A Performance Evaluation of the Canadian Actively Managed ETFs

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The benefits of active portfolio management versus investing in passively managed investment tools such as index funds or exchange traded funds (ETFs) have been intensely debated in the financial literature. The term *active management* refers to the activities of investors who conduct fundamental research or utilize a broad range of quantitative methods and technical analyses to decide which individual securities to buy or redeem, seeking to enhance the return on the portfolio they manage. Pursuing active management strategies incurs significant research and other costs. By contrast, a passive investor avoids the various costs relating to active management by simply buying an entire index, such as the S&P 500 Index via an index fund or an ETF, and seeking to replicate the performance of this index.

Numerous academics and practitioners have tried to establish whether an actively managed portfolio such as a traditional open-ended mutual fund can provide its investors with returns that will exceed the average return of the market. There are two main trends in the literature concerning the merits of active management and the core issue of the performance delivered to investors.

On one hand, several studies (Ippolito [1989], Grinblatt and Titman [1989, 1993], Kacperczyk et al. [2005], and Cremers and Petajisto [2009]) provide evidence that active management does add value; namely, there are active mutual funds that can offer above-average market returns, at least in gross terms before fees and expenses. On the other hand, several researchers have revealed that active manages fail to contribute a positive amount to the value received by investors from their allocations in active mutual funds or similar investment products. Sharpe [1966] and Jensen [1968] raise questions about the ability of active managers to beat benchmarks, and studies by Blake et al. [1993], Malkiel [1995, 2003, and 2013], Gruber [1996], Carhart [1997], French [2008], and McMillan [2014] provide evidence that actively managed portfolios underperform their benchmarks and comparable passively managed counterparts, especially when the cost of active management is taken into consideration.

In addition to the allure of an active strategy's positive alpha, there are some other features that, despite frequently discouraging empirical evidence as far as performance is concerned, make actively managed products quite appealing to investors. These features concern the widely accepted notion that, in inefficient markets, actively managed portfolios consistently beat their beta-indexing counterparts. Moreover, many investors need to have the freedom to modify their portfolio by possibly adding low-quality securities that might pay higher than high-quality shares; they may also desire to incorporate stocks

based on particular objectives and criteria and in weightings other than those prescribed by an index. Finally, active investors may feel that they can enhance their chances of getting an above-average return by choosing to entrust their funds to managers who have a solid investment philosophy, strong credentials, and an impressive record of performance and risk management.

Along with the benefits of active management, there are certain drawbacks attached to this investment strategy. More specifically, active managers incur significantly higher expenses in their efforts to beat their passive rivals, but they frequently fail to create returns that can justify the increased costs charged to investors. The pressure exerted on active managers to deliver returns commensurate to costs may make them act more conservatively than investors expect to achieve at least the average market return and avoid being ranked in the bottom class of the industry. The opposite may also be the case, namely the managers may adopt extremely aggressive approaches to increase the expected returns, burdening their investors with unwanted risk. In addition, active portfolios are usually significantly less diversified than an index fund or an ETF that tracks a well-diversified broad market index. Finally, tax efficiency is another pitfall when active funds are compared to index funds or to ETFs.

Because of their relevance to the concept of active portfolio management, active ETFs are the subject of this article. In should be mentioned that there are significant structural differences between active and passive ETFs, with the core difference being that passive ETFs are structured to track a specific broad market, sector, or international index, whereas active ETFs seek to outperform a specific segment of a market or a particular sector through actively managing a portfolio of stocks, bonds, or other assets. Active ETFs may be assigned a benchmark, but their advisors may buy or sell shares of the portfolio under management on a daily basis without adhering to the index as they attempt to generate a positive alpha. However, this type of management results in higher costs to be borne by investors in active ETFs compared to the fees charged by passive ETFs.

Other differences between the passive and active ETFs concern the number of market makers required by each type of ETFs (at least two and one market maker for passive and active ETFs respectively), the minimum size of investment (not required by passive ETFs but required by active ETFs), and the relationship between the market maker and the ETF manager. More specifically, these investing participants are not related to each other in the case of passive ETFs while the market maker and the manager of an active ETF belong to the same company.

Last but not least, passive ETFs offer arbitrage opportunities that are not offered by active ones. Arbitrage opportunities arise when a gap exists between the trading prices of ETFs and the value of underlying securities; efficient arbitrage execution contributes to the sharp elimination of these gaps. Arbitrage is based on the in-kind creation/redemption process of passive ETFs, and it is attainable because the holdings of tracking indexes are publicly known throughout the trading day. On the contrary, the stocks held by active ETFs are usually not publishable until the end of the trading day because these stocks are chosen by active ETF managers as they attempt to surpass their benchmarks. Consequently, should the holdings of active ETFs be disclosed frequently enough for arbitrage could take place, active managers' capacity to outperform the market is weakened. In such a case, investors would be free to let fund managers do all of the research and then simply wait for the disclosure of the fund managers' choices; they could then buy the selected securities and avoid paying management fees. Thus, the arbitrage and the in-kind creation/redemption are essentially non-events for active ETFs.

The literature on active ETFs is rather poor. Rompotis [2011a] examined the performance of active ETFs versus the S&P 500 Index and found that these ETFs fail to outperform the index. Moreover, Rompotis [2011b] reported that active ETFs underperform their own benchmarks as well as their passively managed ETF peers (i.e., passive ETFs written on the same index). Similar results are provided by Rompotis [2013]. In the same spirit, Schizas [2014] showed that active ETFs do not perform better than passive ones and are more volatile. Contrary to the these findings, Garyn-Tal [2013] used a four-factor model to examine an investment strategy in active ETFs based on R^2 and provided evidence that this strategy can produce a positive risk-adjusted excess return.

The present study seeks to add to the existing literature by providing new insights on whether active management can create value for investors by examining data from a sample of 22 active ETFs traded on the Toronto Stock Exchange. The main empirical issues examined

are whether the Canadian active ETFs can deliver a significant excess return and whether their managers can time the market in such a way as to boost their performance records. The creation of alpha is examined via various single- and multifactor models that all lead to the conclusion that, on average, the sample funds examined fail to produce any material positive alpha. The majority of alphas are negative and highly statistically significant. This finding indicates that Canadian active ETF managers lack sufficient selection skills. The results of the regression model used to assess the market timing skills are also disappointing, as the majority of managers do not seem to possess any superior skills in timing the market.

The remainder of this article is structured as follows: The next section develops the methodology used in our empirical investigation. The third section describes the data used in this study and provides the descriptive statistics of the sample's returns. The empirical findings of our research are presented in the fourth section, and the conclusions are discussed in the final section.

METHODOLOGY

Performance Evaluation

In this section, we apply four alternative models to assess whether the managers of the Canadian active ETFs possess any ability to pick underpriced securities that will help them achieve returns in excess of the return of the selected market index of reference.

Single-factor model. We first use the following single-factor capital asset pricing model (CAPM):

$$R_{p,i} - R_f = \alpha_{p,i} + \beta_{p,I}\,(R_m - R_f) + \varepsilon_{p,i} \qquad (1)$$

in which $R_{p,i}$ denotes the daily return of the ETF's i, R_m represents the return of the benchmark portfolio selected for each ETF of the sample, and R_f is the daily risk-free rate expressed by the daily prices of the Canadian three-month treasury bills. The coefficient $\alpha_{p,i}$ is used to determine the excess return of the ETF's i and measures the stock selection ability of ETF managers. If the market is efficient and the portfolio of ETF's i is properly priced, the expected alpha should not be different from zero. Positive and significant alphas indicate that the manager adds value, whereas negative and significant alphas indicate that the managers fail to diversify the portfolio they manage well or that they pick stocks that are overpriced.

It should be mentioned here that the daily returns of ETFs in Model 1, as well as the models that will follow in the rest of this article, are calculated with net asset value (NAV) data. This means that returns are the net of fees and, consequently, the risk-adjusted returns reported in this article (e.g., the alpha of Model 1) are essentially indicative of ETF managers' ability to add value for the ETF's investors. This interpretation of alphas and risk-adjusted returns is slightly different from risk-adjusted returns computed with gross-of-fee ETF returns (i.e., returns that are calculated with trading data). The usage of such gross-of-fee returns would result in risk-adjusted return estimates that would be indicative of ETF managers' ability to achieve above-market risk-adjusted returns; this is not the case in this study because net-of-fee returns based on NAVs are used to calculate the daily raw returns of ETFs. Based on this analysis of the differences between net-of-fee and gross-of-fee ETF returns, whenever terms such as *excess return* or *above-market return* are used in this article, they will always refer to the net-of-fee risk-adjusted return/value added by ETF managers.

The coefficient β_i measures the segment of the ETF's i statistical variance that, because it is correlated with the return of the other stocks included in portfolio, cannot be mitigated by the diversification provided by the ETF portfolio. *Beta* represents the systematic risk of ETF i and evaluates the degree of its sensitivity to the movements of the benchmark; ε_i represents the residuals of regression Equation (1).

We note that we first applied the previously discussed model using the ordinary least squares (OLS) regression method. OLS regression is the standard choice in the relevant financial literature. However, as indicated by Asteriou and Hall [2006], recent developments in financial econometrics require the use of models and techniques that can model the attitude of investors not only toward expected returns but also toward risk or uncertainty. One such model is the generalized autoregressive conditional heteroskedasticity (GARCH) model, which was pioneered by Bollerslev [1986]. The GARCH model allows the conditional variance to be dependent on squared lagged error terms and its previous own lags. In addition to the OLS method, therefore, we used a GARCH process to estimate the parameters of performance for Model 1.[1] The variance equation of the general GARCH(p,q) model used takes following form:

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^{q} \alpha_i u_{t-i}^2 + \sum_{j=1}^{p} \gamma_j \sigma_{t-j}^2 \quad (2)$$

in which σ_t^2 is the conditional variance; u_{t-i}^2 is the squared lagged error term; σ_{t-j}^2 is the lagged variance term; and α_0, α_i, and γ_j are the constant term, the error, and the variance coefficients, respectively.

Three-factor model. The second model we apply is the Fama and French [1993] three-factor model shown in Equation (3):

$$R_{p,i} - R_f = \alpha_{p,i} + \beta_{p,I}(R_m - R_f) + s_{p,I}(SMB) + h_{p,I}(HML) + \varepsilon_{p,i} \quad (3)$$

in which $R_{p,i}$, R_m, R_f, and $\varepsilon_{p,i}$ are defined as stated earlier. *SMB* stands for "small (market capitalization) minus big" and *HML* for "high (book-to-price ratio) minus low"; they measure the historic excess returns of small caps over big caps and of value stocks over growth stocks, respectively. $s_{p,i}$ is the coefficient loading for the average excess return of portfolios from the small equity class over portfolios from the big equity class, and $h_{p,i}$ is the coefficient loading for the average excess returns of portfolios with high book-to-market equity class over those with low book-to-market equity class. Intuitively, one would expect a portfolio of big stocks to have a negative $s_{p,i}$ coefficient and a portfolio of value stocks to have a positive $h_{p,i}$ coefficient.

