. Dev.	1.009	1.006	0.282	0.039	3.073	1.779	15.348
	Median	0.38	0.409	0.179	-0.63	0.899	-1.111	6.629
Short-term Canadian Bond	**Mean**	0.237	0.25	0.152	-0.352	0.619	-0.165	4.922
	Std. Dev.	0.514	0.489	0.349	0.012	2.758	3.238	21.019
	Median	0.234	0.225	0.151	-0.078	0.601	0.443	2.901
High-yield Bond	**Mean**	0.307	0.358	0.385	-1.035	1.235	-0.925	5.391
	Std. Dev.	1.747	1.621	0.748	0.267	5.16	1.09	5.875
	Median	0.382	0.406	0.434	-1.141	1.855	-0.206	5.043
All	**Mean**	0.324	0.358	0.228	-1.035	1.235	-1.334	10.75
	Std. Dev.	1.079	0.998	0.588	0.012	5.16	1.826	9.441
	Median	0.354	0.381	0.259	-1.141	1.855	-0.234	9.404

Panel B: Distributional statistics for size-weighted portfolios of funds based on fund type and fund sponsor type									
		Monthly Return (%)				**Annual MGNT (%)**		**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	11823	703	12526	3729	151	3880	3331	0	3331	18883	854	19737
S_2	5100	0	5100	2546	0	2546	1224	0	1224	8870	0	8870
S_3	7225	688	7913	1322	18	1340	2209	74	2283	10756	780	11536
S_4	0	2507	2507	0	450	450	0	281	281	0	3238	3238
Total	24148	3898	28046	7597	619	8216	6764	355	7119	38509	4872	43381
Fund #	**T1**			**T2**			**T3**			**Total**		
	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total
S_1	149	9	158	43	2	45	59	0	59	251	11	262
S_2	51	0	51	28	0	28	19	0	19	98	0	98
S3	72	15	87	20	2	22	33	3	36	125	20	145
S_4	0	26	26	0	7	7	0	7	7	0	40	40
Total	272	50	322	91	11	102	111	10	121	474	71	545

Table 2. Summary statistics for the bond indices

This table reports the summary statistics (including unadjusted kurtosis) for the monthly returns of the bond indices. 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 data cover the period from January 2000 to December 2011, for a total of 132 monthly observations.

Factors	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

Table 3. Summary statistics for benchmark-adjusted returns and MER for individual funds

This table reports summary cross-sectional statistics (mean, std. dev. and median) in the rows for the monthly benchmark-adjusted returns and annual management expense ratios (MER) based on the time-series statistics for each individual Canadian fixed-income fund (not) differentiated by fund type over the 132-month period 2000-2011. The cross-sectional summary statistics for gross and net benchmark-adjusted returns, which are reported in Panels A and B, respectively, are calculated by subtracting gross (net returns plus1/12th of a fund's annual MER) and net returns from their expected returns based on the five-factor model used by Ayadi and Kryzanowski (2011). The cross-sectional summary statistics for the annual MER are reported in Panel C.

Panel A: Benchmark-adjusted monthly gross returns						
Fund group	**Statistics**	**Mean**	**Median**	**Std. dev.**	**Minimum**	**Maximum**
Canadian Bond	**Mean**	-0.022	-0.026	0.187	-1.021	0.538
	Std. Dev.	0.498	0.449	0.261	0.005	2.752
	Median	-0.012	-0.028	0.189	-1.021	0.526
Short-term Canadian Bond	**Mean**	0.084	0.076	0.144	-0.326	0.649
	Std. Dev.	0.217	0.203	0.123	0.025	0.806
	Median	0.074	0.064	0.138	-0.296	0.664
High-yield Bond	**Mean**	0.433	0.47	0.419	-1.049	1.433
	Std. Dev.	1.37	1.351	0.572	0.356	3.108
	Median	0.42	0.408	0.37	-0.539	1.507
All	**Mean**	0.067	0.018	0.28	-1.049	1.433
	Std. Dev.	0.577	0.442	0.469	0.005	3.108
	Median	0.07	0.018	0.266	-1.021	1.507

