A Post-Implementation Review of The Impacts of The CRM2 Annual Costs and Performance Reports on Investment Fund Performance[1]

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Executive Summary

I. Purpose and Background of Research

The purpose of this research is to examine the post-implementation impacts on industry behaviour of the final phase of the Client Relationship Model (CRM2) amendments to National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations* (herein after the CRM2 client statements, annual costs and performance reports).

The final amendments, which came into effect on July 15, 2016, were designed to ensure investors receive clear and complete disclosure of the performance of their investments and all fees associated with their accounts, including registrant compensation, on an annual basis.

This study examines whether greater transparency about transaction information and investment returns led to investment fund managers improving the risk-adjusted performance of their mutual funds and ETFs.[2]

The study period covers January 2013 to December 2020. This time period begins about 18 months before the first set of CRM2 amendments came into effect on July 15, 2014 (cost disclosures related to pre-trade disclosure of charges, and trade confirmation for debt securities). The 2013 start date gives us a baseline of what the investment fund industry looked like before the first set of CRM2 amendments were implemented. We hypothesize that the changes we are seeking to measure would take place several years after the CRM2 client statements, including transaction information, and performance reports are fully implemented. Considering this, the study timeline was extended to 2020 to account for this time lag, enabling us to more fully observe the extent of any changes.

Our analysis groups the research findings into three time periods, 2013 to 2020, which is the overall duration of our study period, the pre-implementation period of 2013 to 2016, and the post-implementation period of 2017 to 2020.

Finally, we note that the findings presented in this report are the views of CSA staff and are for informational purposes only. As such, statements made in the report do not represent the CSA's views of any official policy position.

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[2] Risk-adjusted performance or risk-adjusted return is a rate of return that is relative to a/some benchmark(s). Specifically, we use a version of the Fama and French (2015) model as the common benchmark to measure risk-adjusted return in this report. See section Research Methodology in Appendix A for details.

II. Research Findings

Our research findings are based on a fund sample representing approximately 62% of mutual funds and ETFs in the Canadian market, as measured by assets under management (AUM) in December 2020.

We use total return and risk-adjusted return, also known as alpha, as measures of fund performance, and report results based on gross returns, i.e., returns before fees and expenses.[3] On balance, we find that the risk-adjusted performance relative to our model's benchmark for both mutual funds and ETFs, while remaining negative for the whole study period, improved in the years after the client statements, annual costs and performance reports were implemented.[4]

i. 2013 to 2020 Findings

The annualized average gross total returns between 2013 and 2020, for our study sample, were 7.1% for mutual funds and 7.9% for ETFs. Accounting for fund risk, we found that the mean gross alphas relative to our model benchmarks were -3.5% for mutual funds and -2% for ETFs. These negative alphas imply that, on average, the total returns are lower than what would be implied by our benchmark model.

ii. Pre-implementation (2013-2016) and Post-implementation (2017-2020) Findings

Comparing the performance findings for the pre- and post-implementation periods, we found that the risk-adjusted returns relative to our model benchmarks improved during the post-implementation period, even though they continued to remain negative. For mutual funds, the annualized average gross alpha was -5%, between 2013 and 2016, and -2.2% between 2017 to 2020. The ETF findings were -4.8% for the pre-implementation period and -0.6% for the post-implementation period.

Our research also analyzed whether there were differences in fund performance by the following fund characteristics: asset class, investing strategy, product type, and IFM type. The findings by fund characteristics

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[3] Gross performance allows the analysis of funds' performance to be independent of their fees and expenses, which are analyzed separately in a companion report entitled *A Post-Implementation Review of the Impacts of the CRM2 Annual Costs and Performance Reports on Investment Fund Fees.* We have also assessed net performance and obtained qualitatively similar conclusions (results available upon request).

[4] Note that the risk-adjusted performance is measured relative to our chosen benchmarks based on the Fama and French (2015) model. Negative risk-adjusted performance of a fund indicates that the fund underperforms the benchmarks used to account for the fund risk. It is important to highlight that our benchmarks are not necessarily the benchmark used by the funds in our sample, and thus negative risk-adjusted return does not imply that investors incurred losses from investing during our sample period. See section Research Methodology in Appendix A for details.

directionally mirrored the overall findings but the annualized average gross total return and risk-adjusted return varied by fund characteristics.

There were no uniform directional trends for the gross total returns when we compared the pre- and post-implementation results. The returns increased for some fund characteristics and decreased for others, between these two time periods. The gross total returns ranged from 1% to 10.8% for mutuals funds, and 1.4% to 11.2% for ETFs.

1. Introduction

Post-implementation evaluation is crucial in the policy development cycle because it allows regulators to understand whether newly introduced policy has been implemented as intended and is having the desired impacts and outcomes.

The purpose of this research is to examine the post-implementation impacts of the final phase of the Client Relationship Model (CRM2) amendments to National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations* on industry behaviour (herein after the CRM2 client statements, annual costs and performance reports).

The final amendments, which came into effect on July 15, 2016, were designed to ensure investors receive clear and complete disclosure of the performance of their investments, client statements (covering account and security positions and transactions information) and all fees associated with their accounts, including registrant compensation, on an annual basis.[5]

The literature on disclosure regulation has identified numerous potential benefits of reporting standards including improved market liquidity, lower cost of capital, and more efficient portfolio choice among others.[6] Specifically, Zingales (2009) suggests that standardization in performance reporting makes comparison between funds easier and hence facilitates capital allocation toward more talented managers. Hence, it can be argued that providing standardized performance reports would motivate investors to compare investment funds and avoid those with poor performance. Moreover, CRM2 compliant reporting would allow fund managers to signal their product quality more effectively, reducing the cost of information asymmetry.[7] The resulting shift in investor demand toward outperforming funds should prompt fund managers to raise the performance of their offerings (e.g., perhaps by hiring more skilled portfolio managers and

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[5] The CRM2 amendments require dealers to disclose to their clients transaction information and total returns at the account level, expressed as a percentage, and on an annualized basis. The total return is net of fees and other charges.
[6] Leuz and Wysocki (2016) provide a comprehensive survey of the literature.
[7] See Dranove and Jin (2010) for more details.

phasing out underperforming funds). This would ultimately improve the performance of the investment fund market as a whole. Therefore, we hypothesize that the enhanced transparency and standards of performance reporting brought about by the CRM2 amendments will lead to improvements in investment fund performance.

This study focuses on the impacts of the CRM2 implementation on investment fund performance. A separate research report entitled *A Post-Implementation Review of the Impacts of the CRM2 Annual Costs and Performance Reports on Investment Fund Fees* examines the impacts of the new regulations on mutual fund and ETF MERs and management fees.

Our research findings are organized as follows in the report:

- section 2 provides an overview of the investment fund market in Canada, our study samples, and study periods,
- section 3 presents the performance results for mutual funds and ETFs,
- section 4 discusses the limitations of our research findings, and
- section 5 presents our conclusion.

2. Overview of investment fund market in Canada, study samples, and study periods

Canadian households, in 2013, held $4.1 trillion in discretionary financial assets[8] (refer to Table 1). Of this amount, approximately $1.0 trillion (26%) were held in investment funds.[9] By the end of 2020, household discretionary financial assets increased to $6.5 trillion, and of this amount, about $2.0 trillion (30%) dollars were held in investment funds.

Table 1, below, further breaks down these figures by investment fund type. Within investment funds, assets are concentrated in mutual funds, but ETFs assets are growing and gaining market share at the expense of mutual funds.