The SMB variable is constructed by subtracting the return of the S&P/TSX (Toronto Stock Exchange) 60 Index on day *t* from the corresponding return of the S&P/TSX SmallCap Index. The first index addresses the needs of portfolio managers who require a portfolio index of the large-cap market segment of the Canadian equity market, and the second index is composed of the smaller—in market capitalization terms—securities listed in the Toronto Stock Exchange.

Similarly to the *SMB* factor, the *HML* variable is constructed by subtracting the return of the Dow Jones Canada Select Growth Index on day *t* from the respective return of the Dow Jones Canada Select Value Index. The first index includes Canadian securities chosen by S&P Dow Jones Indices LLC based on criteria used to identify companies that demonstrate growth characteristics. The second index is comprised of securities of Canadian issuers selected by S&P Dow Jones Indices LLC based on criteria for identifying companies that demonstrate value characteristics.

In the Fama and French [1993] three-factor model, the *size effect* implies that firms with small market capitalization exhibit returns that, on average, are significantly superior to those of large firms. Hypothetical explanations for the size effect suggest that the small firms' stocks are less liquid and thus trading in them generates greater transaction costs; furthermore, less information is available regarding small firms, and therefore the cost of monitoring a portfolio of small stocks will generally be greater than the cost of a portfolio of large firms. In addition, given that small shares trade less frequently, their betas may be less reliable. The *book-to-market equity effect* shows that average returns are greater for stocks with a higher book-value to market-value ratio than their competitors. Firms with high book value are underpriced by the market and, therefore, are good buy-and-hold targets, as their price will rise later; this phenomenon undermines the semi-strong form efficiency of the market. These two variables explain average return differences across portfolios that cannot be accounted for by beta.

We note that, with the exception of applying Model 3 using value and size variables based on Canadian stock indexes, we also run the model using U.S. Fama and French value and size factors found on Kenneth French's website. Furthermore, we apply an alternative six-factor version of Model 3 that includes both Canadian and U.S. value and size factors to detect whether the Canadian ETF market can be materially related to the market in the United States. In other words, we try to identify whether there are U.S. market factors that may drive the performance of active ETFs in Canada.

Four-factor model. The third model we apply is an expansion of the Fama and French [1993] three-factor Model 3, to which we add a fourth factor to represent the intraday volatility of ETFs:

$$R_{p,i} - R_f = \alpha_{p,i} + \beta_{p,i}(R_m - R_f) + s_{p,i}(SMB) + h_{p,i}(HML) + v_{p,i}(IntVol) + \varepsilon_{p,i} \quad (4)$$

in which $R_{p,i}$, R_m, R_f, *SMB*, *HML*, and $\varepsilon_{p,i}$ are defined as previously described. The intraday volatility (*IntVol*) is calculated as the fraction of the daily highest trading price minus the daily lowest trading price to the closing trading price at the end of the day. This type of intraday volatility is based on ETF's net-of-fee returns and has been found in Rompotis's [2012] study of the Swiss ETF market.

Based on several findings of the literature (e.g., Ang et al. [2009]), quite frequently stocks with recent past high idiosyncratic volatility have low future average returns on a global scale. Strong covariation in the low-returns to high-idiosyncratic-volatility stocks across countries may imply that intraday volatility can also affect the return of ETFs in a negative fashion. Therefore, the $v_{p,i}$ coefficient of Model 4 is expected to be negative.

Five-factor model. The last model we apply is based on the expansion of the Fama and French [1993] three-factor model described in Equation (4), in which we add a fifth factor: the one-day lagged excess return of ETFs. This model is depicted in Equation (5):

$$R_{p,i} - R_f = \alpha_{p,i} + \beta_{p,i}\,(R_m - R_f) + s_{p,i}\,(SMB) + h_{p,i}\,(HML) + v_{p,i}\,(IntVol) + \beta_{t-1,p,i}\,(R_{t-1,p,i} - R_f) + \varepsilon_{p,i} \quad (5)$$

in which $R_{p,i}$, R_m, R_f, *SMB*, *HML*, *IntVol*, and $\varepsilon_{p,i}$ have been previously defined and $R_{t-1,p,i}$ is the lagged return of ETFs. A positive and statistically significant $\beta_{t-1,p,i}$ is indicative of short-term persistence in the return of ETFs. On the contrary, a negative estimate indicates a mean-reverting trend in the performance of ETFs. Overall, the sign of this coefficient cannot be predicted ex ante and is a matter for empirical determination.

Market Timing Testing

In this section, we evaluate whether ETF managers are capable of efficiently timing the market to enhance the performance of the portfolios they manage. In general, good market timing ability implies an efficient increase or decrease in the portfolio's exposure on equities before market accessions or decreases, respectively. Managers' market timing ability is affected by the investing objective of the fund they manage and whether leverage and derivative products are used.

To test the market timing ability of ETF managers, we use the model developed by Treynor and Mazuy [1966], which is expressed by Equation (6):

$$R_{p,i} - R_f = \alpha_{p,i} + \beta_{p,i}\,(R_m - R_f) + \gamma_{p,i}\,(R_m - R_f)^2 + \varepsilon_{p,i} \quad (6)$$

in which $R_{p,i}$, R_m, and R_f have been defined previously and $\gamma_{p,i}$ measures timing ability. If the manager efficiently increases (or decreases) the portfolio's exposure to market index before market accessions (or recessions), $\gamma_{p,i}$ will be positive as a result of the convex function of the portfolio's return with respect to market return. In other words, positive and significant estimations for γ coefficients indicate that ETF managers possess significant market timing skills.

DATA AND DESCRIPTIVE STATISTICS

This study sample includes 22 active ETFs that are listed in the Toronto Stock Exchange and managed by Horizons, an asset management company with a significant presence in the Canadian stock markets and other major stock markets worldwide, including the United States, Australia, and Hong Kong.

Exhibit 1 describes the profiles of ETFs, including the ticker symbol; name; benchmark; type; correlation coefficient between the returns of the ETF and the benchmark; the inception date of each fund; the published management fee; assets under management as of December 31, 2014, in Canadian dollars (CAD); and, finally, the average percentage difference between the trading price and NAV of ETFs calculated at the end of the trading day and labeled as premium. A negative difference is called a *discount*.

Before analyzing the data in Exhibit 1, it should be pointed out that the majority of active ETFs included in the sample do not report a prescribed benchmark in their bulletin. However, given that we must evaluate the performance of each individual ETF against the performance of a suitable index of reference or any other benchmark, we tested several indexes for each ETF to find a suitable benchmark pairing. The correlation of returns between ETFs and indexes was used to establish the relevant benchmarks, and this is why this coefficient is reported in Exhibit 1.

The study sample includes several types of actively managed ETFs that may be appealing to different types of investors. Three purely equity ETFs are included. The next five funds aim to offer fixed income to their investors by investing in a broadly diversified selection of investment-grade government, provincial, corporate, and municipal bonds. The next category includes eight so-called *covered call* ETFs; these ETFs seek to provide their investors with exposure to specific segments of the market while also providing the effectiveness of a covered call strategy and monthly distributions of dividend and call option income. To do so, covered call ETFs

invest primarily in a portfolio of equity and equity-related securities of Canadian and other international companies. To mitigate downside risk and generate income, covered call ETFs generally write covered call options on the option-eligible securities in their portfolio. The level of the covered call option writing may vary based on market volatility and other factors.[2] One so-called *balanced* ETF is also included in the study sample. This fund seeks to provide a consistent rate of return balanced between current income and long-term capital growth by investing primarily in a balanced portfolio of publicly traded equity, income trust, and debt securities mostly located in Canada. Finally, five specialty ETFs are incorporated in the sample. These funds mainly target long-term capital appreciation in all market cycles by tactically allocating their assets among equities, fixed income, commodities, and currencies during periods that historically have demonstrated seasonal trends.

With respect to the suitability of the selected indexes to act as the benchmarks of the ETFs under examination, Exhibit 1 reports an average correlation coefficient for the entire sample of 0.734. This correlation coefficient is quite high and indicates that the selected indexes are indeed appropriate benchmarks for the purposes of the study. The correlation coefficients of each single ETF group are also satisfactorily high.

In regards to the management fees charged to investors, Exhibit 1 includes a group average figure equal to 0.69%. For individual groups, the fixed-income ETFs are the least expensive. On average, fixed-income ETFs charge a 0.52% fee for their managerial expenses. On the other hand, specialty ETFs are the most expensive active ETFs, with a mean management fee of 0.83%. These managerial fees are, in general, significantly higher than those usually charged by passively managed ETFs and are more comparable to the fees of actively managed open-ended mutual funds.

Among other factors, the significance of the active ETF market in Canada can be assessed through the assets invested in these funds. The assets under management for the average sample fund amounts to 72.7 million CAD, and the group that attracts the most assets is the fixed-income ETFs. This pattern can be explained by the fact that, during periods of volatile markets and times of economic crisis, investors seek investments that may offer only modest income but do so with relative safety. The period under investigation, which approximately spans from January 2010 to December 2014 (as can be inferred by the inception dates of ETFs in Exhibit 1),

EXHIBIT 1
Profiles of ETFs

Ticker	Name	Benchmark	Type	Correlation with Benchmark	Inception Date	Management Fee	Assets @ 12/31/2014	Premium
HAL	Horizons Active Cdn Dividend ETF	S&P/TSX Cdn Dividend Aristocrats Index	Equity	0.841	February 10, 2010	0.70%	13,652,365	–0.017%
HAZ	Horizons Active Global Dividend ETF	MSCI World Index	Equity	0.811	July 21, 2010	0.80%	157,714,060	0.084%
HAJ	Horizons Active Emerging Markets Div ETF	MSCI Emerging Markets Index	Equity	0.649	October 10, 2012	0.80%	5,245,650	–0.048%
Equities Group's Mean				**0.767**		**0.77%**	**58,870,692**	**0.006%**
HAB	Horizons Active Corporate Bond ETF	FTSE TMX Canada All Corporate Bond Index	Fixed Income	0.930	July 15, 2010	0.50%	518,533,191	0.276%
HAD	Horizons Active Cdn Bond TF	FTSE TMX Canada Universe Bond Index	Fixed Income	0.961	October 10, 2012	0.42%	56,559,420	0.079%
HYI	Horizons Active High Yield Bond ETF	Barclay's US High Yield Very Liquid Index	Fixed Income	0.635	February 15, 2012	0.60%	40,872,287	0.349%
HFP	Horizons Active Floating Rate Preferred Share	S&P/TSX North American Preferred Stock Canadian Dollar Hedged Index	Fixed Income	0.505	October 2, 2013	0.55%	49,054,840	0.129%
HPR	Horizons Active Preferred Share ETF	S&P/TSX North American Preferred Stock Canadian Dollar Hedged Index	Fixed Income	0.606	November 23, 2010	0.55%	392,365,348	0.097%