Panel B: Benchmark-adjusted monthly net returns						
Fund group	**Statistics**	**Mean**	**Median**	**Std. dev.**	**Minimum**	**Maximum**
Canadian Bond	**Mean**	-0.175	-0.179	0.204	-1.398	0.498
	Std. Dev.	0.498	0.449	0.26	0.005	2.752
	Median	-0.165	-0.18	0.211	-1.639	0.486
Short-term Canadian Bond	**Mean**	-0.049	-0.062	0.159	-0.502	0.424
	Std. Dev.	0.219	0.204	0.122	0.025	0.806
	Median	-0.061	-0.078	0.153	-0.479	0.439
High-yield Bond	**Mean**	0.266	0.319	0.408	-1.156	1.25
	Std. Dev.	1.338	1.345	0.596	0.023	3.108
	Median	0.251	0.224	0.363	-0.698	1.324
All	**Mean**	-0.083	-0.127	0.287	-1.398	1.25
	Std. Dev.	0.576	0.442	0.469	0.005	3.108
	Median	-0.08	-0.127	0.275	-1.639	1.324

Panel C: Annual MER						
Fund group	**Statistics**	**Mean**	**Median**	**Std. dev.**	**Minimum**	**Maximum**
Canadian Bond	**Mean**	1.797	1.879	0.586	0.200	3.189
	Std. Dev.	0.063	0.032	0.114	0.000	1.087
	Median	1.805	1.878	0.595	0.200	3.230
Short-term Canadian Bond	**Mean**	1.659	1.692	0.541	0.335	2.700
	Std. Dev.	0.066	0.028	0.112	0.000	0.614
	Median	1.670	1.667	0.533	0.320	2.700
High-yield Bond	**Mean**	2.002	2.099	0.465	0.678	3.109
	Std. Dev.	0.081	0.032	0.139	0.000	0.850
	Median	2.019	2.130	0.445	0.800	3.083
All	**Mean**	1.802	1.910	0.568	0.200	3.189
	Std. Dev.	0.066	0.031	0.117	0.000	1.087
	Median	1.812	1.925	0.570	0.200	3.230

Table 4. Determinants of monthly benchmark-adjusted alphas by sponsor and fund type based on panel regressions