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[8] Investor Economics Household Balanced Sheet Report, 2014 and 2016. Discretionary financial assets are assets not held in employer sponsored pension plans.

[9] For the purpose of our research, we define an investment fund as an investment product, specifically a fund, that pools money from various investors and invest that money collectively through a portfolio of financial instruments, such as stocks and bonds, and the portfolio of investments is professionally managed by a fund manager. Based on this definition we have classified mutual funds and exchange traded funds (ETFs) as investment funds. While hedge funds satisfy our definition of an investment fund, we have excluded hedge funds from our analysis as these funds are only available to "accredited investors", who are institutional investors and a subset of high net worth retail investors.

Table 1 Estimated Canadian Discretionary Financial Assets Held in Investment Funds

	Asset Size ($B)		Share of Investment Funds (%)		Share of discretionary financial assets (%)	
	2013	2020	2013	2020	2013	2020
All discretionary financial assets	4091	6517				
Investment Funds	1044	1947			26	30
Canadian listed ETFs	63	257	6	13	2	4
Mutual Funds excl ETFs	981	1690	94	87	24	26

Source: CSA estimates based on data in Investor Economics Household Balance Sheet Report, 2014, 2016 and 2021; excludes seg funds; closed-end funds and alternatives

Graphs 1 and 2, below, show the number of mutual funds and ETFs, and their assets as measured by assets under management (AUM), for each year of our study period.

Graph 1 Number of Investment Funds by Fund Type, 2013-2020

	2013	2014	2015	2016	2017	2018	2019	2020
ETFs	283	340	374	456	554	660	746	846
Mutual Funds	2,980	3,024	3,127	3,175	3,148	3,201	3,196	3,173

Data source: Investor Economics Insights Report, January 2021 and January 2019; Investor Economics ETF and Index Funds Report Q4 2020, Q4 2016, Q1 2016; Investor Economics Household Balance Sheet Report 2016, 2018, and 2021.

Graph 2 Investment Fund Assets ($billion) by Fund Type, 2013-2020

	2013	2014	2015	2016	2017	2018	2019	2020
ETFs	63	77	90	114	147	157	205	251
Mutual Funds	981	1,116	1,203	1,302	1,418	1,358	1,547	1,697

Data source: Investor Economics Insights Report, January 2021 and January 2019; Investor Economics ETF and Index Funds Report Q4 2020, Q4 2016, Q1 2016; Investor Economics Household Balance Sheet Report 2016, 2018, and 2021.

Our study sample includes 3,086 unique mutual funds and 299 ETFs. The number of mutual funds increased from 1,974 in 2013 to 2,106 in 2020. The total AUM of mutual funds rose from $594 billion, in 2013, to $995 billion by the end of 2020. Both the number of ETFs in our study sample and their total AUM more than tripled during our study period. The number of ETFs increased from 83, in 2013, to 284 in 2020, while the total AUM increased from $46.6 billion to $162 billion for the same time period.

Taken together, the aggregate AUM of our ETF and mutual fund study samples was almost $1.2 trillion by the end of 2020, and these funds represented approximately 62% of the total AUM of the Canadian mutual fund and ETF markets.[10]

3. Research Findings

We present our performance results for mutual funds and ETFs in the subsections below, for all three time periods, and by fund characteristics.[11]

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[10] Investor Economics, Insight Report January 2021

[11] We have performed statistical tests for our hypothesis that the risk-adjusted performance (i.e., alpha) improves following the CRM2 implementations. Using both t-tests to compare the average alpha before and after the CRM2 implementations and regressions to estimate the impact of the CRM2 compliance on fund alpha controlling for fund characteristics, we find that the results are statistically significant at 0.1% level for both mutual funds and ETFs. The details of these tests are available upon request.

3.1 Mutual Fund Performance

3.1.1 Overall Findings

a. Overview - Number of Funds and Fund Assets

For the entire study period, i.e., 2013-2020, our mutual fund sample contained 3,086 unique mutual funds, with an average age of 12 years, and an average AUM of $361.2 million.[12] The total AUM of our mutual fund study sample, in December 2020, was $995.5 billion, and this represents 59% of the Canadian mutual fund market total net assets.[13]

b. 2013-2020 Findings

Both the equal-weighted and asset-weighted average total returns before fees were 0.59% per month[14], between 2013 and 2020. This finding suggests that there was no difference in total returns by fund size.

Our estimates of the monthly equal weighted and asset weighted average gross alphas[15], from 2013 to 2020, were -0.37% and -0.29%, respectively. These negative alpha values indicate that, on average, mutual fund total returns are lower than the returns implied by the funds' exposures to the risk factors of our model. Negative risk-adjusted performance relative to the Fama and French model is not uncommon and has been documented in several studies of the U.S. mutual fund market. Researchers including Gil-Bazo and Verdue (2009), Fama and French (2010) among others have found that it is formidable for asset managers to generate returns higher than those implied by the Fama and French model. The asset weighted average gross alpha is slightly higher than the equal weighted alpha. This finding suggests that fund size appears to have a positive impact on risk-adjusted performance, despite having no effect on total returns.

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[12] We include fund age in our descriptive statistics because many studies have shown it as one of the variables that determine fund performance. It is well-documented that in the U.S mutual fund market, fund age has a negative relationship with mutual fund performance. See Brown and Wu (2016), Evan (2010) and others for detail.

[13] The total industry assets in December 2020 was $1.697 trillion. Source: Investor Economic Insight Report January 2021.

[14] We have reported the monthly returns as this is the convention in performance research. An annualized figure can be calculated from a monthly return by multiplying the monthly return by 12.

[15] Unless otherwise noted, alpha, risk-adjusted return, and risk-adjusted performance have the same meaning in our report.

b. Pre-implementation (2013-2016) and Post-implementation (2017-2020) Findings

The pre- and post-implementation period results show that, between these two time periods, total returns decreased by 0.13 percentage points for the equal weighted average and by 0.04 percentage points for the asset weighted average (refer to rows 2 and 3 in Panel A, Table 2). For the same two time periods, the risk-adjusted performance increased by 0.27 percentage points for the equal weighted average gross alpha, and 0.24 percentage points for the asset weighted average gross alpha.

Panel B of Table 2 presents the total returns and gross alphas for each year of our study period. The number of mutual funds, in our study sample, slowly increased from 1,974 in 2013 to 2,106 in 2020.[16] There was growth in both the average fund AUM and total AUM throughout our study period. The sole exception was in 2018, when the total AUM dropped but the average fund AUM continued to grow.[17] The total return figure fluctuated year-over-year and was negative in 2018. In contrast, the risk-adjusted performance steadily improved, starting in 2014.

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[16] There are 3,086 unique mutual funds in our study sample. The number of mutual funds for each year of our study period, as laid out in Table 2, is less than 3,086 because within a given year new funds are introduced and existing funds are merged or terminated. If a fund has 36 consecutive months of performance data between 2009 and 2020 then the fund is counted in the total fund count. The inclusion of a fund in the annual fund count depends on when a fund is introduced, merged, or terminated. For example, a fund merged or terminated in 2018 is counted in the 2013 to 2018 statistics but is excluded from the 2019 and 2020 statistics.

[17] This drop is consistent with the broader trend in the mutual fund market. According to Investor Economics Insight Annual Review January 2023, during our sample period from 2013 – 2020, the AUM of long-term investment funds in the market only fell in 2018 when net outflows of mutual funds amounted to $7.94 billion in December alone. See Investor Economics Insight Annual Review January 2019 for more details.