EXHIBIT 1 (*Continued*)

Ticker	Name	Benchmark	Type	Correlation with Benchmark	Inception Date	Management Fee	Assets @ 12/31/2014	Premium
Fixed Income Group's Mean				**0.727**		**0.52%**	**211,477,017**	**0.186%**
HAX	Horizons Active S&P/TSX 6 In Covered Call	S&P/TSX 60™ Index	Covered Call	0.859	January 15, 2013	0.65%	2,275,245	–0.262%
HEE	Horizons Enhanced Income Energy ETF	S&P/TSX 60™ Index	Covered Call	0.731	April 11, 2011	0.65%	27,658,803	0.077%
HEX	Horizons Enhanced Income Equity ETF	S&P/TSX Composite Index	Covered Call	0.941	March 17, 2011	0.65%	72,806,921	0.051%
HEF	Horizons Enhanced Income Financials ETF	S&P/TSX Capped Financials	Covered Call	0.599	May 16, 2011	0.65%	18,744,860	–0.048%
HEA	Horizons Enhanced Income US Equity (USD)	S&P 500 Index	Covered Call	0.795	January 15, 2014	0.65%	36,606,395	–0.175%
HEJ	Horizons Enhanced Income International Equity	MSCI World Index	Covered Call	0.658	April 11, 2011	0.65%	11,605,113	–0.027%
HGY	Horizons Gold Yield ETF	S&P/TSX Composite Index	Covered Call	0.306	December 20, 2010	0.60%	23,404,649	–0.034%
HNY	Horizons Natural Gas Yield ETF	CMDYNGER (Natural Gas)	Covered Call	0.877	March 1, 2012	0.85%	11,209,158	0.082%
Covered Call Group's Mean				**0.721**		**0.67%**	**25,538,893**	**–0.042%**
HAA	Horizons Active Diversified Income ETF	S&P/TSX Composite Index	Balanced	0.900	July 28, 2010	0.70%	5,686,550	–0.249%
Balanced Group's Mean				**0.900**		**0.70%**	**5,686,550**	**–0.249%**
HAC	Horizons Seasonal Rotation ETF	S&P/TSX Composite Index	Specialty	0.559	November 19, 2009	0.75%	105,179,215	0.112%
HBR	Horizons Auspice Broad Commodity Index ETF	Morningstar Global Long/Flat Commodity Index	Specialty	0.716	February 27, 2013	0.80%	1,808,650	0.301%
HMF	Horizons Auspice Managed Futures Index ETF	Auspice Managed Futures Excess Return Index	Specialty	0.929	April 2, 2012	0.95%	7,256,082	0.201%
HHF	Horizons Morningstar Hedge Fund Index ETF	S&P/TSX Composite Index	Specialty	0.488	April 26, 2012	0.95%	30,746,496	0.138%
HUT	Horizons Cdn Equity Managed Risk ETF	S&P/TSX 60™ Index	Specialty	0.857	May 30, 2012	0.70%	11,340,395	–0.016%
Specialty Group's Mean				**0.710**		**0.83%**	**31,266,168**	**0.147%**
Grand Average				**0.734**		**0.69%**	**72,742,077**	**0.050%**

Note: This exhibit presents the profiles of Canadian actively managed ETFs, which includes their ticker; name; benchmark used in the study; type; correlation coefficient with the benchmark used; inception date; management fee; assets under management as of December 31, 2014; and the average difference between the trading prices and the NAV of each ETF labeled as premium (a negative estimation indicates that the relevant ETF trades at a discount to its NAV).

cannot be characterized as a smooth time for capital markets at a global level. The United Sates has only recently begun to substantially recover from the financial crisis of 2007–2009, whereas the global economic crisis and, especially, the sovereign debt and growth crisis in the Eurozone are still quite strong and must be addressed. Therefore, it is plausible that fixed-income ETFs attract, on average, more assets than the other categories.

Overall, the total assets managed by the sample ETFs amount to about 1.6 billion CAD (this is the sum of the assets of each ETF, but it is not clearly reported in Exhibit 1), rather low compared with the 76.8 billion held by the entire ETF market in Canada at the end of 2014.[3] This relatively low amount may be explained by the fact that the active ETF market is still in its infancy—the oldest active ETF in Exhibit 1 dates back to

November 2009. Therefore, these young funds need to market themselves more intensively to catch the interest of a wide mass of investors. In addition, more years of performance records may be needed for investors to broadly entrust their funds with the active ETFs in Canada.

The last feature provided in Exhibit 1 is the percentage premium, or discount, in the trading prices of active ETFs in Canada. Records show that the average active ETF trades at a daily premium of 0.05% to its NAV. This percentage is not very high, demonstrating a satisfactory efficiency in the pricing of these funds. In other words, significant and possibly long-lasting premiums or discounts in trading prices are not the usual circumstance for Canadian active ETFs. However, it must be mentioned that low premiums or discounts do not apply to all funds under examination because there are specific ETFs whose premium or discount well exceeds 10 bps.

Extending the discussion of the features of ETFs, Exhibit 2 provides descriptive statistics of returns for the active ETFs examined, including the average return; the standard deviation of returns, which stands for the risk relating to the investment in the particular funds; the extreme scores (minimum and maximum); and the coefficients for skewness and kurtosis.

The average return of active ETFs is equal to 0.001%. The respective return of benchmarks is 0.028%. These returns indicate that the benchmarks slightly outperform ETFs, but the *t*-tests for each single pair show that the differences in returns are not statistically significant. By scanning through the returns of individual groups, the equity ETFs perform better than the other

EXHIBIT 2
Descriptive Statistics

	Average			StDev		Minimum		Maximum		Skewness		Kurtosis	
Ticker	**ETF**	**Index**	***t*-test**	**ETF**	**Index**	**ETF**	**Index**	**ETF**	**Index**	**ETF**	**Index**	**ETF**	**Index**
HAL	0.029	0.047	–0.048	0.703	0.622	–3.667	–3.926	3.692	2.458	–0.146	–0.439	3.191	3.296
HAZ	0.047	0.060	–0.030	0.728	0.743	–6.084	–4.321	4.056	3.383	–0.529	–0.319	7.104	3.393
HAJ	0.027	0.031	–0.008	0.793	0.729	–2.972	–2.437	2.401	2.864	–0.131	–0.103	0.853	0.672
Mean	**0.034**	**0.046**	**–0.028**	**0.741**	**0.698**	**–4.241**	**–3.561**	**3.383**	**2.901**	**–0.268**	**–0.287**	**3.716**	**2.453**
HAB	0.006	0.021	–0.199	0.217	0.204	–0.858	–0.703	0.855	0.900	–0.207	–0.055	1.002	0.802
HAD	0.002	0.014	–0.204	0.222	0.205	–0.832	–0.746	0.710	0.651	–0.429	–0.428	0.860	0.576
HYI	0.005	–0.002	0.029	0.227	0.301	–1.199	–2.443	1.185	2.013	–1.084	–0.700	5.666	12.865
HFP	0.004	0.033	–0.198	0.150	0.146	–0.632	–0.524	0.491	0.572	–0.568	–0.370	2.086	1.750
HPR	0.004	0.033	–0.221	0.146	0.146	–0.635	–0.524	0.397	0.572	–0.761	–0.370	2.398	1.750
Mean	**0.004**	**0.020**	**–0.159**	**0.192**	**0.200**	**–0.831**	**–0.988**	**0.728**	**0.942**	**–0.610**	**–0.385**	**2.402**	**3.549**
HAX	0.004	0.033	–0.093	0.562	0.659	–2.383	–2.557	2.380	2.497	–0.710	–0.619	2.404	1.495
HEE	0.001	0.033	–0.104	1.287	0.854	–8.597	–3.680	8.767	4.335	–0.397	–0.231	8.789	2.719
HEX	–0.080	0.011	–0.169	0.779	0.829	–4.331	–4.039	3.933	4.020	–0.401	–0.319	4.257	2.918
HEF	–0.040	0.007	–0.075	0.557	0.648	–3.265	–2.840	3.333	2.331	–0.662	–0.434	5.041	1.453
HEA	0.008	0.049	–0.060	0.711	0.721	–2.347	–2.283	2.019	2.402	–0.228	–0.388	0.739	1.371
HEJ	0.022	0.049	–0.179	0.793	0.627	–3.412	–2.507	3.078	2.134	–0.234	–0.189	1.315	1.349
HGY	–0.036	0.073	–0.088	1.001	0.676	–8.791	–2.985	4.214	2.736	–1.249	–0.432	10.578	1.626
HNY	–0.066	0.025	–0.048	1.486	2.569	–5.256	–9.690	6.708	13.777	0.011	0.246	0.863	2.266
Mean	**–0.023**	**0.035**	**–0.102**	**0.897**	**0.948**	**–4.798**	**–3.823**	**4.304**	**4.279**	**–0.484**	**–0.296**	**4.248**	**1.899**
HAA	0.013	0.023	–0.025	0.481	0.809	–2.777	–4.039	2.621	4.020	–0.271	–0.297	4.015	2.823
Mean	**0.013**	**0.023**	**–0.025**	**0.481**	**0.809**	**–2.777**	**–4.039**	**2.621**	**4.020**	**–0.271**	**–0.297**	**4.015**	**2.823**
HAC	0.034	0.022	0.018	0.542	0.823	–3.414	–4.039	3.359	4.020	–0.060	–0.300	6.388	2.395
HBR	–0.034	–0.028	–0.022	0.380	0.306	–1.320	–1.092	1.462	1.277	0.193	–0.018	1.713	1.421
HMF	0.013	0.017	–0.016	0.641	0.656	–3.229	–3.124	4.368	4.273	0.725	0.668	6.230	6.011
HHF	0.047	0.035	0.022	0.422	0.634	–1.881	–2.697	1.779	2.542	–0.263	–0.504	1.892	1.579
HUT	0.021	0.046	–0.072	0.537	0.676	–2.675	–3.039	2.194	2.804	–0.328	–0.471	1.734	1.888
Mean	**0.016**	**0.018**	**–0.014**	**0.505**	**0.619**	**–2.504**	**–2.798**	**2.633**	**2.983**	**0.054**	**–0.125**	**3.592**	**2.659**
Grand Average	**0.001**	**0.028**	**–0.081**	**0.607**	**0.663**	**–3.207**	**–2.920**	**2.909**	**3.026**	**–0.351**	**–0.276**	**3.596**	**2.564**

Notes: This exhibit presents the descriptive statistics of ETFs, which are the average daily return, standard deviation of returns (risk), extreme scores (minimum and maximum returns), and the skewness and kurtosis coefficients. A t-test assesses whether the differences in average returns between ETFs and benchmarks are statistically significant.

groups on mean terms, whereas the covered call ETFs are the poorest performers of the sample.