This table reports the coefficient estimates for panel regression (3) and their t-values in parentheses over the 132-month period 2000-2011 for all available Canadian fixed-income funds for various combinations of sponsor types. The dependent variable FundRTN is the alpha calculated based on last year's gross (net returns plus1/12th of a fund's expense ratio) or net returns using the five-factor model used by Ayadi and Kryzanowski (2011). S_1, S_2, S_3 and S_4 are dummies 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. In panel A for reporting purposes, we exploit the fact that only the signs of the coefficients and t-values change between two sponsor types (say S_1, S_2) when each takes turn not being included in the panel regression. MER controls for the effect of management expense ratios on the alphas of the individual funds. The piece-wise linear relation approach as described in section 5 is used to control for size. Other control variables include the natural logarithm of the age of a fund (LnAge), fund flows lagged one year in thousand dollars (Flow), and fund performance lagged one year (LagPerf). 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**	
Panel A: Coefficient estimates for intercept and dummy variables									
Out	**In**	**Net**	**Gross**	**Net**	**Gross**	**Net**	**Gross**	**Net**	**Gross**
S_1	**Intercept**	-0.016	0.029	-0.155**	-0.122*	-0.016	0.018	0.158	0.182
		(-0.24)	(0.39)	(-2.54)	(-1.88)	(-0.21)	(0.22)	(0.44)	(0.51)
	S_2	0.098**	0.071*	0.060*	0.049	0.012	0.011	0.158	0.154
		(2.51)	(1.81)	(1.67)	(1.31)	(0.35)	(0.33)	(0.91)	(0.89)
	S_3	0.056*	0.020	-0.008	0.003	-0.058*	-0.064*	0.148	0.153
		(1.70)	(0.62)	(-0.42)	(0.16)	(-1.78)	(-1.79)	(1.17)	(1.20)
	S_4	0.018	0.003	-0.020	-0.007	0.038	0.052	0.578***	0.579***
		(0.30)	(0.05)	(-0.77)	(-0.27)	(0.63)	(0.78)	(3.28)	(3.37)
S_2	**Intercept**	0.081	0.100	-0.096	-0.074	-0.004	0.029	0.317	0.336
		(1.17)	(1.39)	(-1.39)	(-1.12)	(-0.06)	(0.38)	(0.90)	(0.96)
	S_3	-0.041	-0.052	-0.068**	-0.045	-0.070	-0.075*	-0.010	0.425
		(-0.83)	(-1.13)	(-1.96)	(-1.17)	(-1.64)	(-1.66)	(-0.05)	(-0.01)
	S_4	-0.080	-0.068	-0.079**	-0.056	0.027	0.041	0.419**	0.425***
		(-1.16)	(-1.04)	(-2.03)	(-1.34)	(0.45)	(0.62)	(2.56)	(2.68)
S_3	**Intercept**	0.040	0.048	-0.163**	-0.119*	-0.074	-0.046	0.306	0.335
		(0.49)	(0.56)	(-2.47)	(-1.68)	(-0.84)	(-0.48)	(0.90)	(1.00)
	S_4	-0.039	-0.016	-0.012	-0.010	0.097	0.116	0.430**	0.426**
		(-0.62)	(-0.26)	(-0.48)	(-0.41)	(1.45)	(1.63)	(2.33)	(2.38)
S_4	**Constant**	0.001	0.032	-0.175***	-0.129*	0.022	0.070	0.736*	0.761*
		(0.02)	(0.42)	(-2.81)	(-1.95)	(0.26)	(0.73)	(1.88)	(1.96)
Panel B: Coefficient estimates for control variables									
MER		-0.058**	0.032	-0.060***	0.019	-0.058	0.023	-0.148	-0.071
		(-2.40)	(1.30)	(-2.98)	(0.94)	(-1.54)	(0.56)	(-1.12)	(-0.55)
Size1		-0.046	-0.006	-0.047	-0.070	0.269	0.223	-0.398	-0.335
		(-0.27)	(-0.04)	(-0.36)	(-0.46)	(1.41)	(1.16)	(-0.78)	(-0.67)
Size2		0.094	0.009	0.039	-0.018	0.072	0.099	-0.298	-0.337
		(0.85)	(0.08)	(0.54)	(-0.23)	(0.71)	(0.96)	(-0.58)	(-0.67)
Size3		-0.051	0.002	-0.196	-0.124	-0.204	-0.233	-0.013	0.071
		(-0.29)	(0.01)	(-1.36)	(-0.83)	(-1.37)	(-1.60)	(-0.02)	(0.12)
LnAge		-0.010	-0.012	0.031**	0.037**	-0.007	-0.009	0.214	0.203
		(-0.59)	(-0.66)	(2.24)	(2.43)	(-0.29)	(-0.38)	(1.56)	(1.45)
Flow		0.043***	0.006***	0.041***	0.009***	0.022***	0.017***	0.443	0.533
		(3.03)	(5.61)	(10.11)	(8.31)	(3.29)	(2.68)	(0.14)	(0.17)
LagPerf		-0.026	0.006	-0.063***	-0.066***	0.102***	0.065**	-0.013	-0.011
		(-1.62)	(0.36)	(-3.91)	(-4.36)	(3.43)	(2.49)	(-0.52)	(-0.47)
W		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adj.R^2		0.005	0.001	0.010	0.006	0.047	0.015	0.006	0.006
S.R		2022	2022	1302	1302	414	414	302	302

Table 5. Determinants of monthly benchmark-adjusted alphas by public sponsor and fund type based on panel regressions