Table 2. Summary of MF Monthly Gross Performance

			Panel A. Performance over the Sample Period						
	No. of Obs.	No. of	Total Return (%/month)		Gross Alpha (%/month)		Average	Average AUM	Total AUM
Period	(Fund x Month)	Funds	EW Mean	AW Mean	EW Mean	AW Mean	Age	($ million)	($ billion)
2013-2020	201,416	3,086	0.59	0.59	-0.37	-0.29	11.95	361.15	995.46
2013-2016	95,571	2,567	0.66	0.62	-0.51	-0.42	11.49	331.17	780.01
2017-2020	105,845	2,704	0.53	0.58	-0.24	-0.18	12.37	388.22	995.46

			Panel B. Performance by Year						
	No. of Obs.	No. of	Total Return (%/month)		Gross Alpha (%/month)		Average	Average AUM	Total AUM
Year	(Fund x Month)	Funds	EW Mean	AW Mean	EW Mean	AW Mean	Age	($ million)	($ billion)
2013	22,029	1,974	1.23	1.02	-0.51	-0.41	11.29	309.38	594.13
2014	23,132	2,081	0.61	0.68	-0.61	-0.53	11.53	330.48	664.47
2015	24,864	2,198	0.31	0.25	-0.47	-0.39	11.52	336.67	707.64
2016	25,546	2,316	0.57	0.6	-0.45	-0.37	11.6	345.23	780.01
2017	26,582	2,334	0.66	0.59	-0.37	-0.31	11.8	368.88	841.31
2018	27,009	2,362	-0.4	-0.29	-0.24	-0.2	12.16	372.76	789.95
2019	27,418	2,432	1.1	1.08	-0.2	-0.14	12.42	379.34	920.63
2020	24,836	2,106	0.78	0.89	-0.12	-0.08	13.13	435.54	995.46

3.1.2 Mutual Fund Performance by Broad Asset Class

a. Overview - Number of Funds and Fund Assets by Broad Asset Class

Table 3 presents the mutual fund performance results by the funds' broad asset class: balanced, equity, fixed income and money market. Our sample consists of 980 balanced funds, 1,610 equity funds, 436 fixed income funds, and 100 money market funds. Balanced funds, with an average age of 10.1 years are the youngest of the four asset classes, yet they have the largest total and average fund AUM for the entire study period. The average fund AUM in December 2020 was $666.1 million and the total AUM was $558.1 billion. Equity mutual funds have the second largest total AUM, followed by fixed income funds. Funds belonging to both these asset classes have an average age that is between 12 to 13 years. Money market funds, with an average age of 17.9 years, are the oldest funds in our study sample, and yet they have the smallest total and average fund AUMs, of the four asset classes.

b. 2013-2020 Findings

Balanced and equity funds have the highest monthly asset weighted average total returns of 0.51% and 0.86%, respectively. These funds, however, have

the lowest monthly asset weighted average risk-adjusted performance, of -0.3% for balanced funds and -0.32% for equity funds. Fixed income and money market funds have the highest monthly asset weighted risk-adjusted performance, with gross alphas of -0.11% and -0.24%, respectively.

c. Pre-implementation (2013-2016) and Post-implementation (2017-2020) Findings

Comparing the asset weighted risk-adjusted performance for each asset class, for the pre- and post-implementation periods, we find that there is a consistent improvement in performance – between 0.2 and 0.3 percentage points per month. Except for fixed income funds, total returns decreased for most asset classes, between these two time periods.

Table 3. Summary of MF Monthly Gross Performance by Asset Class

Asset Class	Period	No. of Obs. (Fund x Month)	No. of Funds	Total Return (%/month) EW Mean	AW Mean	Gross Alpha (%/month) EW Mean	AW Mean	Average Age	Average AUM ($ million)	Total AUM ($ billion)
Balanced	2013-2020	61,549	980	0.49	0.51	-0.34	-0.3	10.09	666.11	558.1
Balanced	2013-2016	28,620	791	0.54	0.53	-0.46	-0.42	9.45	607.65	453.19
Balanced	2017-2020	32,929	863	0.45	0.49	-0.23	-0.21	10.66	716.92	558.1
Equity	2013-2020	106,021	1,610	0.77	0.86	-0.43	-0.32	12.61	220.49	312.62
Equity	2013-2016	51,352	1,360	0.88	0.9	-0.59	-0.49	12.08	206.05	244.32
Equity	2017-2020	54,669	1,382	0.68	0.83	-0.28	-0.19	13.11	234.06	312.62
Fixed Income	2013-2020	26,373	436	0.25	0.3	-0.19	-0.11	11.93	266.88	109.06
Fixed Income	2013-2016	11,566	344	0.2	0.23	-0.3	-0.24	12.1	258.34	70.75
Fixed Income	2017-2020	14,807	384	0.29	0.36	-0.11	-0.02	11.79	273.55	109.06
Money Market	2013-2020	7,473	100	0.09	0.11	-0.26	-0.24	17.91	177.71	15.68
Money Market	2013-2016	4,033	98	0.13	0.13	-0.37	-0.38	16.73	171.2	11.75
Money Market	2017-2020	3,440	86	0.04	0.08	-0.12	-0.09	19.3	185.35	15.68

3.1.3 Mutual Fund Performance by Product Type

a. *Overview - Number of Funds and Fund Assets by Product Type*

The mutual funds in our sample comprise of four product types: stand-alone funds, proprietary fund-of-funds (proprietary FoF), proprietary & 3rd party fund-of-funds (proprietary and 3rd party FoF), and 3rd party fund-of-funds (3rd party FoF).

Stand-alone funds account for most mutual funds in our study sample, both in terms of the number of funds (77.6%) and the total AUM (59.9%), at the end of 2020. Stand-alone funds were also the oldest product type, with an average age of 12.7 years.

The three types of FoFs account for 25.1% of funds and 40.1% of total AUM. The age of these funds is about 3 years less than stand-alone funds, on average.[18]

b. 2013-2020 Findings

Table 4, below, summarizes mutual fund performance by product type. Stand-alone funds have the highest average total returns and are among the funds with the highest risk-adjusted returns, second only to 3rd party FoF. All three FoFs have very similar total returns, which are between 0.51% and 0.55% per month. Risk-adjusted performance is, however, more varied, with third-party FoF having the best gross alpha, -0.23% per month.

c. Pre-implementation (2013-2016) and Post-implementation (2017-2020) Findings

Comparing the pre- and post-implementation period findings, we observe that all product types gained between 0.2 and 0.3 percentage points per month in risk-adjusted performance. Changes in total returns, by product type, varied after the CRM2 requirements were fully implemented.