A general comment that should be made is that when comparing the net-of-fee returns of ETFs to the gross-of-fee return of benchmarks, the difference should approximate the size of the expense ratio. In our case, the difference between the sample's average returns for ETFs and indexes amounted to 2.7 bps. On the other hand, the average annual management fee of the sample is equal to 69 bps, translating to 0.27% of annual fees being charged to ETFs on a daily basis.[4] The comparison of average difference in returns to the daily fee charged to ETF investors verifies the expectation that the difference between the net-of-fee returns of ETFs and the gross-of-fee return of benchmarks should be about the size of the expense ratio.

As far as risk is concerned, ETFs are slightly less risky than the indexes. The average standard deviation is 0.607% for ETFs and 0.663% for indexes. Focusing on the single ETF groups, the records in Exhibit 2 show that fixed income ETFs are the safest choice and covered call ETFs are more risky. This finding is reasonable given the investment strategies of these different types of actively managed ETFs, as described earlier.

Overall, the risk estimates are modest given that the majority of standard deviation coefficients do not exceed 1%. The relatively modest risk of investing in particular active ETFs is verified by the estimates of extreme scores; that is, the minimum and maximum return records for ETFs and indexes, which range up to 6.12% for active ETFs and 5.95% for indexes.[5] Finally, no issues with skewness seem to exist in the return's sample ETF distributions; however, returns are leptokurtic for some ETFs and indexes, with the return of active ETFs being more leptokurtic than the return distributions of indexes.

EMPIRICAL RESULTS

Performance Evaluation Results

In this section, we analyze the findings of the empirical analysis performed on the selection and market timing skills of active ETF managers to verify whether active management can add value or if investors would be better off with a less costly passively managed investment.

Single-factor model. The results for the net-of-fee risk-adjusted excess return evaluated via the single-factor regression model (Model 1) are presented in Exhibit 3. The exhibit displays the alpha coefficients, which stand for the excess value added by active ETF managers; the beta coefficient of each ETF; the *t*-tests on the statistical significance of estimates; and the R^2 on the explanatory power of the applied model. The exhibit has two panels; Panel A is for the results obtained via the OLS method and Panel B concerns the results extracted via a GARCH(1,1) regression process.[6] In the case of the GARCH process, the statistical significance of estimates is assessed via a Z-statistic rather than a *t*-test.

Based on the results in Exhibit 3, active ETFs do not deliver any material excess net-of-fee return. More specifically, the average alpha of ETFs in Panel A is negative at −0.012. Furthermore, approximately half of the individual alphas (i.e., 10 alpha estimates) are negative and significant at 10% or better. Only 2 alphas are positive and significant, and the remaining 10 alpha coefficients are either positive or negative but insignificant from both a statistical and economic perspective. Overall, the alphas indicate that, with a few minor exceptions, active ETF managers do not possess any impressive selection skills that would help them beat the market and add value for their investors.

The usage of the GARCH(1,1) process leads to similar conclusions regarding the selection ability of ETF managers because the alphas are essentially equal to those obtained through the OLS regression method. In particular, 11 alphas are significantly negative and only 1 alpha is positive and significant at 10%. The absolute value of alphas is also more or less similar to those in Panel A of Exhibit 3, and the rest are indistinguishable from zero. Therefore, the GARCH method confirms the failure of active ETF managers to locate underpriced securities that will help their portfolios deliver an above-average return.

Interpreting the results as an indicator of market's efficiency, we may conclude that the Canadian ETF market is sufficiently efficient and, consequently, offers managers limited or no chance at all of gaining abnormal returns. Another conclusion could be that the Canadian market itself is efficient. Once again, considering the results as an indicator of the selection skills of active ETF managers, the negative alpha estimates show that these managers either fail to properly diversify the portfolios they manage or fail to add value for investors by detecting and choosing undervalued stocks that can offer increased expected future returns. However, it

EXHIBIT 3
Regression Results of the Single-Factor Model

	Panel A: Ordinary Least Squares										Panel B: GARCH (1,1)				
	Daily Returns					Monthly Returns									
Ticker	Alpha	*t*-test	Beta	*t*-test	R^2	Alpha	*t*-test	Beta	*t*-test	R^2	Alpha	Z-statistic	Beta	Z-statistic	R^2
HAL	–0.015	–1.423	0.951[a]	55.679	0.708	–0.185	–1.551	0.853[a]	14.618	0.735	–0.014	–1.405	0.954[a]	58.871	0.708
HAZ	–0.001	–0.076	0.795[a]	49.585	0.658	0.066	0.455	0.705[a]	10.318	0.580	–0.010	–0.945	0.809[a]	65.688	0.657
HAJ	0.002	0.167	0.706[a]	30.518	0.422	0.003	0.028	0.876[a]	13.000	0.687	0.015	0.621	0.698[a]	20.050	0.421
Mean	**–0.004**	**–0.444**	**0.817**	**45.261**	**0.596**	**–0.039**	**–0.356**	**0.811**	**12.645**	**0.667**	**–0.003**	**–0.576**	**0.820[a]**	**48.203**	**0.595**
HAB	–0.013[a]	–6.440	0.989[a]	90.403	0.865	–0.202[a]	–7.965	0.938[a]	26.138	0.899	–0.014[a]	–3.419	0.988[a]	78.664	0.865
HAD	–0.006[a]	–4.992	1.039[a]	121.68	0.921	–0.090[a]	–4.926	1.031[a]	31.984	0.930	–0.010[a]	–3.572	1.051[a]	149.035	0.922
HYI	0.003	0.863	0.479[a]	29.375	0.403	0.054[c]	1.656	0.790[a]	23.760	0.880	0.004	0.536	0.518[a]	46.751	0.400
HFP	–0.003[c]	–1.720	0.503[a]	20.628	0.250	–0.026	–0.889	0.375[a]	6.235	0.336	–0.013[c]	–1.689	0.521[a]	11.190	0.255
HPR	–0.004[b]	–2.243	0.585[a]	26.751	0.359	–0.044[c]	–1.817	0.521[a]	10.392	0.584	–0.016[b]	–2.051	0.608[a]	15.978	0.367
Mean	**–0.005**	**–2.907**	**0.719**	**57.768**	**0.559**	**–0.062**	**–2.788**	**0.731**	**19.702**	**0.726**	**–0.010**	**–2.039**	**0.737**	**60.324**	**0.562**
HAX	–0.009[c]	–1.720	0.732[a]	59.861	0.737	–0.146[a]	–3.790	0.760[a]	25.621	0.895	–0.026[a]	–5.822	0.792[a]	120.753	0.733
HEE	–0.067[a]	–3.205	1.101[a]	38.187	0.533	–1.095[a]	–3.554	1.112[a]	7.536	0.424	–0.084[a]	–3.608	1.020[a]	39.182	0.531
HEX	–0.034[a]	–5.374	0.884[a]	99.192	0.885	–0.529[a]	–7.173	0.900[a]	25.746	0.896	–0.045[a]	–5.757	0.869[a]	120.038	0.886
HEF	–0.010	–1.060	0.514[a]	26.719	0.358	–0.251[a]	–3.208	0.699[a]	17.340	0.796	–0.019	–1.332	0.597[a]	26.299	0.350
HEA	–0.003	–0.601	0.782[a]	46.819	0.632	0.037	0.760	0.255[a]	4.440	0.204	–0.020	–0.694	0.780[a]	19.314	0.632
HEJ	–0.055[a]	–4.307	0.823[a]	30.842	0.427	–0.801[a]	–3.357	0.698[a]	4.796	0.230	–0.081[a]	–4.197	0.819[a]	27.556	0.432
HGY	–0.044[b]	–2.180	0.451[a]	11.426	0.093	–0.854[a]	–3.342	0.940[a]	5.826	0.306	–0.056[c]	–1.921	0.410[a]	11.055	0.092
HNY	–0.035[b]	–2.368	0.507[a]	65.174	0.769	–0.532[a]	–3.505	0.642[a]	26.760	0.903	–0.064[a]	–2.813	0.546[a]	62.356	0.765
Mean	**–0.032**	**–2.602**	**0.724**	**47.277**	**0.554**	**–0.521**	**–3.396**	**0.751**	**14.758**	**0.582**	**–0.049**	**–3.268**	**0.729**	**53.319**	**0.553**
HAA	0.000	0.018	0.534[a]	73.735	0.810	0.009	0.123	0.532[a]	17.520	0.799	–0.004	–0.785	0.563[a]	88.363	0.807
Mean	**0.000**	**0.018**	**0.534**	**73.735**	**0.810**	**0.009**	**0.123**	**0.532**	**17.520**	**0.799**	**–0.004**	**–0.785**	**0.563**	**88.363**	**0.807**
HAC	0.026[b]	2.062	0.368[a]	24.122	0.313	0.433[b]	2.406	0.328[a]	4.718	0.224	0.013[c]	1.639	0.217[a]	28.243	0.259
HBR	–0.003	–0.711	0.891[a]	36.832	0.515	–0.053	–0.850	0.944[a]	11.951	0.650	–0.006	–0.578	0.802[a]	24.851	0.508
HMF	–0.001	–0.267	0.908[a]	89.675	0.863	–0.033[b]	–2.716	1.011[a]	156.120	0.997	–0.012[a]	–21.278	0.998[a]	1,472.68	0.854
HHF	0.017[b]	2.413	0.327[a]	20.047	0.239	0.319[a]	2.945	0.103[a]	1.306	0.217	0.034	2.326	0.322[a]	15.521	0.238
HUT	–0.005	–0.972	0.681[a]	59.334	0.734	–0.108	–2.738	0.745[a]	26.795	0.903	–0.004	–0.632	0.733[a]	109.512	0.729
Mean	**0.007**	**0.505**	**0.635**	**46.002**	**0.533**	**0.112**	**–0.190**	**0.626**	**40.178**	**0.598**	**0.005**	**–3.705**	**0.614**	**330.162**	**0.518**
Grand Average	**–0.012**	**–1.552**	**0.707**	**50.299**	**0.568**	**–0.183**	**–1.955**	**0.716**	**21.496**	**0.640**	**–0.020**	**–2.608**	**0.710**	**118.725**	**0.564**

Notes: This exhibit presents the results of the single-factor performance regression model. The daily excess return (return minus risk free rate) of ETFs is regressed on the excess return of the benchmark. Alpha coefficient reflects the excess return that can be achieved by an ETF beyond the market return. Beta counts for the systematic risk of ETFs. The model is run with two alternative regression methods, which are the ordinary least squares (OLS) method and a generalized autoregressive conditional heteroskedasticity (GARCH 1,1) process.