This table reports the coefficient estimates for panel regression (3) and their t-values in parentheses over the 132-month period 2000-2011 for all available individual Canadian fixed-income funds for various combinations of sponsor types. The dependent variable FundAlpha is the alpha calculated based on last year's gross or net returns using the 5-factor model of Ayadi and Kryzanowski (2011). Public S_1, S_2 (all public), and Public S_3 are sponsorship dummies which take a value of 1 if the fund sponsor belongs to respectively the public Independent, Bank, and public Insurer category and 0 otherwise. In panel A for reporting purposes, we exploit the fact that only the signs of the coefficients and t-values change between two sponsor types (say Public S_1, S_2) when each takes turn not being included in the panel regression. MER controls for the effect of management expense ratios on the alphas of funds. A piece-wise linear relation approach as described in section 5 is used to control for the effect of size. Other control variables include the natural logarithm of a fund's age in years and lagged one month (LnAge), fund flows lagged one month (Flow) per thousand dollars, and fund performances lagged one year (LagPerf). 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 sponsorship dummy variables (Public S_1, S_2, Public S_3) are jointly 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**	
Panel A: Coefficient estimates for intercept and dummy variables									
Out	**In**	Net	Gross	Net	Gross	Net	Gross	Net	Gross
Public S_1	**Intercept**	0.118	0.159*	-0.064	-0.034	0.049	0.109	0.246	0.283
		(1.54)	(1.76)	(-0.93)	(-0.41)	(0.54)	(1.11)	(0.60)	(0.69)
	S_2	0.080**	0.049	0.051	0.035	0.003	-0.002	0.153	0.153
		(1.98)	(1.09)	(1.43)	(0.88)	(0.08)	(-0.06)	(0.98)	(0.92)
	Public S_3	0.056	0.015	0.005	0.001	-0.034	-0.033	0.188	0.190
		(1.59)	(0.43)	(0.26)	(0.04)	(-1.04)	(-0.94)	(1.45)	(1.43)
S_2 (all public)	**Intercept**	0.198***	0.208**	-0.013	0.001	0.051	0.107	0.399	0.429
		(2.66)	(2.52)	(-0.18)	(0.02)	(0.64)	(1.17)	(0.97)	(1.03)
	Public S_3	-0.024	-0.034	-0.046*	-0.034	-0.037	-0.031	0.035	0.044
		(-0.47)	(-0.65)	(-1.69)	(-0.77)	(-0.88)	(-0.71)	(0.18)	(0.22)
Public S_3	**Intercept**	0.174*	0.176*	-0.059	-0.033	0.014	0.075	0.434	0.473
		(1.87)	(1.67)	(-0.81)	(-0.35)	(0.15)	(0.71)	(1.10)	(1.19)
Panel B: Coefficient estimates for control variables									
MER		-0.077**	0.002	-0.100***	0.002	-0.098***	-0.037	-0.255	-0.180
		(-2.58)	(0.07)	(-3.74)	(0.05)	(-3.19)	(-1.07)	(-1.50)	(-1.07)
Size1		-0.052	-0.117	-0.113	-0.239	0.103	0.056	-0.498	-0.404
		(-0.26)	(-0.52)	(-0.79)	(-1.19)	(0.57)	(0.29)	(-1.07)	(-0.85)
Size2		0.010	-0.064	-0.043	-0.059	0.148	0.178	-0.140	-0.240
		(0.08)	(-0.50)	(-0.50)	(-0.66)	(1.37)	(1.62)	(-0.28)	(-0.48)
Size3		0.112	0.044	-0.233	-0.141	-0.205	-0.233	0.021	0.043
		(0.54)	(0.22)	(-1.49)	(-0.83)	(-1.30)	(-1.50)	(0.04)	(0.07)
LnAge		-0.046**	-0.022	0.032**	0.039**	-0.003	-0.005	0.205	0.211
		(-2.49)	(-1.10)	(2.17)	(2.16)	(-0.13)	(-0.24)	(1.34)	(1.37)
Flow		0.043***	0.007***	0.041***	0.009***	0.020***	0.013*	1.195	1.425
		(2.63)	(6.19)	(10.41)	(10.79)	(2.77)	(1.89)	(0.36)	(0.43)
LagPerf		-0.003	0.005	-0.068***	-0.073***	0.100***	0.052**	-0.005	-0.005
		(-0.19)	(0.31)	(-3.18)	(-3.86)	(4.44)	(2.42)	(-0.18)	(-0.21)
W		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adj.R^2		0.009	0.002	0.015	0.009	0.057	0.014	0.007	0.006
S.R		1554	1554	932	932	337	337	284	284

Table 6. Determinants of monthly benchmark-adjusted alphas by private sponsor and fund type based on panel regressions