Table 4. Summary of MF Monthly Gross Performance by Product Type

Product Type	Period	No. of Obs. (Fund x Month)	No. of Funds	Total Return (%/month)		Gross Alpha (%/month)		Average Age	Average AUM ($ million)	Total AUM ($ billion)
				EW Mean	AW Mean	EW Mean	AW Mean			
Stand-alone Fund	2013-2020	156,840	2,396	0.61	0.64	-0.37	-0.28	12.66	294.58	596.06
Stand-alone Fund	2013-2016	74,866	2,005	0.68	0.67	-0.52	-0.42	12.25	284.09	485.43
Stand-alone Fund	2017-2020	81,974	2,085	0.55	0.62	-0.23	-0.15	13.04	304.16	596.06
Proprietary FoF	2013-2020	33,374	563	0.53	0.51	-0.37	-0.3	9.55	644.51	341.92
Proprietary FoF	2013-2016	15,859	425	0.59	0.5	-0.48	-0.43	8.69	521.39	238.59
Proprietary FoF	2017-2020	17,515	508	0.48	0.51	-0.26	-0.22	10.32	755.99	341.92
Proprietary & 3rd Party FoF	2013-2020	8,053	149	0.53	0.52	-0.36	-0.33	9.21	499.93	48.53
Proprietary & 3rd Party FoF	2013-2016	3,590	102	0.61	0.56	-0.49	-0.46	8.99	459.76	44.49
Proprietary & 3rd Party FoF	2017-2020	4,463	137	0.47	0.5	-0.25	-0.24	9.39	532.25	48.53
3rd Party FoF	2013-2020	3,033	62	0.63	0.55	-0.29	-0.23	8.93	326.8	8.7
3rd Party FoF	2013-2016	1,188	31	0.66	0.57	-0.45	-0.34	8.61	383.63	11.39
3rd Party FoF	2017-2020	1,845	61	0.61	0.54	-0.19	-0.14	9.14	290.2	8.7

3.1.4 Mutual Fund Performance by Investing Strategy

a. Overview - Number of Funds and Fund Assets by Investing Strategy

Table 5, below, summarizes mutual fund performance by a fund's investing strategy. Ninety-seven percent of mutual funds (3,001 out of 3,086 funds)

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[18] There are four funds in our sample that do not have observations of product type.

in our study sample use an actively managed strategy. Actively managed funds account for 98% of the total AUM at the end of 2020. Passively managed funds compared to actively managed funds account for less than 3% of the number of funds, and less than 2% of total AUM, despite having the same average age of approximately 12 years.

b. *2013-2020 Findings*

Actively managed funds, in comparison to passively managed funds, have lower monthly asset weighted average total returns (0.59% vs. 0.85%), yet their risk-adjusted performance is only marginally lower (-0.29% vs. -0.24%).

c. *Pre-implementation (2013-2016) and Post-implementation (2017-2020) Findings*

Both actively managed and passively managed funds improved their risk-adjusted performance during the post-implementation period (0.2 and 0.3 percentage points, respectively). Total returns, however, fell for actively managed funds and rose for passively managed funds.

Table 5. Summary of MF Monthly Gross Performance by Investing Strategy

		No. of Obs.		Total Return (%/month)		Gross Alpha (%/month)			Average AUM	Total AUM
Strategy	Period	(Fund x Month)	No. of Funds	EW Mean	AW Mean	EW Mean	AW Mean	Average Age	($ million)	($ billion)
Active	2013-2020	195,879	3,001	0.59	0.59	-0.37	-0.29	11.95	365.1	973.31
Active	2013-2016	92,892	2,493	0.66	0.61	-0.51	-0.42	11.51	335.88	768.1
Active	2017-2020	102,987	2,639	0.53	0.57	-0.24	-0.18	12.35	391.46	973.31
Passive	2013-2020	5,421	88	0.73	0.85	-0.35	-0.24	11.98	223.74	21.9
Passive	2013-2016	2,611	76	0.73	0.79	-0.52	-0.41	10.78	169.61	11.8
Passive	2017-2020	2,810	65	0.73	0.89	-0.19	-0.14	13.09	274.04	21.9

3.1.5 Mutual Fund Performance by IFM Firm Type

a. *Overview - Number of Funds and Fund Assets by IFM Firm Type*

Mutual funds sponsored by bank-affiliated IFMs and independent IFMs account for 70.5% of funds (2,175 funds) and 86.3% of total AUM ($859.4 billion) at the end of 2020. These funds had an average age of about 12 years. There are 281 funds sponsored by insurer-affiliated IFMs. These funds are the youngest funds, with an average age of 9 years, and a total AUM of $59 billion, at the end of 2020. The oldest funds are those sponsored by IFMs that are professional associations. These 24 funds have a total AUM of $2.4 billion at the end of 2020.

b. 2013-2020 Findings

The asset weighted average total returns and gross alphas for the entire study period, and by IFM firm type, range from 0.5% to 0.62% and from -0.39% to -0.19% per month, respectively.

We observe that there appeared to be differences in the average risk-adjusted performance among IFM types. However, caution should be taken to interpret this result. First, it is worth noting that the differences were not statistically significant.[19] Second, these are differences in the sample mean only and do not account for the difference in the distribution of mutual funds (for example, across asset class or product type) sponsored by each IFM type, which is important when making meaningful comparisons of each group's performance. Finally, as emphasized in Section 4 below, this result may depend on the measure of performance and our specific sample of mutual funds. There is no guarantee that it will hold for a different measure of performance and/or for a different sample of mutual funds.

c. Pre-implementation (2013-2016) and Post-implementation (2017-2020) Findings

Comparing the results for the pre- and post-implementation periods, we find that the risk-adjusted performance improved between 0.2 to 0.3 percentage points per month during the post-implementation period. Total returns, meanwhile, showed little improvement and in some instances declined after the CRM2 requirements were fully implemented.

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[19] In one of our statistical tests, mentioned in footnote 10 above, we controlled for the type of IFM firms and found that effects of IFM firm type on alphas are statistically insignificant. This result is available upon request.

Firm Type	Period	No. of Obs. (Fund x Month)	No. of Funds	Total Return (%/month) EW Mean	AW Mean	Gross Alpha (%/month) EW Mean	AW Mean	Average Age	Average AUM ($ million)	Total AUM ($ billion)
Association	2013-2020	1,866	24	0.56	0.5	-0.38	-0.39	19.77	145.48	2.42
Association	2013-2016	1,039	24	0.6	0.49	-0.51	-0.53	16.72	134.13	3.45
Association	2017-2020	827	24	0.51	0.51	-0.21	-0.24	23.6	159.73	2.42
Bank	2013-2020	68,766	992	0.64	0.57	-0.32	-0.27	12.57	526.9	536.46
Bank	2013-2016	30,907	780	0.69	0.56	-0.48	-0.41	12.24	484.08	381.13
Bank	2017-2020	37,859	940	0.6	0.58	-0.2	-0.17	12.84	561.87	536.46
Independent	2013-2020	81,263	1,183	0.6	0.62	-0.39	-0.33	12.21	338.99	322.89
Independent	2013-2016	39,542	997	0.7	0.67	-0.52	-0.45	11.78	336.01	307.65
Independent	2017-2020	41,721	1,077	0.51	0.57	-0.26	-0.21	12.63	341.81	322.89
Insurer	2013-2020	16,463	281	0.59	0.61	-0.33	-0.19	9.02	185.18	59
Insurer	2013-2016	7,253	228	0.6	0.55	-0.45	-0.34	8.82	132.38	31.24
Insurer	2017-2020	9,210	248	0.58	0.64	-0.22	-0.12	9.17	226.76	59

3.2 ETF Performance

This section of the report examines changes in ETF performance during our study period. We will examine ETF performance for the following three fund characteristics: broad asset class, investing strategy, and IFM firm type.

3.2.1 Overall Findings

Overall, the performance of ETFs was similar to that of mutual funds. Total returns fluctuated while gross alphas consistently improved starting in 2014, and became positive starting in 2019, although the size of the improvement is negligible. The gross alphas for ETFs are also higher than the gross alphas for mutual funds during our study period.