[a]*Significant at the 1% level.*

[b]*Significant at the 5% level.*

[c]*Significant at the 10% level.*

must be noted that it would be wise to be a bit modest when drawing conclusions about the managerial skills of ETF managers given that the period under investigation is characterized by dramatic financial distress, market crisis, and price volatility, circumstances that may leave little room for managers to maneuver to protect their portfolios from the effects of this negative market environment. Nonetheless, even if fund managers cannot be expected to achieve positive returns in such an investing environment, they are expected to achieve positive risk-adjusted returns. Based on the results, however, it seems that managers are unable to do so and, consequently, they cannot do justice to the increased fees they charge investors relative to their passively managed ETF rivals.

When it comes to systematic risk, the mean beta of ETFs is equal to 0.707, indicating that, on average, the examined active ETFs are quite conservative compared with the market portfolios used as benchmarks. Overall, single betas are significant at the 1% level, whereas the magnitude for the majority of ETFs exceeds 0.500, verifying that the selected indexes are quite sufficient to act as benchmarks for performance evaluation, a conclusion reached through the correlation coefficients displayed

in Exhibit 1. Only two betas are higher than unity, showing that these ETFs follow an aggressive strategy versus their benchmark. The inference about the conservativeness of active ETFs may seem very strange given the active nature of these funds. However, conservative behavior may be explained by the negative outlook of financial markets over the period under examination; that is, managers may need to protect themselves from the possible collapse of their performance records as a result of the highly negative market conditions.

Before concluding this section, it should be mentioned that we also ran Model 1 using monthly return data to detect the presence of any material differences in results between the two alternative time frames. The relevant results are presented in Exhibit 3. As can be seen, there is no material difference in risk-adjusted returns when monthly returns are used. Once again, the average alpha of the sample is negative, and the majority of individual alphas are significantly negative both from a statistical and economic perspective. Consequently, the inferences drawn about the inability of Canadian ETF managers to add value to their investors via analysis of daily returns remain valid even when a monthly time frame is employed.

Three-factor model. The results of the Fama and French [1993] three-factor model are presented in Exhibit 4. The exhibit provides the coefficients for excess

EXHIBIT 4
Regression Results of the Three-Factor Model

	Panel A: Canadian Value and Size Factors									Panel B: U.S. Value and Size Factors								
Ticker	Alpha	*t*-test	Beta	*t*-test	Small-Big	*t*-test	High-Low	*t*-test	R^2	Alpha	*t*-test	Beta	*t*-test	Small-Big	*t*-test	High-Low	*t*-test	R^2
HAL	–0.016[c]	–1.607	0.962[a]	56.605	–0.109[a]	–6.363	–0.105[a]	–6.025	0.721	–0.011	–1.089	0.899[a]	49.786	0.153[a]	7.239	0.089[a]	3.363	0.721
HAZ	0.000	–0.039	0.796[a]	49.262	0.053[b]	2.742	0.007	0.332	0.660	0.001	0.063	0.765[a]	44.836	0.126[a]	4.971	0.016	0.505	0.665
HAJ	0.002	0.199	0.711[a]	30.715	0.046[c]	1.837	–0.087[b]	–2.033	0.426	0.002	0.178	0.705[a]	30.485	0.055[b]	2.281	0.028	0.870	0.424
Mean	**–0.005**	**–0.482**	**0.823**	**45.527**	**–0.003**	**–0.594**	**–0.061**	**–2.576**	**0.602**	**–0.003**	**–0.283**	**0.790**	**41.703**	**0.111**	**4.830**	**0.044**	**1.579**	**0.603**
HAB	–0.013[a]	–6.418	0.988[a]	90.140	0.002	0.487	–0.003	–0.764	0.865	–0.013[a]	–6.418	0.986[a]	86.948	–0.004	–0.886	–0.002	–0.270	0.865
HAD	–0.006[a]	–4.928	1.038[a]	120.85	0.006[b]	2.325	0.002	0.551	0.921	–0.006[a]	–5.011	1.041[a]	121.16	0.012[a]	2.960	0.006	1.040	0.921
HYI	0.003	0.952	0.479[a]	29.343	0.019[b]	2.520	0.015	1.473	0.406	0.003	0.862	0.480[a]	29.381	–0.016	–1.404	–0.017	–1.151	0.404
HFP	–0.003	–1.540	0.499[a]	20.152	0.006	1.336	0.020[b]	2.201	0.253	–0.003[c]	–1.663	0.506[a]	20.678	0.011	1.312	0.034[a]	3.027	0.255
HPR	–0.003[b]	–2.139	0.583[a]	26.213	0.004	0.823	0.009	1.131	0.360	–0.004[b]	–2.255	0.590[a]	26.799	–0.002	–0.319	0.017[c]	1.651	0.361
Mean	**–0.004**	**–2.814**	**0.717**	**57.341**	**0.007**	**1.498**	**0.009**	**0.919**	**0.561**	**–0.005**	**–2.897**	**0.721**	**56.993**	**0.000**	**0.333**	**0.008**	**0.859**	**0.561**
HAX	–0.007	–1.589	0.772[a]	73.148	0.223[a]	22.237	0.063[a]	3.581	0.811	–0.008[c]	–1.633	0.723[a]	57.147	0.039[b]	2.080	0.110[a]	4.422	0.741
HEE	–0.059[a]	–3.000	1.162[a]	40.220	0.504[a]	13.750	0.182[a]	3.849	0.594	–0.065[a]	–3.117	1.053[a]	33.755	0.164[a]	3.088	0.258[a]	3.930	0.540
HEX	–0.035[a]	–5.546	0.885[a]	92.926	–0.049[a]	–4.213	–0.019	–1.282	0.887	–0.034[a]	–5.349	0.881[a]	90.482	0.017	1.048	–0.004	–0.205	0.885
HEF	–0.010	–1.074	0.514[a]	26.736	–0.005	–0.233	0.051[c]	1.939	0.361	–0.010	–1.016	0.507[a]	26.396	0.139[a]	4.836	0.070[a]	1.901	0.370
HEA	–0.006	–1.173	0.806[a]	48.681	–0.129[a]	–9.049	–0.110[a]	–3.921	0.656	–0.004	–0.739	0.775[a]	45.079	–0.077[a]	–3.086	–0.128[b]	–3.639	0.636
HEJ	–0.051[a]	–4.162	0.816[a]	31.119	0.216[a]	8.455	–0.143[a]	–4.109	0.473	–0.054[a]	–4.300	0.803[a]	29.884	0.165[a]	4.228	0.243[a]	4.949	0.441
HGY	–0.034[c]	–1.832	0.270[a]	6.952	0.417[a]	10.742	–0.462[a]	–8.461	0.232	–0.044[b]	–2.192	0.435[a]	10.534	0.045	0.697	0.192[a]	2.397	0.197
HNY	–0.036[b]	–2.420	0.508[a]	65.059	–0.042	–1.358	–0.033	–0.759	0.769	–0.035[b]	–2.419	0.507[a]	65.264	–0.038	–0.821	0.136[a]	2.318	0.770
Mean	**–0.030**	**–2.599**	**0.717**	**48.105**	**0.142**	**5.041**	**–0.059**	**–1.145**	**0.598**	**–0.032**	**–2.596**	**0.710**	**44.818**	**0.057**	**1.509**	**0.110**	**2.009**	**0.573**
HAA	0.000	–0.036	0.540[a]	70.107	–0.014	–1.424	0.016	1.450	0.811	0.000	0.017	0.528[a]	66.553	0.031[b]	2.421	–0.021	–1.331	0.811
Mean	**0.000**	**–0.036**	**0.540**	**70.107**	**–0.014**	**–1.424**	**0.016**	**1.450**	**0.811**	**0.000**	**0.017**	**0.528**	**66.553**	**0.031**	**2.421**	**–0.021**	**–1.331**	**0.811**
HAC	0.026[b]	2.109	0.356[a]	22.452	0.024	1.138	–0.048[b]	–2.265	0.317	0.026[b]	2.097	0.352[a]	20.937	0.036	1.382	0.074[a]	2.338	0.316
HBR	–0.003	–0.687	0.886[a]	36.050	0.010	0.918	0.012	0.634	0.515	–0.003	–0.744	0.895[a]	36.842	–0.023	–1.364	–0.040[c]	–1.727	0.516
HMF	–0.001	–0.245	0.906[a]	88.737	–0.007	–0.694	0.045[a]	3.158	0.864	–0.001	–0.210	0.906[a]	89.002	–0.019	–1.239	–0.073[c]	–3.742	0.864
HHF	0.017[b]	2.411	0.335[a]	19.856	–0.002	–0.107	0.053[b]	2.111	0.242	0.018[b]	2.486	0.344[a]	20.411	–0.036	–1.481	–0.168[c]	–5.457	0.257
HUT	–0.004	–0.793	0.684[a]	60.557	0.118[a]	10.259	–0.066[a]	–3.801	0.761	–0.005	–0.981	0.667[a]	56.206	0.060[a]	3.207	0.106[a]	4.552	0.739
Mean	**0.007**	**0.559**	**0.633**	**45.530**	**0.029**	**2.303**	**–0.001**	**–0.033**	**0.540**	**0.007**	**0.530**	**0.633**	**44.680**	**0.004**	**0.101**	**–0.020**	**–0.807**	**0.538**
Grand Average	**–0.011**	**–1.525**	**0.704**	**50.267**	**0.059**	**2.551**	**–0.027**	**–0.500**	**0.587**	**–0.011**	**–1.520**	**0.698**	**48.117**	**0.038**	**1.416**	**0.042**	**0.897**	**0.577**

Notes: This exhibit presents the results of the Fama-French (1993) three-factor performance regression model. The daily excess return of ETFs is regressed on the excess return of their benchmark, the Fama-French SMB factor, which stands for the "small (market capitalization) minus big" stocks index, and the Fama-French HML factor, which stands for the "high (book-to-price ratio) minus low" value stocks index.

[a]*Significant at the 1% level.*

[b]*Significant at the 5% level.*

[c]*Significant at the 10% level.*

return and systematic risk as well as the coefficients for the size and value factors; *t*-tests and R^2 for the significance of estimates and the explanatory power of the applied model are shown as well.

A key point that can be made based on the results in Exhibit 4 is that, overall, the three-factor model does not change the results obtained using the single-factor model, as described in the section discussing managers' selection skills and the aggressiveness of their investment strategies. In particular, the average alpha of the sample is negative and quite close to the group average alpha shown in Exhibit 3, −0.011 and −0.012, respectively. Furthermore, the majority of significant alphas (nine estimates) are negative, and only one alpha is positive and significant. Therefore, we may conclude once again that the managers in question do not possess the skill to select suitably underpriced securities that will make a positive contribution to the return of their portfolios.