This table reports the coefficient estimates for panel regression (3) and their t-values in parentheses over the 132-month period 2000-2011 for all available individual Canadian fixed-income funds for various combinations of sponsor types. The dependent variable FundAlpha is the alpha calculated based on last year's gross or net returns using the 5-factor model of Ayadi and Kryzanowski (2011). Private S_1, Private S_3, and S_4 (all private) are dummies which take a value of 1 if the fund sponsor belongs to respectively the private Independent, private Insurer and member-owned or controlled financial entity (all private) category and 0 otherwise. In panel A for reporting purposes, we exploit the fact that only the signs of the coefficients and t-values change between two sponsor types (say Private S_1, Private S_3) when each takes turn not being included in the panel regression. MER controls for the effect of management expense ratios on the alphas of funds. A piece-wise linear relation approach as described in section 5 is used to control for the effect of size. Other control variables include the natural logarithm of a fund's age in years and lagged one year (LnAge), fund flows lagged one month per thousand dollars (Flow), and fund performances lagged one year (LagPerf). 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 sponsorship dummy variables (Private S_1, Private S_3, and S_4) are jointly 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**	
Panel A: Coefficient estimates for intercept and dummy variables					
Out	**In**	Net	Gross	Net	Gross
Private S_1	**Intercept**	-0.391*** (-2.74)	-0.322** (-2.53)	-0.419*** (-3.41)	-0.305*** (-3.08)
	Private S3	-0.031 (-0.33)	-0.027 (-0.51)	0.005 (0.05)	0.021 (0.44)
	S_4	0.018 (0.27)	0.048 (0.84)	-0.032 (-0.77)	0.019 (0.50)
Private S_3	**Intercept**	-0.421** (-2.51)	-0.349*** (-2.75)	-0.415*** (-3.08)	-0.284*** (-2.79)
	S_4	0.049 (0.48)	0.075 (1.19)	-0.036 (-0.42)	-0.002 (-0.05)
S_4 (all private)	**Intercept**	-0.373*** (-2.65)	-0.274** (-2.35)	-0.451*** (-3.65)	-0.286*** (-2.85)
Panel B: Coefficient estimates for control variables					
MER		0.003 (0.07)	0.074* (1.69)	0.025 (0.66)	0.048 (1.38)
Size1		0.113 (0.42)	0.194 (0.81)	0.074 (0.29)	0.214 (1.03)
Size2		0.163 (0.96)	0.095 (0.60)	0.157 (1.14)	0.085 (0.55)
Size3		-0.305 (-1.19)	-0.212 (-0.96)	-0.082 (-0.30)	-0.107 (-0.41)
LnAge		0.100** (2.55)	0.078** (2.05)	0.075** (2.36)	0.057** (1.99)
Flow		-0.790 (-0.45)	-0.129*** (-14.67)	-1.659 (-0.94)	-0.115*** (-8.35)
LagPerf		-0.062** (-2.30)	-0.049* (-1.87)	-0.065*** (-3.67)	-0.058*** (-3.33)
W		0.00	0.00	0.00	0.00
Adj.R^2		0.007	0.005	0.011	0.009
S.R		469	469	375	375

Table 7. Determinants of individual fund fees by public sponsor and fund type based on panel regressions

