ADDENDA
CAPITAL

Toronto Investment Board

Presented by:

Christian Robert, CFA, FCIA, FSA
Vice-President, Investment Solutions and Liability Driven Investment

John Stilo, CFA
Senior Portfolio Manager, Core Fixed Income

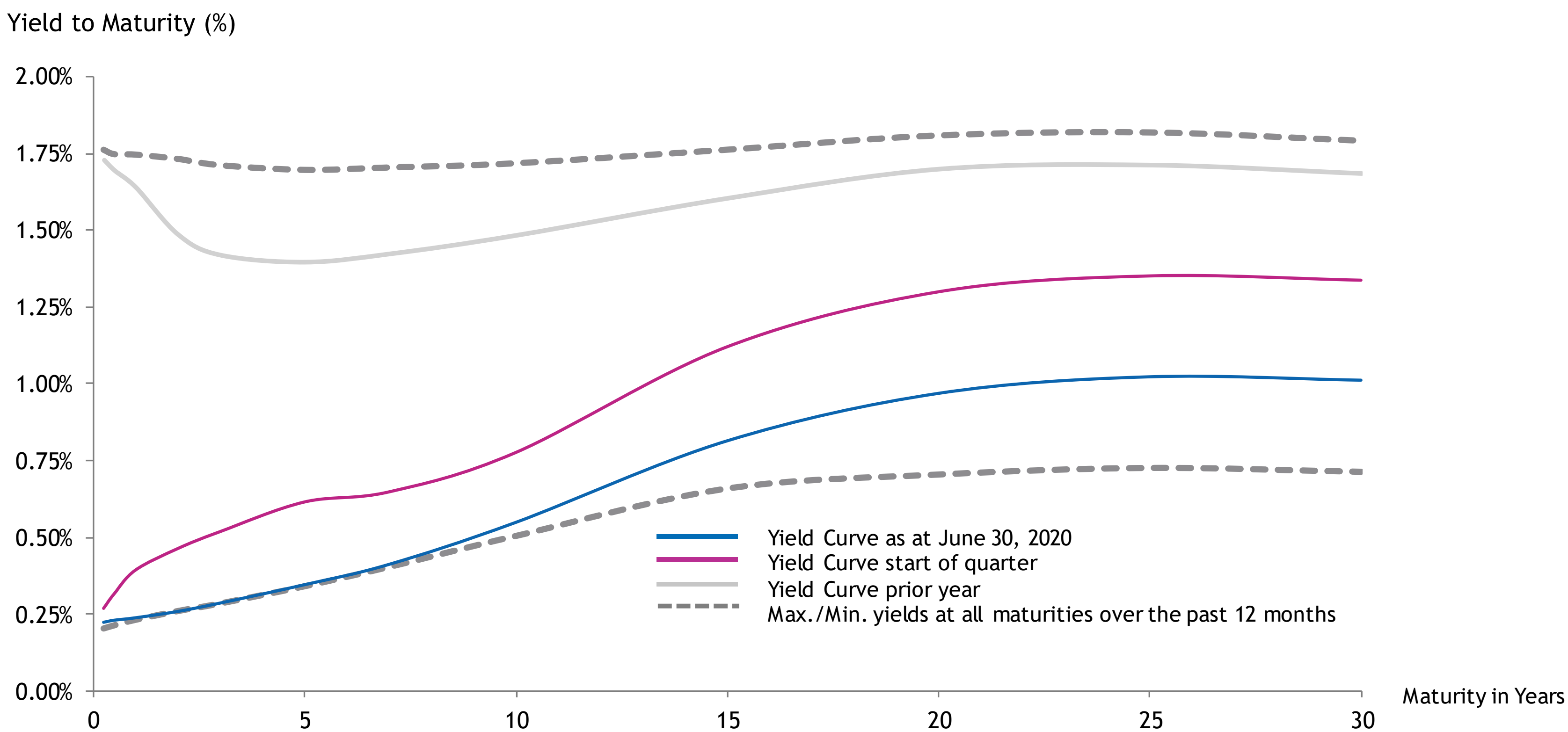
Dan Lavric, CFA
Portfolio Manager, Core Fixed Income