As far as the aggressiveness of ETF managers is concerned, the betas derived from the three-factor model are also similar to those described previously. The average beta of the group is equal to 0.704, essentially no different to the average beta in Exhibit 3. Furthermore, similar to the results in the previous section, only two funds seem to be more aggressive than their benchmarks. These results reiterate the need of active ETF managers in Canada to protect themselves from the negative market forces, forces which may result in their dismissal if their performance is ranked in the bottom class of the market.

Further addressing the factors that may explain the performance of Canadian active ETFs, Exhibit 4 displays an average term of 0.059 for the size factor. Usage of the average size estimate does not tell the whole truth about the relation between the performance of ETFs and the size factor; in particular, there are three significantly negative size estimates and nine significantly positive coefficients, and those remaining are either negative or positive but not significantly different from zero. The fact that there are clearly more positive (and significant) estimates than negative may be an indication that the size index included in the applied three-factor model exerts a positive influence on the return of active ETFs. Nevertheless, the safest conclusion is that the relationship between performance and size is to be determined for each individual ETF separately.

The last factor considered is the High Minus Low Value Index. In general, this factor is negatively related to the return of ETFs because the average value factor estimate amounts to −0.027. At a first glance, this average estimate indicates that value affects the return of ETFs in a negative way. However, similar to the analysis of size estimates performed earlier, use of the average estimate may misrepresent the impact the value factor exerts on return, and we therefore need to focus on single size estimates. Analysis yielded six significantly negative and six significantly positive value estimates. The remaining coefficients are either positive or negative but of poor statistical significance. Based on these results, the main inference that can be made is that the value factor used in this analysis does not have a unique relationship with the sample funds, but this relation may instead be positive, negative, or occasionally nonexistent.

After analyzing the results of Model 3 obtained using Canadian data for the value and size factors, we now focus on the results derived from the U.S. Fama and French value and size factors, as reported in Exhibit 4. As far as risk-adjusted return and the systematic risk of ETFs are concerned, the usage of U.S. factors does not change the inferences that can be made about the inability of Canadian active ETF managers to add value to their investors or their relevant conservative investment philosophy, at least during the time frame under investigation.

Regarding the U.S. size factor, the model offers 10 significantly positive estimates and 1 significantly negative estimate. This may indicate a potential positive effect of the U.S. size factor on performance of Canadian ETFs, but the safest conclusion is that this relationship is more fund-specific than it is universal. More or less the same can be said about the relationship between the returns of Canadian active ETFs and the U.S. value factor. More specifically, there are 11 significantly positive estimates and 4 significantly negative. These results show that there may be a positive relationship between the returns of Canadian active ETFs and the value factor of the U.S. market, at least for some of the sample's ETFs. However, this inference does not apply to all ETFs in the sample and is more fund-specific than universal in nature.

The results of the alternative version of Model 3 shown in Exhibit 5, which includes both Canadian and U.S. size and value factors, are supportive of the infer-

EXHIBIT 5
Regression Results of the Six-Factor Model

Ticker	Alpha	*t*-test	Beta	*t*-test	Small-Big CAN	*t*-test	High-Low U.S.	*t*-test	High-Low CAN	*t*-test	High-Low U.S.	*t*-test	R^2
HAL	–0.012	–1.258	0.911[a]	50.895	–0.111[a]	–6.648	0.147[a]	7.097	–0.101[a]	–5.870	0.104[a]	3.952	0.734
HAZ	0.001	0.081	0.769[a]	44.713	0.046[b]	2.388	0.121[a]	4.751	0.016	0.751	0.014	0.450	0.666
HAJ	0.002	0.206	0.709[a]	30.656	0.041[c]	1.641	0.047[c]	1.963	–0.084[c]	–1.950	0.028	0.871	0.428
Mean	**–0.003**	**–0.323**	**0.796**	**42.088**	**–0.008**	**–0.873**	**0.105**	**4.604**	**–0.056**	**–2.357**	**0.049**	**1.758**	**0.609**
HAB	–0.013[a]	–6.390	0.985[a]	86.580	0.002	0.554	–0.005	–1.079	–0.004	–0.891	–0.001	–0.165	0.865
HAD	–0.006[a]	–4.952	1.040[a]	120.072	0.005[c]	1.917	0.011[b]	2.677	0.004	0.799	0.004	0.697	0.921
HYI	0.004	0.962	0.480[a]	29.358	0.021[b]	2.681	–0.017	–1.493	0.014	1.384	–0.020	–1.381	0.408
HFP	–0.003	–1.526	0.503[a]	20.225	0.004	0.765	0.011	1.337	0.016[c]	1.710	0.030[b]	2.538	0.257
HPR	–0.004[b]	–2.187	0.587[a]	26.259	0.003	0.605	–0.003	–0.353	0.005	0.633	0.015	1.393	0.361
Mean	**–0.004**	**–2.819**	**0.719**	**56.499**	**0.007**	**1.304**	**–0.001**	**0.218**	**0.007**	**0.727**	**0.005**	**0.616**	**0.563**
HAX	–0.007[c]	–1.639	0.778[a]	70.187	0.225[a]	21.847	–0.037[b]	–2.253	0.055[a]	3.109	0.019	0.855	0.812
HEE	–0.057[a]	–2.943	1.127[a]	36.025	0.493[a]	13.421	0.086[c]	1.709	0.156[a]	3.277	0.225[a]	3.606	0.598
HEX	–0.035[a]	–5.520	0.882[a]	85.465	–0.049[a]	–4.244	0.019	1.166	–0.018	–1.158	–0.004	–0.199	0.887
HEF	–0.010	–1.041	0.506[a]	26.434	–0.013	–0.659	0.151[a]	5.225	0.067[b]	2.526	0.068[c]	1.829	0.374
HEA	–0.006	–1.277	0.807[a]	46.945	–0.124[a]	–8.406	–0.056[b]	–2.268	–0.116[a]	–3.999	–0.038	–1.057	0.657
HEJ	–0.051[a]	–4.190	0.801[a]	30.348	0.203[a]	7.978	0.109[b]	2.868	–0.148[a]	–4.274	0.229[a]	4.826	0.484
HGY	–0.035[c]	–1.874	0.257[a]	6.389	0.413[a]	10.637	–0.022	–0.378	–0.487[a]	–8.874	0.234[a]	3.151	0.239
HNY	–0.036[b]	–2.480	0.508[a]	65.174	–0.045	–1.447	–0.037	–0.771	–0.047	–1.087	0.146[b]	2.463	0.771
Mean	**–0.030**	**–2.621**	**0.708**	**45.871**	**0.138**	**4.891**	**0.027**	**0.662**	**–0.067**	**–1.310**	**0.110**	**1.934**	**0.603**
HAA	0.000	–0.053	0.535[a]	63.708	–0.015	–1.533	0.032[b]	2.493	0.021[c]	1.837	–0.028[c]	–1.743	0.812
Mean	**0.000**	**–0.053**	**0.535**	**63.708**	**–0.015**	**–1.533**	**0.032**	**2.493**	**0.021**	**1.837**	**–0.028**	**–1.743**	**0.812**
HAC	0.027[b]	2.159	0.338[a]	19.354	0.021	1.005	0.034	1.278	–0.058[b]	–2.665	0.088[b]	2.762	0.322
HBR	–0.003	–0.719	0.890[a]	36.124	0.014	1.271	–0.024	–1.451	0.014	0.707	–0.045[c]	–1.931	0.517
HMF	–0.001	–0.170	0.904[a]	88.389	–0.004	–0.410	–0.012	–0.783	0.049[a]	3.419	–0.075[a]	–3.861	0.866
HHF	0.018[b]	2.506	0.353[a]	20.383	0.006	0.343	–0.033	–1.341	0.065[b]	2.614	–0.174[a]	–5.634	0.261
HUT	–0.004	–0.843	0.676[a]	57.352	0.112[a]	9.606	0.021	1.141	–0.073[a]	–4.187	0.087[a]	3.864	0.764
Mean	**0.007**	**0.587**	**0.632**	**44.320**	**0.030**	**2.363**	**–0.003**	**–0.231**	**–0.001**	**–0.022**	**–0.024**	**–0.960**	**0.546**
Grand Average	**–0.011**	**–1.507**	**0.698**	**48.229**	**0.057**	**2.423**	**0.025**	**0.979**	**–0.030**	**–0.554**	**0.041**	**0.786**	**0.591**

Notes: This exhibit presents the results of a six-factor performance regression model. The daily excess return of ETFs is regressed on the excess return of their benchmark, the Fama-French SMB factor in Canadian terms, the Fama-French SMB factor in U.S. terms, the Fama-French HML factor in Canadian terms, and the Fama-French HML factor in U.S. terms.

[a]*Significant at the 1% level.*

[b]*Significant at the 5% level.*

[c]*Significant at the 10% level.*

ences drawn so far regarding inability of ETF managers to add value to their investors, their conservativeness relative to market benchmarks, and the inconclusive relationships between the performance of Canadian active ETFs and the size and value factors, whether they be Canadian or U.S.

Four-factor model. The analysis of the results obtained from the four-factor model is given in this section. The relevant estimates for excess return; systematic risk; size and value factors; and the intraday volatility, along with the *t*-tests and R^2s are presented in Exhibit 6.

With regard to alphas and betas, the results derived from the four-factor model are qualitatively and, in most cases, quantitatively similar to those given in the previous sections. Therefore, we need only stress that the inclusion of one additional factor concerning the intraday volatility of ETFs does not change the bigger picture of the selection skills of managers and managerial aggressiveness compared with benchmarks.