Table 7 summarises ETF performance for our study period. Panel A presents the performance results for three time periods – the overall study period, and the pre-and post-implementation periods.

Panel B of Table 7 provides the ETF performance for each year of our study period. The number of ETFs and total AUM have both more than tripled during our study period. In comparison to our mutual fund sample, the average fund size for ETFs has fluctuated and declined during our study period[20], perhaps due to a more dynamic market structure.

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[20] This may be due to a more dynamic market structure in the ETF market, compared to the mutual fund market, which is characterized by more active trading, more liquidity, and arbitrage by authorized participants.

a. Overview - Number of Funds and Fund Assets

Our ETF sample, for the entire study period, consists of 293 funds, with an average age of 7.2 years, and an average fund AUM of $509.4 million. The total AUM of our ETF sample is $162 billion at the end of 2020, and our study sample accounts for 65% of the Canadian ETF market total net assets.[21]

b. 2013-2020 Findings

The equal weighted and asset weighted average gross total returns are 0.61% and 0.66% per month, respectively. Our estimates of the monthly equal weighted and asset weighted average gross alpha are -0.19% and -0.17%, respectively. The asset weighted averages are slightly higher than the equal weighted averages. This finding suggests that ETF fund size has a positive impact on both total returns and risk-adjusted returns.

c. Pre-implementation (2013-2016) and Post-implementation (2017-2020) Findings

Comparing the pre and post-implementation periods shows that ETF total returns and risk-adjusted performance both increased significantly. Total returns and risk-adjusted performance increased by 0.05 and 0.35 percentage points, respectively in equal weighted average, and by 0.14 and 0.35 percentage points, respectively in asset weighted average.

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[21] Total industry assets as of December 2020 was $251 billion. Source: Investor Economic Insight Report, January 2021.

Table 7. Summary of ETF Monthly Gross Performance

	Panel A. Performance over the Sample Period								
	No. of Obs.		Total Return (%/month)		Gross Alpha (%/month)			Average AUM	Total AUM
Period	(Fund x Month)	No. of Funds	EW Mean	AW Mean	EW Mean	AW Mean	Average Age	($ millions)	($ billions)
2013-2020	16783	293	0.61	0.66	-0.19	-0.17	7.18	509.44	161.99
2013-2016	5777	176	0.58	0.57	-0.42	-0.4	6.18	489.14	89.1
2017-2020	11006	293	0.63	0.71	-0.07	-0.05	7.7	520.12	161.99

	Panel B. Performance by Year								
	No. of Obs.		Total Return (%/month)		Gross Alpha (%/month)			Average AUM	Total AUM
Year	(Fund x Month)	No. of Funds	EW Mean	AW Mean	EW Mean	AW Mean	Average Age	($ millions)	($ billions)
2013	899	83	0.63	0.62	-0.47	-0.33	5.93	584.13	46.55
2014	1228	122	0.73	0.71	-0.56	-0.56	5.99	498.81	56.6
2015	1654	150	-0.11	-0.17	-0.42	-0.42	6.1	443.33	65.46
2016	1996	176	1.04	1.02	-0.31	-0.32	6.48	478.06	89.1
2017	2268	189	0.82	0.7	-0.21	-0.24	7.01	520.52	103.76
2018	2531	211	-0.4	-0.27	-0.07	-0.08	7.54	515.5	106.82
2019	2852	243	1.27	1.24	-0.02	0.01	7.97	527.31	136.39
2020	3355	284	0.74	0.98	-0.01	0.03	8.07	517.23	161.99

3.2.2 ETF Performance by Broad Asset Class

a. *Overview - Number of Funds and Fund Assets by Broad Asset Class*

The ETF performance findings by asset class are presented in Table 8, below. Our ETF sample is comprised of 10 balanced funds, 190 equity funds, 94 fixed income funds, and 2 money market funds. Balanced ETFs are the oldest, with an average age of 8.2 years, yet they have the smallest total AUM ($2.7 billion at the end of 2020). Equity and fixed income ETFs are the largest asset classes in terms of number of funds (190 and 94, respectively) and total AUM at the end of 2020 ($100.9 billion and $55.7 billion, respectively). Money market ETFs is the smallest asset class, within our study sample, with only 2 funds and a total AUM of $2.8 billion at the end of 2020.[22]

b. *2013-2020 findings*

Equity and balanced ETFs have the highest asset weighted average total returns during our study period (0.88% and 0.55%, respectively), yet their risk-adjusted performance, of -0.18%, is the lowest of the four asset

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[22] Note that the total number of funds and total AUM, by asset class, may not add up to the corresponding totals for the sample because some ETFs have changed their asset class during our study period.

classes. In contrast, fixed income and money market ETFs have the highest risk-adjusted performance, in spite of their lower total returns.

Comparing the equal weighted and asset weighted averages of the two largest asset classes of funds, i.e., equity and fixed income ETFs, we find that the impact of fund size on performance is not clear. Fund size has a positive effect on performance for equity ETFs, but a negative effect for fixed income ETFs.

c. Pre-implementation (2013-2016) and Post-implementation (2017-2020) Findings

We find that there is consistent improvement in both the total returns and risk-adjusted performance across all asset classes, in the post-implementation period, and the improvements in general were larger for the risk-adjusted performance. The lower overall risk-adjusted performance for balanced and equity ETF is mainly due to their poorer pre-implementation performance.

Table 8. Summary of ETF Monthly Gross Performance by Asset Class

Asset Class	Period	No. of Obs. (Fund x Month)	No. of Funds	Total Return (%/month) EW Mean	AW Mean	Gross Alpha (%/month) EW Mean	AW Mean	Average Age	Average AUM ($ millions)	Total AUM ($ billions)
Balanced	2013-2020	535	10	0.52	0.55	-0.27	-0.18	8.15	249.77	2.66
Balanced	2013-2016	261	6	0.48	0.44	-0.45	-0.41	6.52	213.93	1.23
Balanced	2017-2020	274	9	0.57	0.64	-0.09	-0.01	9.69	283.91	2.66
Equity	2013-2020	10759	190	0.78	0.88	-0.22	-0.18	7.28	480.37	100.87
Equity	2013-2016	3598	116	0.78	0.8	-0.5	-0.47	6.4	477.15	54
Equity	2017-2020	7161	188	0.78	0.93	-0.07	-0.03	7.72	481.98	100.87
Fixed Income	2013-2020	5342	94	0.31	0.32	-0.13	-0.16	6.88	592.91	55.71
Fixed Income	2013-2016	1867	54	0.23	0.2	-0.25	-0.28	5.7	561.2	33.4
Fixed Income	2017-2020	3475	94	0.35	0.37	-0.06	-0.09	7.51	610.3	55.71
Money Market	2013-2020	147	2	0.09	0.11	-0.21	-0.07	7.59	577.54	2.75
Money Market	2013-2016	51	2	0.05	0.06	-0.41	-0.39	6.68	97.75	0.48
Money Market	2017-2020	96	2	0.1	0.12	-0.1	-0.05	8.08	832.42	2.75

3.2.3 ETF Performance by Investing Strategy

a. Overview – *Number of Funds and Fund Assets by Investing Strategy*

The ETFs in our study sample employ an actively managed, passively managed, or strategic beta[23] investing strategy.