Presented on July 8, 2020

Discussion Topics

Market Review

Government of Canada Interest Rates in 2020

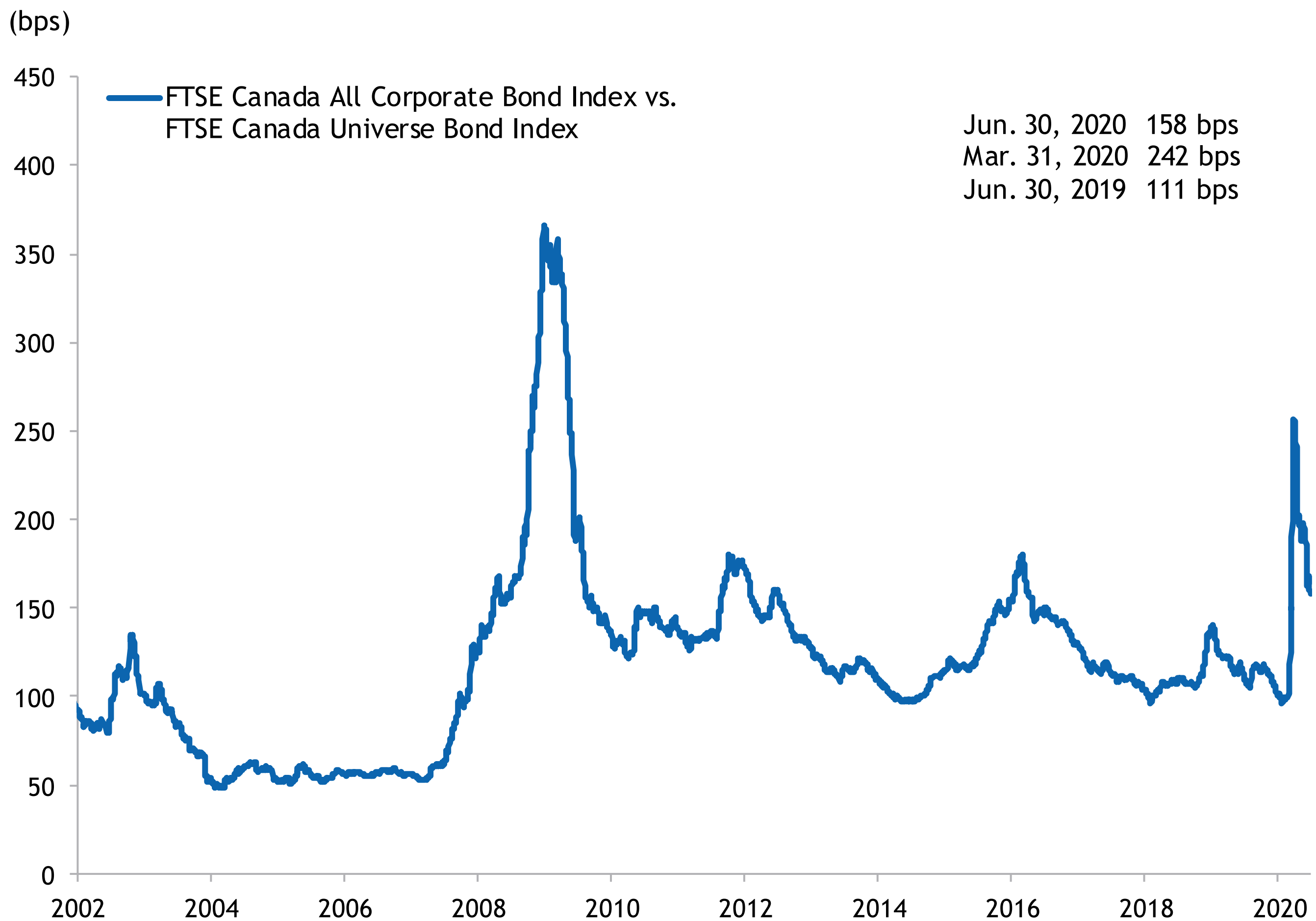


	CAN 3m	CAN 6m	CAN 1y	CAN 2y	CAN 3y	CAN 5y	CAN 7y	CAN 10y	CAN 15y	CAN 20y	CAN 25y	CAN 30y
2020-06-30	0.22%	0.23%	0.24%	0.26%	0.29%	0.35%	0.41%	0.55%	0.81%	0.97%	1.02%	1.01%
2020-03-31	0.27%	0.32%	0.39%	0.46%	0.52%	0.62%	0.65%	0.78%	1.12%	1.30%	1.35%	1.34%
2019-06-28	1.73%	1.69%	1.64%	1.48%	1.42%	1.40%	1.42%	1.48%	1.60%	1.70%	1.71%	1.68%