The same pattern applies to the size and value factors. For both of these variables, the model produces either significantly positive or negative estimates as well as estimates lacking in any economic and statistical

EXHIBIT 6
Regression Results of the Four-Factor Model

Ticker	Alpha	*t*-test	Beta	*t*-test	Small-Big	*t*-test	High-Low	*t*-test	IntVol	*t*-test	R^2
HAL	–0.017[c]	–1.605	0.962[a]	56.438	–0.109[a]	–6.341	–0.105[a]	–6.028	0.010	0.303	0.721
HAZ	0.009	0.669	0.795[a]	48.989	0.051[b]	2.647	0.006	0.271	–0.020	–1.340	0.661
HAJ	0.000	–0.018	0.712[a]	30.736	0.049[c]	1.942	–0.084[c]	–1.970	0.023	1.082	0.426
Mean	**–0.003**	**–0.318**	**0.823**	**45.388**	**–0.003**	**–0.584**	**–0.061**	**–2.576**	**0.004**	**0.015**	0.603
HAB	–0.011[a]	–4.211	0.988[a]	90.148	0.002	0.517	–0.003	–0.766	–0.006	–1.033	0.865
HAD	–0.005[a]	–3.917	1.037[a]	121.365	0.005[b]	2.038	0.002	0.364	–0.010[a]	–3.567	0.922
HYI	0.010[b]	2.422	0.472[a]	28.814	0.018[b]	2.339	0.017[c]	1.601	–0.029[a]	–3.449	0.412
HFP	–0.002	–1.288	0.501[a]	20.168	0.006	1.243	0.020[b]	2.246	–0.019	–1.026	0.254
HPR	–0.003[c]	–1.672	0.586[a]	26.319	0.003	0.653	0.010[b]	1.225	–0.032[c]	–1.995	0.362
Mean	**–0.002**	**–1.733**	**0.717**	**57.363**	**0.007**	**1.358**	**0.009**	**0.934**	**–0.019**	**–2.214**	**0.563**
HAX	–0.005	–1.242	0.766[a]	72.844	0.218[a]	21.803	0.057[a]	3.253	–0.248[a]	–4.749	0.814
HEE	–0.040[c]	–1.618	1.159[a]	39.918	0.497[a]	13.420	0.180[a]	3.810	–0.021	–1.164	0.594
HEX	–0.018[b]	–2.238	0.883[a]	92.618	–0.051[a]	–4.442	–0.020	–1.332	–0.026[a]	–3.088	0.887
HEF	0.008	0.773	0.509[a]	26.565	–0.007	–0.342	0.049[c]	1.855	–0.091[a]	–3.507	0.367
HEA	–0.004	–0.869	0.807[a]	48.776	–0.129[a]	–9.046	–0.112[a]	–4.014	–0.063[b]	–2.045	0.657
HEJ	0.001	0.102	0.805[a]	31.090	0.203[a]	8.058	–0.150[a]	–4.383	–0.168[a]	–6.385	0.490
HGY	0.022	0.995	0.262[a]	6.777	0.416[a]	10.790	–0.457[a]	–8.420	–0.142[a]	–4.513	0.244
HNY	0.007	0.384	0.505[a]	64.671	–0.042	–1.340	–0.035	–0.812	–0.073[a]	–4.149	0.772
Mean	**–0.004**	**–0.464**	**0.712**	**47.907**	**0.138**	**4.863**	**–0.061**	**–1.255**	**–0.104**	**–3.700**	**0.603**
HAA	0.001	0.103	0.540[a]	70.132	–0.014	–1.475	0.016	1.461	–0.099	–1.284	0.811
Mean	**0.001**	**0.103**	**0.540**	**70.132**	**–0.014**	**–1.475**	**0.016**	**1.461**	**–0.099**	**–1.284**	**0.811**
HAC	0.044[b]	2.547	0.355[a]	22.401	0.024	1.170	–0.047[b]	–2.212	–0.026	–1.481	0.318
HBR	–0.003	–0.665	0.887[a]	36.011	0.010	0.919	0.012	0.619	–0.046	–0.250	0.515
HMF	–0.002	–0.400	0.907[a]	88.036	–0.007	–0.658	0.046[a]	3.182	0.023	0.634	0.864
HHF	0.018[b]	2.323	0.335[a]	19.837	–0.002	–0.120	0.052[b]	2.096	–0.003	–0.189	0.242
HUT	–0.003	–0.519	0.683[a]	60.195	0.117[a]	10.123	–0.066[a]	–3.813	–0.010	–0.820	0.761
Mean	**0.011**	**0.657**	**0.633**	**45.296**	**0.028**	**2.287**	**–0.001**	**–0.025**	**–0.012**	**–0.421**	**0.540**
Grand Average	**0.000**	**–0.452**	**0.702**	**50.129**	**0.057**	**2.450**	**–0.028**	**–0.535**	**–0.049**	**–2.001**	**0.589**

Notes: This exhibit presents the results of a four-factor performance regression model. The daily excess return of ETFs is regressed on the excess return of their benchmark, the Fama-French SMB factor, the Fama-French HML factor, and the intraday volatility of ETFs, which is calculated as the fraction of the daily highest trading price minus the daily lowest trading price to the closing trading price at the end of the day.

[a]*Significant at the 1% level.*

[b]*Significant at the 5% level.*

[c]*Significant at the 10% level.*

significance. Therefore, we note once again that the relationship between the performance of active ETFs and the size and value factors is to be assessed with due care for each single ETF in the sample.

We now turn our attention to the impact of intraday volatility on the ETF return. We remind the reader that we have assumed a negative relationship between performance and intraday volatility, and the results in Exhibit 5 verify our expectations. The average estimate for the entire group is –0.049. Moreover, there only three positive but insignificant estimates, and the rest are all negative, 10 of which are significant at the 10% level or greater. Overall, estimates regarding intraday volatility reveal that during highly turbulent periods investors should expect potential significant losses from their allocations in actively managed ETFs.

Five-factor model. This section presents the empirical results of the final model used to evaluate the performance of active ETFs in the Canadian market. This five-factor model includes all the factors: market benchmark, size and value factors, and the intraday volatility, with the addition of the one-day-lagged return of ETFs. The latter variable is included to check for a very short-term persistence in the returns of ETFs. The estimates are presented in Exhibit 7.

With respect to the excess return, the alphas obtained from the five-factor model are slightly different

from those in the previous sections. The main difference is that the statistical significance of estimates is weaker than that in previous models, especially the single- and three-factor models. On the other hand, the core inference about the inability of managers to add value for their investors remains constant.

When it comes to systematic risk, the results of Model 6 are in line with the results of the previous models. The majority of ETFs are verified to be conservative relative to the benchmarks used, with only two of them displaying more aggressive behavior than the underlying market indexes. When we focus on the size and value factors, Exhibit 7 offers similar results to those in Exhibits 4 and 5 and, thus, the inference about the unique relationship between each single ETF and the size and value indexes remains solid. The negative relationship between performance and intraday volatility is verified, too, by the records in Exhibit 7.

Finally, as far as the daily persistence in ETF returns is concerned, Exhibit 7 reports an average estimate of −0.044 for the lagged return. This negative figure implies a reverting pattern in ETF performance. This trend also applies to average terms, as verified by the single coefficients of the whole sample. In particular, 14 estimates are significantly negative and only 3 are significantly positive, implying a daily momentum in the return of the corresponding ETFs. As a conclusion, we could note that the mean-reverting pattern found in the

EXHIBIT 7
Regression Results of the Five-Factor Model

Ticker	Alpha	*t*-test	Beta	*t*-test	Small-Big	*t*-test	High-Low	*t*-test	IntVol	*t*-test	LagRet	*t*-test	R^2
HAL	–0.015	–1.432	0.966a	56.504	–0.103[a]	–5.995	–0.102[a]	–5.873	0.001	0.045	–0.036[a]	–2.412	0.722
HAZ	0.017	1.368	0.802a	50.502	0.067[a]	3.505	0.012	0.566	–0.029[c]	–1.948	–0.125[a]	–7.775	0.676
HAJ	0.004	0.426	0.822a	35.680	0.058[b]	2.470	–0.054	–1.349	–0.002	–0.089	–0.293[a]	–13.796	0.501
Mean	**0.002**	**0.121**	**0.863**	**47.562**	**0.007**	**–0.006**	**–0.048**	**–2.219**	**–0.010**	**–0.664**	**–0.152**	**–7.995**	**0.633**
HAB	–0.012[a]	–4.225	0.988a	90.169	0.002	0.455	–0.003	–0.861	–0.006	–0.979	–0.013	–1.231	0.865
HAD	–0.005[a]	–3.900	1.037a	121.406	0.005[c]	1.928	0.001	0.148	–0.010[a]	–3.630	–0.011	–1.326	0.922
HYI	0.009[b]	2.232	0.453a	27.107	0.019[b]	2.477	0.014	1.388	–0.026[a]	–3.166	0.105[a]	4.771	0.422
HFP	–0.002	–1.287	0.500a	20.049	0.006	1.231	0.020[b]	2.160	–0.019	–1.053	0.018	0.718	0.254
HPR	–0.003[c]	–1.671	0.580a	25.824	0.003	0.653	0.009	1.108	–0.032[b]	–2.004	0.052[b]	2.290	0.364
Mean	**–0.002**	**–1.770**	**0.711**	**56.911**	**0.007**	**1.349**	**0.008**	**0.788**	**–0.019**	**–2.167**	**0.030**	**1.044**	**0.566**
HAX	–0.005	–1.225	0.766a	72.939	0.220[a]	21.910	0.060[a]	3.420	–0.253[a]	–4.837	–0.024[c]	–1.936	0.814
HEE	–0.040[c]	–1.600	1.165a	40.039	0.510[a]	13.637	0.185[a]	3.922	–0.025	–1.339	–0.042[b]	–2.318	0.596
HEX	–0.017[b]	–2.042	0.884a	92.824	–0.047[a]	–3.978	–0.019	–1.264	–0.029[a]	–3.457	–0.024[b]	–2.441	0.888
HEF	0.011	1.084	0.581a	29.477	0.008	0.436	0.071[b]	2.808	–0.108[a]	–4.356	–0.238[a]	–10.269	0.415
HEA	–0.004	–0.826	0.807a	48.859	–0.126[a]	–8.804	–0.108[a]	–3.853	–0.062[b]	–2.017	–0.035[b]	–2.114	0.658
HEJ	0.002	0.146	0.818a	31.659	0.208[a]	8.326	–0.147[a]	–4.320	–0.177[a]	–6.783	–0.093[a]	–4.659	0.498
HGY	0.024	1.063	0.255a	6.606	0.417[a]	10.824	–0.472[a]	–8.651	–0.151[a]	–4.763	–0.057[b]	–2.301	0.247
HNY	0.007	0.392	0.505a	64.690	–0.042	–1.362	–0.035	–0.821	–0.072[a]	–4.120	0.016	1.164	0.772
Mean	**–0.003**	**–0.376**	**0.723**	**48.387**	**0.143**	**5.124**	**–0.05**	**–1.095**	**–0.110**	**–3.959**	**–0.062**	**–3.109**	**0.611**
HAA	0.001	0.153	0.541a	70.153	–0.012	–1.247	0.017	1.555	–0.105	–1.353	–0.021[c]	–1.730	0.811
Mean	**0.001**	**0.153**	**0.541**	**70.153**	**–0.012**	**–1.247**	**0.017**	**1.555**	**–0.105**	**–1.353**	**–0.021**	**–1.730**	**0.811**
HAC	0.046[b]	2.639	0.356a	22.443	0.026	1.257	–0.046[b]	–2.130	–0.026	–1.534	–0.032	–1.372	0.319
HBR	–0.004	–0.833	0.891a	36.307	0.008	0.775	0.013	0.670	–0.061	–0.331	–0.068[a]	–3.512	0.520
HMF	–0.002	–0.302	0.903a	87.932	–0.007	–0.636	0.047[a]	3.313	0.019	0.529	–0.048[a]	–4.671	0.866
HHF	0.017[b]	2.141	0.331a	19.521	–0.002	–0.133	0.050[b]	2.009	–0.002	–0.114	0.053[b]	2.145	0.245
HUT	–0.002	–0.431	0.687a	60.432	0.121[a]	10.435	–0.061[a]	–3.502	–0.010	–0.855	–0.046[a]	–3.337	0.764
Mean	**0.011**	**0.643**	**0.634**	**45.327**	**0.029**	**2.339**	**0.001**	**0.072**	**–0.016**	**–0.461**	**–0.028**	**–2.150**	**0.543**
Grand Average	**0.001**	**–0.370**	**0.711**	**50.506**	**0.061**	**2.644**	**–0.025**	**–0.434**	**–0.054**	**–2.189**	**–0.044**	**–2.551**	0.597

Notes: This exhibit presents the results of a five-factor performance regression model. The daily excess return of ETFs is regressed on the excess return of their benchmark, the Fama-French SMB factor, the Fama-French HML factor, the intraday volatility of ETFs, which is calculated as the fraction of the daily highest trading price minus the daily lowest trading price to the closing trading price at the end of the day, and the one-lagged excess return of ETFs.