This table reports the panel regression (4) coefficients and their t-values in parentheses for the 11-year period 2000-2011 for determinants of the management expense ratios (MER) and administrative fees (AdminFee) of the individual Canadian fixed-income funds managed by different sponsor types. Public is a dummy variable which takes a value of 1 if the fund has a publicly traded fund sponsor and zero otherwise. 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. In panel A for reporting purposes, we exploit the fact that only the signs of the coefficients and t-values change between two sponsor types (say S_1, S_2) when each takes turn not being included in the panel regression. LnNumFund is the natural logarithm of number of mutual funds managed by the sponsor. LnAge is the natural logarithm of the age of the mutual fund. PerfRank is the percentile ranking of each fund's total return or benchmark-adjusted return within each investment objective for the previous year. The piece-wise linear relation approach as described in section 5 is used to control for the effect of size. 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_1, S_3 and S_4) are jointly equal to zero. S.R is 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**	
Panel A: Coefficient estimates for intercept and dummy variables									
Out	**In**	**MER**	**AdminFee**	**MER**	**AdminFee**	**MER**	**AdminFee**	**MER**	**AdminFee**
S_1	**Intercept**	1.754***	0.427***	1.799***	0.330***	1.478***	0.577***	1.845***	0.535***
		(24.88)	(6.59)	(21.31)	(6.04)	(10.62)	(2.67)	(7.66)	(4.97)
	S_2	-0.427***	-0.119***	-0.474***	-0.099***	-0.403***	-0.070	-0.232	-0.126*
		(-6.28)	(-4.41)	(-5.28)	(-2.73)	(-3.04)	(-1.01)	(-1.43)	(-1.76)
	S_3	0.385***	-0.006	0.400***	-0.013	0.415***	-0.027	0.243*	-0.035
		(5.12)	(-0.11)	(3.91)	(-0.16)	(2.92)	(-0.38)	(1.77)	(-0.43)
	S_4	0.242***	0.078	0.281***	0.184***	0.218	-0.029	0.172	-0.108
		(3.16)	(1.56)	(3.25)	(3.01)	(1.12)	(-0.29)	(1.21)	(-0.92)
S_2	**Intercept**	1.345***	0.308***	1.362***	0.232***	1.077***	0.507**	1.613***	0.408***
		(15.81)	(4.36)	(12.40)	(3.85)	(6.95)	(2.11)	(5.64)	(7.48)
	S_3	0.787***	0.119**	0.825***	0.099	0.816***	0.070	0.475***	0.126
		(8.63)	(2.02)	(6.23)	(1.06)	(5.63)	(0.44)	(2.89)	(0.97)
	S_4	0.651***	0.112***	0.718***	0.085***	0.619***	0.043	0.405***	0.092***
		(7.38)	(3.74)	(6.40)	(4.30)	(3.16)	(0.40)	(3.03)	(3.03)
S_3	**Intercept**	2.144***	0.421***	2.206***	0.317***	1.895***	0.550***	2.088***	0.500***
		(24.27)	(5.19)	(18.41)	(3.24)	(11.67)	(2.88)	(10.66)	(4.97)
	S_4	-0.147	0.084	-0.127***	0.197**	-0.198	-0.002	-0.070	-0.074
		(-1.58)	(1.22)	(3.25)	(2.05)	(-0.99)	(-0.02)	(-0.46)	(-0.55)
S_4	**Constant**	2.000***	0.504***	2.080***	0.507***	1.699***	0.549***	2.017***	0.426***
		(22.35)	(6.91)	(20.40)	(6.61)	(8.30)	(2.68)	(7.48)	(3.45)
Panel B: Coefficient estimates for control variables									
Size1		-0.022	-0.004	-0.123	-0.073	0.297	0.100	-0.074	0.319
		(-0.17)	(-0.03)	(-0.91)	(-0.55)	(0.91)	(0.31)	(-0.09)	(0.81)
Size2		-0.086	-0.201	-0.087	0.029	0.100	-0.753	-0.386	-0.664
		(-0.67)	(-1.19)	(-0.63)	(0.24)	(0.31)	(-1.47)	(-0.79)	(-1.59)
Size3		0.265	0.006	0.187	-0.154	0.403	0.527**	0.194	-0.442**
		(1.15)	(0.03)	(0.99)	(-0.93)	(1.11)	(1.96)	(0.32)	(-2.15)
LnAge		0.004	-0.004	-0.016	0.016	0.012	-0.097	0.125	0.125
		(0.18)	(-0.21)	(-0.53)	(0.83)	(0.29)	(-1.59)	(1.29)	(0.93)
PerfRank		-0.041**	-0.015	-0.068***	-0.034*	0.049*	0.091**	-0.022	-0.013
		(-2.20)	(-0.95)	(-2.66)	(-1.72)	(1.68)	(2.16)	(-0.62)	(-0.47)
LnFundNum		0.019*	0.010*	0.029*	0.016*	0.010	0.003	0.012	0.002
		(1.93)	(1.90)	(1.93)	(1.94)	(0.72)	(0.33)	(1.37)	(0.27)
W		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adj.R^2		0.020	0.021	0.043	0.018	0.035	0.146	0.092	0.223
S.R		224	224	147	147	46	46	31	31

Table 8. Determinants of individual fund fees by private sponsor and fund type based on panel regressions