As at June 30, 2020

Note: Yields are calculated using constant maturity par yields generated by the Addenda Capital yield curve algorithm. The estimated yield curves are based on FTSE Canada daily prices.
Sources: FTSE Canada, Addenda Capital

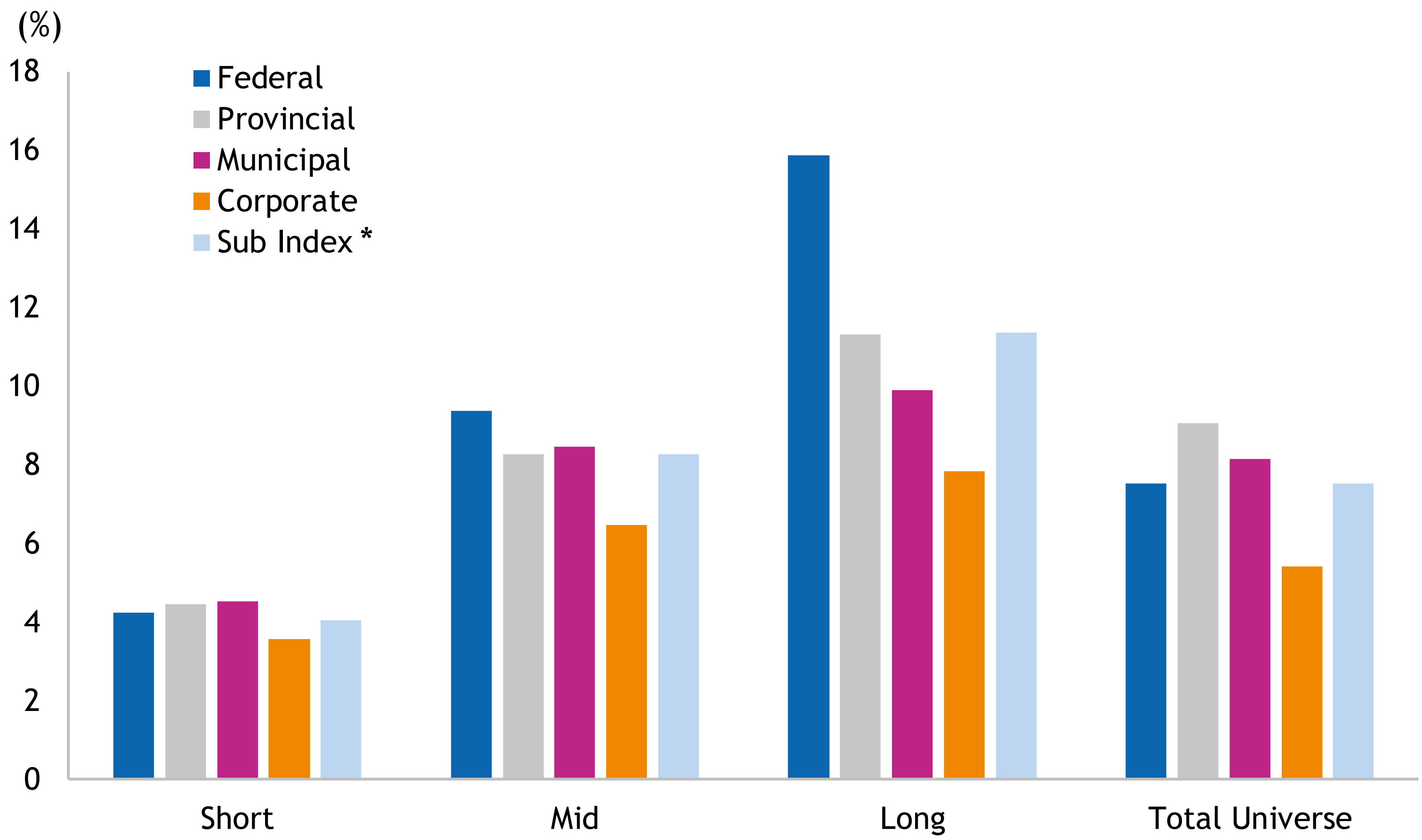
Universe Corporate Bond Spreads



As at June 30, 2020

Sources: FTSE Canada, Addenda Capital

Canadian Bond Market Returns

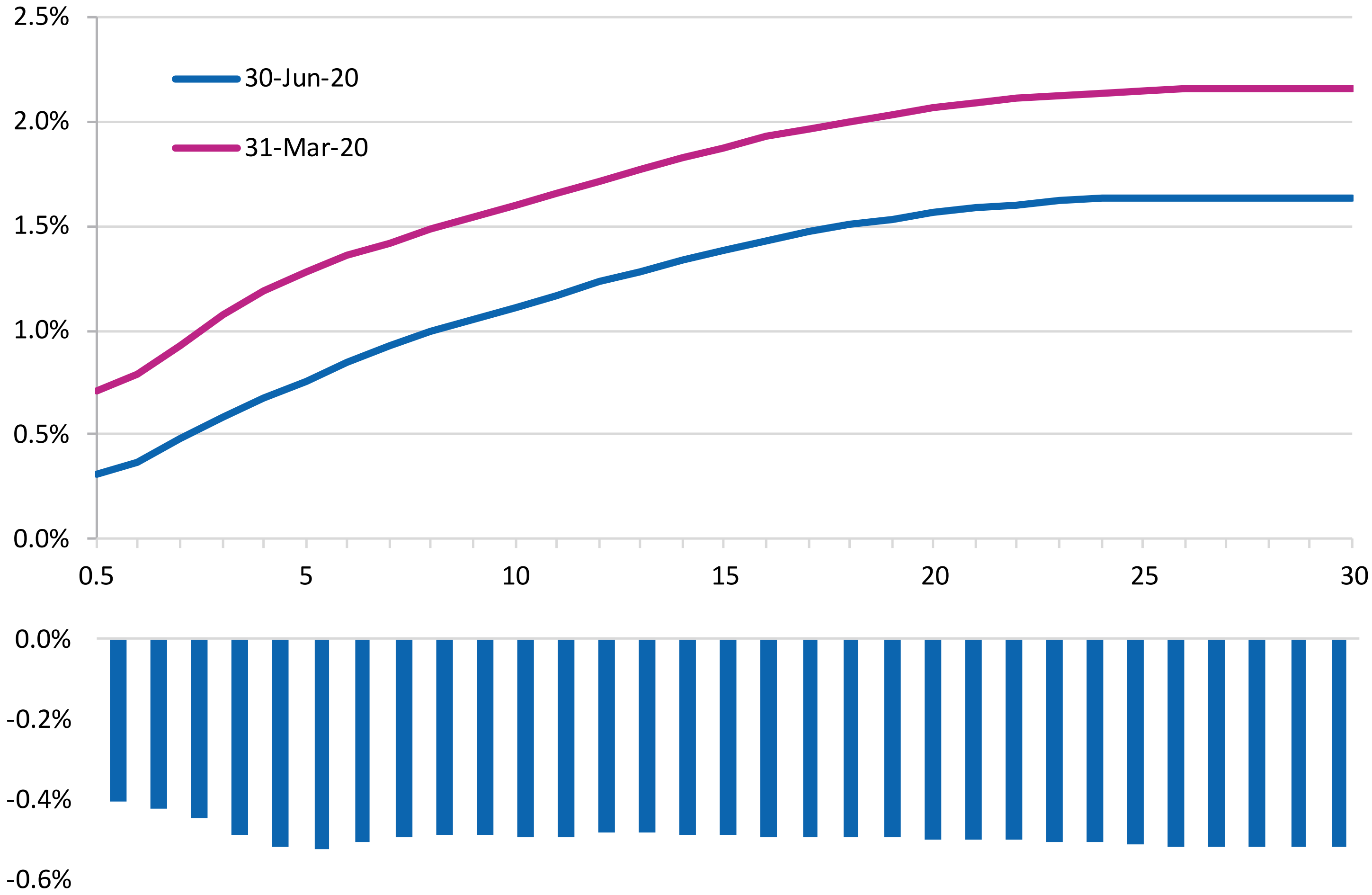


For the 6 month period ending June 30, 2020

* The sub-index refers to the portion of the FTSE Canada Universe Bond Index for each maturity segment.
Sources: FTSE Canada, Addenda Capital

Portfolio Performance and Characteristics

Liability Discount Curve



** Discount Curve Composition 43% Federal, 43% Provincial, 14% Corporate*

As at June 30, 2020

Source: Addenda Capital

Master Account Sinking Fund - Q1 2020 Returns

Summary of Performance Results
For the period ending March 31, 2020

				ANNUALIZED RETURNS					
	1 month	Quarter to date	Year to date	1 yr	2 yrs	3 yrs	4 yrs	5 yrs	Start (2019-06-30)
A1327	-6.40%	-1.85%	-1.85%	-	-	-	-	-	-1.44%
Benchmark Index *	-1.94%	3.93%	3.93%	-	-	-	-	-	3.95%
Added Value	-446	-578	-578	-	-	-	-	-	-539