[a] *Significant at the 1% level.*

[b] *Significant at the 5% level.*

[c] *Significant at the 10% level.*

EXHIBIT 8
Market Timing Regression Results

Ticker	Alpha	*t*-test	Beta	*t*-test	Gamma	*t*-test	R^2
HAL	–0.016	–1.416	0.951[a]	55.276	0.003	0.277	0.708
HAZ	0.008	0.643	0.793[a]	49.423	–0.018[c]	–1.906	0.659
HAJ	0.007	0.620	0.706[a]	30.534	–0.024	–1.345	0.422
Mean	**0.000**	**–0.051**	**0.817**	**45.077**	**–0.013**	**–0.991**	**0.596**
HAB	–0.012[a]	–5.222	0.990[a]	90.057	–0.031	–0.971	0.865
HAD	–0.004[a]	–3.488	1.035[a]	120.465	–0.079[a]	–3.254	0.921
HYI	0.001	0.347	0.487[a]	29.426	0.037[b]	2.629	0.406
HFP	–0.002	–0.955	0.513[a]	20.939	–0.260[a]	–3.199	0.256
HPR	–0.002	–1.478	0.594[a]	27.026	–0.229[a]	–3.141	0.364
Mean	**–0.004**	**–2.159**	**0.724**	**57.583**	**–0.112**	**–1.587**	**0.562**
HAX	–0.001	–0.190	0.718[a]	57.383	–0.045[a]	–4.718	0.742
HEE	–0.042[c]	–1.878	1.092[a]	37.881	–0.048[a]	–3.139	0.537
HEX	–0.027[a]	–3.938	0.880[a]	98.254	–0.015[a]	–3.095	0.886
HEF	0.001	0.071	0.507[a]	26.204	–0.044[a]	–2.824	0.362
HEA	–0.003	–0.491	0.781[a]	46.548	–0.005	–0.452	0.632
HEJ	–0.040[a]	–2.915	0.827[a]	31.051	–0.067[a]	–3.031	0.431
HGY	–0.005	–0.232	0.417[a]	10.507	–0.147[a]	–4.988	0.110
HNY	–0.012	–0.765	0.512[a]	65.784	–0.006[a]	–4.634	0.773
Mean	**–0.016**	**–1.292**	**0.717**	**46.701**	**–0.047**	**–3.360**	**0.559**
HAA	0.001	0.136	0.534[a]	73.265	–0.001	–0.306	0.810
Mean	**0.001**	**0.136**	**0.534**	**73.265**	**–0.001**	**–0.306**	**0.810**
HAC	0.017	1.222	0.371[a]	24.134	0.013	1.450	0.314
HBR	–0.006	–1.324	0.898[a]	36.877	0.090[b]	2.283	0.517
HMF	–0.002	–0.343	0.908[a]	86.695	0.002	0.341	0.863
HHF	0.026[a]	3.394	0.317[a]	19.188	–0.043[a]	–3.268	0.246
HUT	0.003	0.436	0.674[a]	58.465	–0.034[a]	–4.046	0.737
Mean	**0.008**	**0.677**	**0.633**	**45.072**	**0.006**	**–0.648**	**0.535**
Grand Average	**–0.005**	**–0.808**	**0.705**	**49.790**	**–0.043**	**–1.879**	**0.571**

Notes: This table presents the results of the Treynor and Mazuy [1966] model, which evaluates the timing ability of ETF managers. The daily excess return of ETFs is regressed on the excess return of the benchmark and the square excess return of the benchmark. The timing ability implies that the managers of ETFs efficiently respond to the movements of the market and revise the portfolios they manage. The timing ability is evaluated via the gamma estimate.

[a]*Significant at the 1% level.*

[b]*Significant at the 5% level.*

[c]*Significant at the 10% level.*

return behavior of the majority of ETFs may hint that these ETFs may be appealing to very short-term traders who seek to take quick advantage of daily underpricing in active ETFs and then abandon them the next day.

Market Timing Testing

This section discusses the estimations of the Treynor and Mazuy [1966] Model 6, which evaluates the market timing skills of active ETF managers. The regression results are presented in Exhibit 8. Presented in the exhibit are the alpha, beta, and gamma coefficients; the relevant *t*-tests; and the R^2 values for each ETF. The gamma coefficient assesses the market timing skills of the managers. Positive and significant gamma estimates indicate that managers time the market efficiently; negative or nonsignificant gamma estimations imply that the ETF managers do not have sufficient market timing skills.

First of all, the alphas and betas obtained from the model are very similar to those analyzed in previous sections. Therefore, once again, the overall lack of any material selection skill and the conservativeness of ETF managers are verified. When it comes to market timing, the average gamma is negative. In addition, there are 13 single gammas that are negative and significant at the 10% level or better, whereas only 2 gammas are positive and significant at the 5% level. The remaining seven gammas are either positive or negative but statistically insignificant. The results of the gamma estimate reveal that the majority of ETF managers fail to time the market; in other words, they cannot predict the depth of unexpected financial turbulence and adjust their investment decisions and the structure of their portfolios accordingly to enhance their performance.

Overall, our results are consistent with the previous findings of Treynor and Mazuy [1966], Henriksson and Merton [1981], Chang and Lewellen [1984], Henriksson [1984], and Graham and Harvey [1996] on the timing abilities of active mutual fund managers, all of which reported limited or nonexistent market timing ability. The common feature of these studies is that returns are considered on a monthly or an annual basis; in contrast, in our study returns are considered daily. Therefore, our findings are more comparable to the results of Bollen and Busse [2001, 2004], who applied daily tests on the market timing efficiency of mutual funds and revealed that managers do possess material market timing skills.

CONCLUSIONS

The ability of mutual fund managers to outperform the market by applying efficient selection and market

timing strategies has been thoroughly examined in the literature. The findings on this issue are ambiguous, with some studies reporting material outperformance of actively managed mutual funds over the market returns but others showing that active mutual funds fundamentally underperform their benchmarks or their passively managed counterparts. In this article, we expanded the research on the "active versus passive" management debate by providing new evidence from the actively managed ETFs listed in the Toronto Stock Exchange and managed by Horizons, which is an ETF provider and asset administrator with a significant presence in the Canadian stock market.

The results of our study can be summarized as follows: In terms of raw returns, active ETFs present slightly lower returns than those of the selected benchmarks. The active ETFs, however, are found to be slightly less risky than the indexes. When we consider performance in risk-adjusted terms, we find no evidence that the active ETFs can add value and achieve any material excess return against the market returns. This finding is supported by a range of single- and multifactor models employed to explain the performance of active ETFs. In addition, a lack of aggressiveness on behalf of the majority of active ETF managers is revealed.

The findings for risk-adjusted performance may suggest that the Canadian market of active ETFs or the Canadian market itself is efficient enough and, thus, provide managers with limited chances to achieve abnormal returns. On the other hand, the results can be interpreted as an indicator of the managers' lack of selection skills. This indicator implies that the active ETF managers fail to detect and select the stocks that are undervalued and can make a positive contribution to performance. However, we should bear in mind that the unprecedented crisis in stock markets worldwide has impoverished managers' investing choices.

We find no systematic relationship between the performance of active ETFs and the factors relating to size and value of stocks listed in the Toronto Stock Exchange, meaning that this relationship is specific to each individual fund. We are unable to reach a concrete general conclusion about the influence exerted by size and value factors on the performance of active ETFs.

Moreover, we find that the intraday volatility of ETFs affects their performance in a negative way. A negative relationship is also found between the concurrent and the lagged returns of ETFs. The first finding shows that during highly volatile markets investors in active ETFs should be prepared to suffer significant losses from their investments. The second finding is indicative of a mean-reverting pattern in the trading behavior of active ETFs and can lead to the inference that active ETFs could be attractive to short-term traders who seek quick gains from particular trends in the stock market.

Considering the market timing abilities of ETF managers, results indicate that managers are not able to time the market efficiently. In regression analysis, we find that market timing coefficients (γ estimates) are negative. The active ETFs need to time the market efficiently so as to help the portfolios they manage outperform the market return. Therefore, our findings indicate that the active ETFs fail to do what they meant to do. Moreover, the lack of market timing skills may contribute to the failure of active ETFs to achieve significant abnormal returns.

Overall, our empirical findings about the performance of the Canadian active ETFs are in line with the previous findings of the literature on the performance of active mutual funds and actively managed ETFs in the United States. The lack of significant risk-adjusted performance for active ETFs due to inadequate selection and market timing skills contributes to the existing literature on mutual fund and ETF performance on the active management with a new set of data having different operating features.

ENDNOTES

JEL classification: G12, G15

[1]In the analysis of the empirical results in a following section of this article, it will be shown that the two methods produce similar results both from a statistical and an economic significance perspective. Based on this element, we run the rest models described in the methodology section using the standard OLS method used in the financial literature.

[2]A more detailed description of the investment strategy adopted by the covered call ETFs can be found on the website of Horizons (www.horizonsetfs.com/pub/en/Products.aspx).

[3]Refer to *Financial Post* Staff [2015] for information on the assets under management in the Canadian ETF market.

[4]This figure is obtained by dividing 0.69% by 252 trading days per annum.

[5]These figures are calculated as the difference between the maximum and minimum returns and are not clearly reported in the exhibit.

[6]We have also employed GARCH(1,2), GARCH(2,1) and GARCH(2,2) regression processes to estimate the alpha and beta coefficients of Model 1 without obtaining materially different results than those presented in Exhibit 3. In any event, these results are available on request.

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