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[23] Strategic beta ETFs are products that apply rules to a basket of securities (often represented by an index) to target companies that demonstrate specific "factors" such as value, momentum, or growth. Strategic beta ETFs are also known by other names such as smart beta or alternative beta. There is no universally accepted view as to whether strategic

The distribution of ETFs by investing strategy is dominated by passively managed and strategic beta funds, whereas for mutual funds active fund management is the dominant investing strategy. Funds employing these two investing strategies account for 72% of funds and 85% of total AUM, of our ETF sample at the end of 2020.

Passively managed and strategic beta ETFs are, on average, older than actively managed ETFs (8.1 year, 6.5 years, and 5.6 years respectively).

b. 2013-2020 Findings

Strategic beta ETFs have the highest asset weighted average total returns (0.75%), followed by passively managed ETFs (0.67%), and then actively managed ETFs (0.53%). Despite having the lowest asset weighted average total returns, actively managed ETFs have the highest risk-adjusted performance, with a monthly asset weighted average gross alpha of -0.05%. The differences between the equal weighted and asset weighted averages suggest that fund size has more impact on the risk-adjusted returns than total returns, and among the investing strategies it impacts actively managed ETFs the most.

c. *Pre-implementation (2013-2016) and Post-implementation (2017-2020) Findings*

Comparing the results for the pre- and post-implementation periods, we find that all three investing strategies show improved risk-adjusted performance[24] in the post-implementation period. However, there were no consistent directional changes in total returns. Both passively managed and strategic beta ETFs have improvements in their asset weighted average risk-adjusted returns, and these improvements are greater than the asset weighted average risk-adjusted returns for actively managed ETFs. It is worth noting that the asset weighted average gross alpha for strategic beta ETFs turned positive in the post-implementation period, and this is the only instance, at the fund characteristic level, where we observe a positive gross alpha.

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beta ETFs are passively managed investment funds or actively managed investment funds. For the purpose of our research, we have classified strategic beta ETFs as passively managed funds because they focus on a specific basket of securities, often represented by an index.

[24] Improvements were seen in both the equal weighted and asset weighted gross risk adjusted performance, i.e., gross alpha.

Strategy	Period	No. of Obs. (Fund x Month)	No. of Funds	Total Return (%/month) EW Mean	AW Mean	Gross Alpha (%/month) EW Mean	AW Mean	Average Age	Average AUM ($ millions)	Total AUM ($ billions)
Active	2013-2020	3416	82	0.55	0.53	-0.14	-0.05	5.55	265.75	22.63
Active	2013-2016	820	32	0.56	0.64	-0.44	-0.25	4.35	201.45	9.03
Active	2017-2020	2596	82	0.55	0.5	-0.05	-0.01	5.93	285.7	22.63
Passive	2013-2020	9226	130	0.61	0.67	-0.2	-0.19	8.05	729.02	122.63
Passive	2013-2016	3688	102	0.54	0.54	-0.39	-0.41	6.77	637.76	69.91
Passive	2017-2020	5538	130	0.65	0.74	-0.07	-0.07	8.9	790.15	122.63
Strategic Beta	2013-2020	3949	79	0.68	0.75	-0.2	-0.12	6.45	223.27	15.69
Strategic Beta	2013-2016	1173	40	0.72	0.79	-0.49	-0.42	5.51	250.69	10.08
Strategic Beta	2017-2020	2776	79	0.66	0.73	-0.08	0.03	6.85	211.68	15.69

3.2.4 ETF Performance by IFM Firm Type

a. Overview – Number of Funds and Fund Assets by Investing Strategy

Table 10 presents the ETF performance findings by IFM firm type. The IFM firm types in our study sample are independent and bank-affiliated IFMs.

Our study sample is dominated by ETFs sponsored by independent IFMs (hereinafter independent ETFs). These ETFs account for 75% of funds and 73% of total AUM, at the end of 2020. In general, independent ETFs have larger average fund sizes than ETFs sponsored by bank-affiliated IFMs (hereinafter bank-sponsored ETFs). The average fund size was $522.3 million for independent ETFs and $477.4 million for bank-sponsored ETFs.

b. 2013-2020 Findings

We observed that in our sample the asset weighted average total returns and risk-adjusted returns for independent ETFs were 0.68% and -0.19%, respectively. The corresponding numbers for bank-sponsored ETFs were 0.62% and -0.11%. Again, while there appeared to be differences in performance between the two IFM types, caution should be exercised in interpreting them. First, the difference between bank- and independent-sponsored ETFs' performance in our sample is only marginally statistically significant.[25] Second, as noted earlier, this is the difference in the sample mean only and does not account for the difference in the distribution of ETFs sponsored by each IFM firm type. Finally, as emphasized in Section 4 below, this result may depend on the measure of performance and our specific sample of ETFs.

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[25] In our statistical tests, mentioned in footnote 10 above, for the ETF sample, we controlled for IFM firm type and found that the difference in performance between bank-sponsored ETFs and independent ETFs was only statistically significant at 5% level. This result is available upon request.

c. *Pre-implementation (2013-2016) and Post-implementation (2017-2020) Findings*

Comparing the pre- and post-implementation period results, we find that both bank and independent ETFs saw increased total returns and risk-adjusted performance, in the post-implementation period. The effect of fund size on performance varied by IFM firm type and time period.

Table 10. Summary of ETF Monthly Gross Performance by IFM Firm Type

Firm Type	Period	No. of Obs. (Fund x Month)	No. of Funds	Total Return (%/month) EW Mean	Total Return (%/month) AW Mean	Gross Alpha (%/month) EW Mean	Gross Alpha (%/month) AW Mean	Average Age	Average AUM ($ millions)	Total AUM ($ billions)
Independent	2013-2020	12439	221	0.61	0.68	-0.2	-0.19	7.47	522.27	118.91
Independent	2013-2016	4181	131	0.58	0.57	-0.42	-0.42	6.68	544.94	65.91
Independent	2017-2020	8258	221	0.63	0.73	-0.08	-0.06	7.87	510.75	118.91
Bank	2013-2020	4279	71	0.63	0.62	-0.16	-0.11	6.35	477.44	42.84
Bank	2013-2016	1579	44	0.59	0.54	-0.41	-0.29	4.88	344.86	22.99
Bank	2017-2020	2700	71	0.65	0.64	-0.01	-0.04	7.21	554.97	42.84

4. Limitations of Research Findings

We discuss several limitations of our research findings in this section of the report.

Our study is an observational study, and as such the documented increase in the risk-adjusted returns for mutual funds and ETFs should be interpreted as correlation rather than causation. We cannot exclude the possibility that some of the improvements in the risk-adjusted returns are driven by other structural changes in the investment fund industry, broader macroeconomic conditions, and/or proposed regulatory changes.

Second, there is no consensus or industry-wide accepted standard of fund performance measures that allow for comparable analysis of funds with diverse risk exposures.[26] A large body of literature on methodologies to evaluate fund performance has emerged since Jensen (1968). Each of these methodologies have their own advantages and disadvantages. Though our chosen performance measure based on the prominent Fama and French (2015) model is the most widely used in academics, there are some criticisms of using the model for this purpose. Most notably, as pointed out by Berk and van Binsbergen (2017), benchmarking performance against the Fama and French (2015) model builds on the premise that investors' next best investment opportunities are spanned by the portfolios mimicking the model factors. However, these portfolios are not truly investible because they do not include transaction costs.

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[26] See Elton (2020), Wermers (2011), and Ferson (2010) for comprehensive reviews of performance measures.