This table reports the panel regression (4) coefficients and their t-values in parentheses for the 11-year period 2000-2011 for determinants of the management expense ratios (MER) and administrative fees (AdminFee) of the individual Canadian fixed-income funds managed by different sponsor types. Public S_1, S_2 (all public), and Public S_3 are sponsorship dummies which take a value of 1 if the fund sponsor belongs to respectively the public Independent, Bank, and public Insurer category and 0 otherwise. In panel A for reporting purposes, we exploit the fact that only the signs of the coefficients and t-values change between two sponsor types (say public S_1, S_2) when each takes turn not being included in the panel regression. LnNumFund is the natural logarithm of number of mutual funds managed by the sponsor. LnAge is the natural logarithm of the age of the mutual fund. PerfRank is the percentile ranking of each fund's total return or benchmark-adjusted return within each investment objective in the previous year. The piece-wise linear relation approach as described in section 5 is used to control for the effect of size. 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 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**	
Panel A: Coefficient estimates for intercept and dummy variables									
Out	**In**	**MER**	**AdminFee**	**MER**	**AdminFee**	**MER**	**AdminFee**	**MER**	**AdminFee**
Public S_1	**Intercept**	1.877***	0.486***	1.935***	0.477***	1.520***	0.361***	1.998***	0.547***
		(25.45)	(9.04)	(22.14)	(7.02)	(9.28)	(2.78)	(8.71)	(6.73)
	S_2 (all public)	-0.499***	-0.129***	-0.570***	-0.116***	-0.355**	-0.109**	-0.407**	-0.407**
		(-6.91)	(-4.65)	(-5.93)	(-3.08)	(-2.60)	(-1.98)	(-2.55)	(-2.54)
	Public S_3	0.332***	-0.005	0.347***	-0.020	0.417***	-0.019	0.114	-0.014
		(4.25)	(-0.09)	(3.26)	(-0.25)	(2.78)	(-0.27)	(0.79)	(-0.18)
S_2 (all public)	**Intercept**	1.395***	0.358***	1.394***	0.361***	1.169***	0.253**	1.591***	0.386***
		(17.14)	(6.76)	(12.32)	(5.25)	(7.71)	(2.01)	(6.25)	(5.35)
	Public S_3	0.809***	0.122**	0.879***	0.095	0.768***	0.090	0.521***	0.147**
		(8.91)	(2.26)	(6.55)	(1.18)	(5.59)	(1.41)	(3.48)	(1.96)
Public S_3	**Intercept**	2.212***	0.481***	2.286***	0.456***	1.939***	0.343***	2.112***	0.533***
		(25.04)	(5.98)	(18.30)	(3.85)	(12.07)	(3.49)	(11.72)	(6.39)
Panel B: Coefficient estimates for control variables									
Size1		-0.151	-0.246	-0.400***	-0.539**	0.562*	0.561**	0.389	0.159
		(-1.07)	(-1.34)	(-2.64)	(-2.26)	(1.70)	(1.98)	(0.56)	(0.62)
Size2		-0.005	-0.143	0.081	0.079	-0.145	-0.595*	-0.271	-0.399*
		(-0.06)	(-1.26)	(0.90)	(0.94)	(-1.32)	(-1.77)	(-0.93)	(-1.70)
Size3		0.164	0.058	0.163	-0.008	0.245	0.531*	0.000	-0.394*
		(0.99)	(0.42)	(1.12)	(-0.07)	(0.76)	(1.91)	(0.00)	(-1.92)
LnAge		0.008	0.002	0.003	0.014	-0.004	-0.029	0.047	0.027
		(0.44)	(0.16)	(0.13)	(0.78)	(-0.10)	(-0.82)	(1.08)	(1.00)
PerfRank		-0.041**	-0.014	-0.067***	-0.031	0.001	0.043	0.000	-0.006
		(-2.28)	(-0.74)	(-2.91)	(-1.20)	(0.04)	(1.11)	(0.01)	(-0.40)
LnFundNum		0.004	0.003*	0.006	0.005**	-0.002	-0.003	0.007	0.003
		(1.39)	(1.88)	(1.41)	(1.96)	(-0.44)	(-0.54)	(0.94)	(0.81)
W		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adj.R^2		0.073	0.019	0.083	0.017	0.080	0.111	0.079	0.154
S.R		169	169	105	105	37	37	27	27

Table 9. Determinants of individual fund fees of private sponsors based on panel regressions