Finally, our research findings are based on a subset of mutual funds and ETFs, and as such our performance results may not be representative of the larger universe of mutual funds and ETFs. We caution readers from using our research results to make inferences about the performance of the broader universe of mutual funds and ETFs, from 2013 to 2020.

5. Conclusion

Post-implementation evaluation is crucial in the policy development cycle because it allows regulators to understand whether a newly introduced policy has been implemented as intended and is having the desired impacts and outcomes.

The purpose of this research is to examine the post-implementation impacts of the final phase of the Client Relationship Model (CRM2) amendments to National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations* on industry behaviour. We specifically wanted to examine whether greater transparency about investment returns, in the annual costs and performance reports, is leading to improved risk-adjusted performance.

We find that the risk-adjusted performance for both mutual funds and ETFs is negative for the entirety of our study period, but performance improves in the years after the annual costs and performance reports were implemented.

Although our study cannot practically control for every factor that may influence our research findings, the results help provide evidence that disclosure-based regulations may be an effective tool in shifting industry behaviour.

Appendix A – Research Design

a. Data Sources and Fund Coverage

The data sets that underpin our analysis were obtained directly from investment fund managers and third-party data providers, specifically ISS MI Investor Economics and Morningstar. Our data sets contained a total of 3,703 unique mutual funds for our study period. After filtering the funds by our selection criteria and eliminating funds with obvious reporting errors and missing data points our final sample size was 3,086 mutual funds and 299 ETFs. The 3,086 mutual funds were comprised of 13,356 unique fund series.

The following data points were sourced from ISS MI Investor Economics:

- Series type classification
- Investing strategy
- CIFSC classification (for ETFs only)

We use monthly returns and assets data from Morningstar Direct, and Product Type from investment fund managers.

b. Selection of Funds

The following criteria were used to select ETFs and mutual funds for inclusion in our analysis:

- The funds are domiciled in Canada and sold to Canadian retail investors[27]
- Mutual funds must be open-ended funds
- ETFs are Canadian listed ETFs
- Each fund must have gross monthly total return data for at least 36 consecutive months, between 2009 to 2020. Terminated and merged funds are included in our sample population if they can satisfy the monthly performance data criteria. These criteria were included to minimize survivorship bias in our sample population.

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[27] ETF assets include assets held by both retail and institutional investors. Mutual fund assets exclude mutual fund series sold to institutional investors.

c. Research Methodology

Investment performance evaluation has been studied extensively in the academic fund management literature.[28] Ever since the seminal paper by Jensen (1968), it has been established that in order to measure and compare fund performance, it is necessary to account for fund risk. Failure to do so would lead to a substantial overestimate of fund performance and an incorrect inference of average performance.[29] Moreover, subjecting fund returns to a common risk model renders an added bonus of making possible comparisons of fund performance among funds with diverse asset classes and risk exposures.

One of the most prominent models used to account for risk in the stock market is the Fama and French (2015) model, which has been found to explain patterns in stock returns consistently.[30]

Our approach to estimate risk-adjusted returns uses the Fama and French (2015) model, with five risk factors. We, however, include an additional bond factor, because our study sample includes both stock and bond funds.[31] The equation below is a mathematical representation of our performance model.[32]

$$R_{it} - R_{ft} - R_t^{USDCAD}$$
$$= \alpha_i + \beta_{iM}MKT_t + \beta_{iSMB}SMB_t + \beta_{iHML}HML_t + \beta_{iRMW}RMW_t$$
$$+ \qquad\qquad \beta_{iCMA}CMA_t + \beta_{iMOM}MOM_t + \beta_{iWB}WB_t + \varepsilon_{it}$$

Where:

- R_{it} is fund i's total returns (before expenses) in month t,
- R_{ft} is the risk-free rate, and
- R_t^{USDCAD} is the monthly change in the USD/CAD exchange rate.[33]

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[28] See Ferson (2010), Wermers (2011), and Elton (2020) for comprehensive reviews.

[29] See Elton et al. (1993 and 1996).

[30] See Cochrane (2005) and, more recently, Ferson (2019) for comprehensive reviews of empirical methods and models in finance.

[31] See Elton et al. (1996)

[32] In addition to estimating this model, we also estimated various permutations of the explanatory risk factors. We settled on this model because it produced the highest adjusted R squared on average. The adjusted R squared, one of the most common measures used for model selection, is a corrected "goodness-of-fit" measure for linear regression models. The adjusted R squared measures how well the predictor variables, in our case the risk factors, explain the estimated gross alpha. The higher the adjusted R squared, the better the model's explanatory power.

[33] We adjust a fund's returns for the USD/CAD exchange rate because while a funds' returns are measured in Canadian dollar, the explanatory risk factors on the right hand-side of our equation are measured in U.S. dollars.

The explanatory factors MKT_t, SMB_t, HML_t, RMW_t, and CMA_t represent the common risk factors of the Fama and French (2015) model for equities; and MOM_t is the Carhart (1997)'s momentum factor.[34] Finally, the factor WB_t is the excess returns on a value-weight portfolio of global and Canadian bond indices, which represents the risks for bonds.[35]

The regression equation above shows that a fund's total returns in excess of the risk-free rate and the Canadian exchange rate can be explained by the Fama and French factors and a bond factor. The slopes ($\beta_i s$) on the explanatory returns describe a fund's risk exposure to each of the common risk factors.

The intercept α_i, which is the fund's alpha, measures a fund's average returns in excess of the returns explained by exposures to the risk factors and captures the fund's before-fee risk-adjusted performance.[36] A positive alpha is interpreted as "outperformance" and a negative alpha as "underperformance", relative to the expected returns implied by the risk exposures.[37] This model, therefore, attempts to measure the degree to which variations in a fund's past performance are explained by variations in the six factors.

It is worth noting that the Fama and French factors and the momentum factor are not available for Canada, thus we follow Cumming et al. (2019) and use the North American factors, which comprise constituents from both the Canadian and U.S. markets. This choice can be justified by extensive evidence of stock market integration between Canada and the United States

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[34] Specifically, MKT, the market factor, is the return on the market portfolio in excess of the risk-free rate; and SMB, HML, RMW, CMA, and MOM are the returns on the value-weighted, zero-investment factor-mimicking portfolios for size, book-to-market ratio, profitability, investment, and one-year momentum in stock returns. For details of how to construct the Fama and French (2015) factors, please refer to Prof. Kenneth French's webpage at https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html#Benchmarks.

[35] The bond indices are total returns index, including the Bloomberg Barclays Global Aggregate Bond Index, Bloomberg Barclays Global High Yield Index, Bloomberg Barclays Global Inflation Linked Index, and Bloomberg Barclays Canadian Aggregate Bond Index.

[36] Note that the risk factors include the returns for both the equity and bond markets that are subtracted from total returns when calculating alpha. Hence, unlike total returns, the risk-adjusted return or alpha is independent of the equity and bond market performance.

[37] We caution that risk-adjusted return is defined, and therefore, must be interpreted within the context of a specific risk model that has been selected to benchmark a fund's performance. Our chosen version of the Fama and French (2015) model may not be the performance benchmark that an IFM has chosen for its funds. Consequently, a fund's negative risk-adjusted returns based on our estimation simply means that the fund' expected returns is lower than the expected returns of our model and does not necessarily imply a loss of wealth for the fund's investors.

due to their comprehensive economic ties.[38] More importantly, the use of these factors is supported by the high values of adjusted R^2 when estimating the above equation. The average adjusted R^2 is 88.4% and 84.3% for mutual funds and ETFs, respectively, indicating that about 84% to 88% of the variations in sample funds' returns are accounted for by the factors in our model.

We use a rolling-regression procedure to estimate the monthly risk-adjusted performance for each fund in our sample. For every month in our study period, we regress the gross total returns of each mutual fund series or ETF on the risk factors for the previous three years. The rolling regression provides time-varying estimates that can account for changes in market dynamics. Given that all mutual fund series of the same fund share a common underlying portfolio, the returns at the mutual fund series level should be similar.[39] Following conventions in mutual fund performance research we aggregate the series level estimates (using asset-weighted average) of the same fund to obtain the fund's overall risk-adjusted performance.[40]

We then derived equal weighted and asset weighted averages of fund performance, to compare performance by time periods and fund characteristics. The equal weighted performance metric represents a fund's performance on average, while the asset weighted average performance metric takes into account the effects of a fund's assets size on performance.

We perform statistical tests for our hypothesis using t-tests and regressions. The results are available for interested readers upon request.

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[38] See, for example, Harvey (1991), Mittoo (1992), Mussa and Goldstein (1993), Faff and Mittoo (2003), Glimore and McManus (2004), Bekaert et al. (2007), and Pukthuanthong and Roll (2009)).
[39] See Morningstar (2006) for details.
[40] See, for example, Ferson and Lin (2014) and Fama and French (2015) among others.

Bibliography

Bekaert, G., Harvey, C.R., Lundblad, C. and S. Siegel, 2007. *Global growth opportunities and market integration.* The Journal of Finance 62: 1081 – 1137.

Berk, J. B. and R. C. Green, 2004. *Mutual fund flows and performance in rational markets*. Journal of Political Economy 112: 1269 – 1295.

Berk, J. B. and J. H. van Binsbergen, 2017. *Mutual funds in equilibrium*. Annual Review of Financial Economics 9: 147 – 167.

Bloomberg, 2018. *Bloomberg Barclays Methodology*.

Brown, D. P. and Y. Wu, 2016. *Mutual fund flows and cross-fund learning within families*. Journal of Finance 71: 383 – 424.

Brown, S., Goetzmann, W., Liang, B., and C. Schwarz, 2008. *Mandatory disclosure and operational risk: Evidence from hedge fund registration*. Journal of Finance 63: 2785 – 2815.

Carhart, M.M., 1997. *On Persistence in Mutual Fund Performance.* The Journal of Finance 52: 57 – 82.

Cochrane, J.H., 2005. *Asset Pricing: Revised Edition*. Princeton University Press, Princeton.

Cumming, D. J., Johan, S. A., and Y. Zhang, 2019. *What is Mutual Fund Flow?* Journal of International Financial Markets, Institutions and Money 62: 222 – 251.

Dranove, D. and G. Z. Jin, 2010. *Quality Disclosure: Theory and Practice.* Journal of Economic Literature 48: 935 – 963.

Evans, R. B., 2010. *Mutual fund incubation*. Journal of Finance 66: 1581 – 1611.

Elton, E. J., Gruber, M. J., Da, S. and M. Hlavka, 1993. *Efficiency with costly information: A reinterpretation of evidence for managed portfolios*. Review of Financial Studies 6: 1 – 22. Elton, E. J., Gruber, M. J. and C. R. Blake, 1996. The persistence of risk-adjusted mutual fund performance. Journal of Business 69: 133 – 157.

Elton, E. J., Gruber, M. J. and C. R. Blake, 1996. *Survivorship bias and mutual fund performance*. Review of Financial Studies 9: 1097 – 1120.

Elton, E. J. and C. R. Blake, 2013. *Mutual Funds*. Financial Markets and Asset Pricing: Handbooks of Economics and Finance. Edited by Constantinides, Harris, and Stulz.

Elton, E. J., M. J. Gruber and A. de Souza, 2019. *Passive mutual funds and ETFS: Performance and Comparison*. Journal of Banking and Finance 106: 265 – 275.

Faff, R. W. and U. R. Mittoo, 2003. *Capital market integration and industrial structure: the case of Australia, Canada and the United States.* Journal of Economic Integration: 433 – 465.

Fama, E. F. and K. R. French, 1993. *Common risk factors in the returns on stocks and bonds*. Journal of Financial Economics 33: 3 – 56.

Fama, E. F. and K. R. French, 2010. *Luck versus skills in the cross-section of mutual fund returns*. Journal of Finance 65: 1915 – 1947.

Fama, E. F. and K. R. French, 2015. *A five-factor asset pricing model*. Journal of Financial Economics 116: 1 – 22.

Ferson, W. E., 2019. Empirical Asset Pricing Models and Methods. The MIT Press, Cambridge, Massachussets.

Ferson, W. E., 2010. *Investment performance evaluation*. Annual Review of Financial Economics 2: 207 – 234.

Ferson, W. E. and J. Lin, 2014. *Alpha and performance measurement: The effect of investor disagreement and heterogeneity*. Journal of Finance 69: 1565 – 1596.

Gil-Bazo, J. and P. Ruiz-Verdu, 2009. *The relation between price and performance in mutual fund industry*. Journal of Finance 64: 2153 – 2183.

Gilmore, C.G. and G. M. McManus, 2004. *The impact of NAFTA on the integration of the Canadian, Mexican, and U.S. equity markets*. North American Economic and Financial Integration (Research in Global Strategic Management, Vol. 10): 137 – 151. Edited by Rugman.

George, T. J. and C. Y. Hwang, 2015. *Disclosure policy of investment funds*. Quarterly Journal of Finance 5: 1 – 49.

Guercio, D. and J. Reuter, 2014. *Mutual fund performance and the incentive to generate alpha*. Journal of Finance 69: 1673 – 1704.

Honigsberg, C., 2019. *Hedge fund regulation and fund governance: Evidence on the effects of mandatory disclosure rules*. Journal of Accounting Research 57: 845 – 888.

Harvey, C. R., 1991. *The world price of covariance risk.* The Journal of Finance 46: 111 – 157.

Investor Economics, 2021. *Insight Report January 2021*.

Jensen, M. C., 1968. *The performance of mutual funds in the period: 1945 – 1964.* Journal of Finance 23: 389 – 416.

Leuz, C. and P. D. Wysocki, 2016. *The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research*. Journal of Accounting Research 54: 525 – 622.

Mittoo, U. R., 1992. *Additional evidence on integration in the Canadian stock market*. The Journal of Finance 47: 2035 – 2054.

Morningstar Research, 2006. *Standard performance calculation methodology.*

Morningstar Research, 2018. *Morningstar strategic beta and index attributes – Methodology.*

Mussa, M. M. and M. M. Goldstein, 1993. *The integration of world capital markets*. International Monetary Fund.

Pukthuanthong, K. and R. Roll, 2009. *Global market integration: An alternative measure and its application*. Journal of Financial Economics 94: 214 – 232.

Shi, Z., 2017. *The impact of portfolio disclosure on hedge fund performance*. Journal of Financial Economics 126: 36 – 53.

Wermers, R., 2000. *Mutual fund performance: An empirical decomposition into stock-picking talent, style, transaction costs, and expenses*. Journal of Finance 55: 1655 – 1695.

Zingales, L., 2019. *The future of securities regulations*. Journal of Accounting Research 47: 391 – 425.