This table reports the panel regression (4) coefficients and their t-values in parentheses for the 11-year period 2000-2011 for determinants of the management expense ratios (MER) and administrative fees (AdminFee) of the individual Canadian fixed-income funds managed by different sponsor types. Private S_1, Private S_3, and S_4 are sponsorship dummies which take a value of 1 if the fund sponsor belongs to respectively the private Independent, private Insurer and member-owned or controlled financial company (all private) category and 0 otherwise. In panel A for reporting purposes, we exploit the fact that only the signs of the coefficients and t-values change between two sponsor types (say private S_1, private S_3) when each takes turn not being included in the panel regression. LnNumFund is the natural logarithm of number of mutual funds managed by the management company. LnAge is the natural logarithm of the age of the mutual fund. PerfRank is the percentile ranking of each fund's total return or benchmark-adjusted return within each investment objective in the previous year. The piece-wise linear relation approach as described in section 5 is used to control for the effect of size. 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 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	
Panel A: Coefficient estimates for intercept and dummy variables					
Out	**In**	**MER**	**AdminFee**	**MER**	**AdminFee**
Private S_1	**Intercept**	1.791*** (14.87)	0.506*** (5.69)	1.777*** (12.44)	0.395*** (4.84)
	Private S_3	0.357 (0.93)	-0.069 (-0.51)	0.346 (0.89)	-0.044 (-0.32)
	S_4 (all private)	0.355*** (3.79)	0.081 (1.33)	0.388*** (3.77)	0.181*** (2.61)
Private S_3	**Intercept**	2.148*** (5.69)	0.437*** (2.78)	2.123*** (5.58)	0.352** (2.29)
	S_4 (all private)	-0.001 (0.00)	0.151 (1.05)	0.042 (0.11)	0.225 (1.51)
S_4 (all private)	**Intercept**	2.146*** (16.84)	0.587*** (6.02)	2.165*** (15.21)	0.577*** (5.77)
Panel B: Coefficient estimates for control variables					
Size1		-0.038 (-0.15)	-0.211 (-0.86)	-0.099 (-0.38)	-0.110 (-0.55)
Size2		-0.331 (-1.12)	-0.234 (-1.32)	-0.576** (-2.22)	-0.374** (-2.11)
Size3		-0.092 (-0.34)	-0.091 (-0.42)	0.143 (0.37)	-0.067 (-0.21)
LnAge		-0.057 (-1.28)	-0.012 (-0.45)	-0.042 (-0.85)	0.015 (0.50)
PerfRank		-0.020 (-0.67)	-0.009 (-0.44)	-0.021 (-0.55)	-0.002 (-0.07)
LnFundNum		0.018 (1.16)	0.003 (0.27)	0.024 (1.22)	0.005 (0.33)
W		0.00	0.00	0.00	0.00
Adj.R^2		0.054	0.026	0.111	0.061
S.R		55	55	42	42

Appendix: Definition of variables

Variable	Definition
Gross Return	Net returns plus1/12th of a fund's annual expense ratio
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
S_2	Sponsorship dummy which takes a value of 1 if the fund sponsor belongs to Banks (all public), otherwise zero
S_3	Sponsorship dummy which takes a value of 1 if the fund sponsor belongs to Insurers, otherwise zero
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
FundRTN	Benchmark-adjusted return (alpha) based on equation 2 as proposed by Brennan *et al.* (1998)
LagFundRTN	Lagged one year FundRTN
MER	Mutual fund's annual expense ratio
AdminFee	The difference between the MER and the management fees ratio
Size1	Lowest 30% category of funds in a piece-wise relation of size with either fund alphas (equation 3) or fund fees (equation 4)
Size2	Middle 40% category of funds in piece-wise relation of size with either fund alphas (equation 3) or fund fees (equation 4)
Size3	Highest 30% category of funds in piece-wise relation of size with either fund alphas (equation 3) or fund fees (equation 4)
LnAge	Natural logarithm of fund's age as given by the fund launch date
Flow	The net of all cash inflows and outflows in and out of various financial assets for a fund as proposed per 1000 dollars by Sirri and Tufano (1998)
Public	Dummy variable which takes a value of 1 if the fund sponsor is publicly traded and 0 otherwise
PerfRank	Percentile ranking of each fund's alpha during last year (12 month lag) within each investment objective
LnNumFund	The natural logarithm of the number of funds that the fund management company manages in the previous month
LagPerf	Fund performance (risk adjusted return) lagged one year (equation 3)