	ANNUAL RETURNS AS OF DECEMBER 31								
	2019	2018	2017	2016	2015	2014	2013	2012	2011
A1327	-	-	-	-	-	-	-	-	-
Benchmark Index *	-	-	-	-	-	-	-	-	-
Added Value	-	-	-	-	-	-	-	-	-

The portfolio's performance returns are calculated using the time-weighted rate of return methodology and represent total returns (including income, realized and non-realized gains and losses). The performance results exclude the portfolio's management and custodian fees. Valuations and rates of returns are computed and stated in the portfolio's base currency.
For the Addenda Pooled Funds, the investment performance is net of the Funds' administrative expenses (custodian, audit, and others). In addition, certain series are net of the Funds' management and performance fees, if applicable.

* Benchmark Index : Toronto Aggregate Liability Benchmark

- Underperformance during Q1 was attributable to the portfolio's higher spread duration contribution than the liability index composition. Primarily due to the large concentration of provincial stripped coupons.
- Liquidity strains in March at the beginning of the economic shutdown caused stripped bond spreads to widen 60-70bps. The higher corporate credit duration contribution also had a negative impact on a relative basis.

Master Account Sinking Fund – Q2 2020 Returns

Summary of Performance Results
For the period ending June 30, 2020

					ANNUALIZED RETURNS				
	1 month	Quarter to date	Year to date	1 yr	2 yrs	3 yrs	4 yrs	5 yrs	Start (2019-06-30)
A1327	3.66%	10.58%	8.54%	8.99%	-	-	-	-	8.96%
Benchmark Index *	2.41%	7.60%	11.83%	11.85%	-	-	-	-	11.82%
Added Value	**125**	**298**	**-329**	**-286**	**-**	**-**	**-**	**-**	**-286**

	ANNUAL RETURNS AS OF DECEMBER 31								
	2019	2018	2017	2016	2015	2014	2013	2012	2011
A1327	-	-	-	-	-	-	-	-	-
Benchmark Index *	-	-	-	-	-	-	-	-	-
Added Value	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

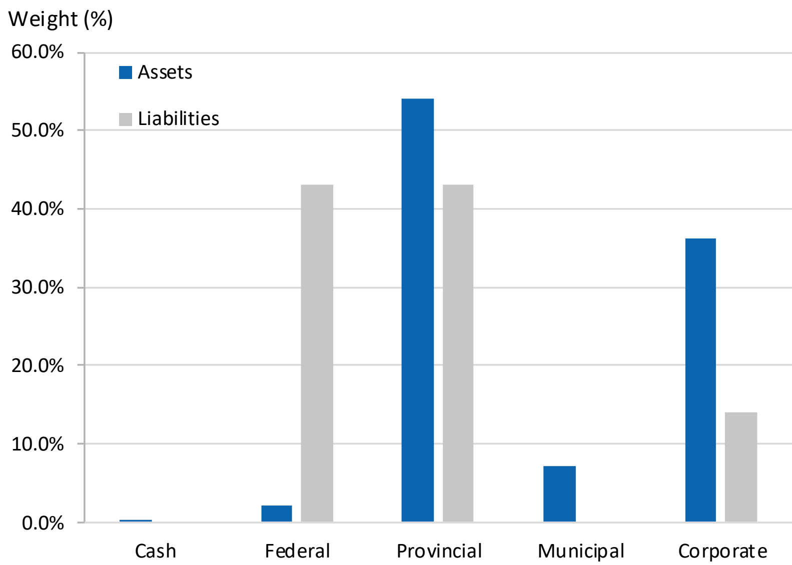
The portfolio's performance returns are calculated using the time-weighted rate of return methodology and represent total returns (including income, realized and non-realized gains and losses). The performance results exclude the portfolio's management and custodian fees. Valuations and rates of returns are computed and stated in the portfolio's base currency.
For the Addenda Pooled Funds, the investment performance is net of the Funds' administrative expenses (custodian, audit, and others). In addition, certain series are net of the Funds' management and performance fees, if applicable.

* Benchmark Index : Toronto Aggregate Liability Benchmark

- Q2 outperformance was driven by a reversal of the influencing factors in Q1. Market dislocations were alleviated by the large monetary stimulus and credit spreads in both corporate and provincial sectors narrowed materially.
- The central banks' commitment to lower rates and liquidity contributed to the overall strong performance in Q2.

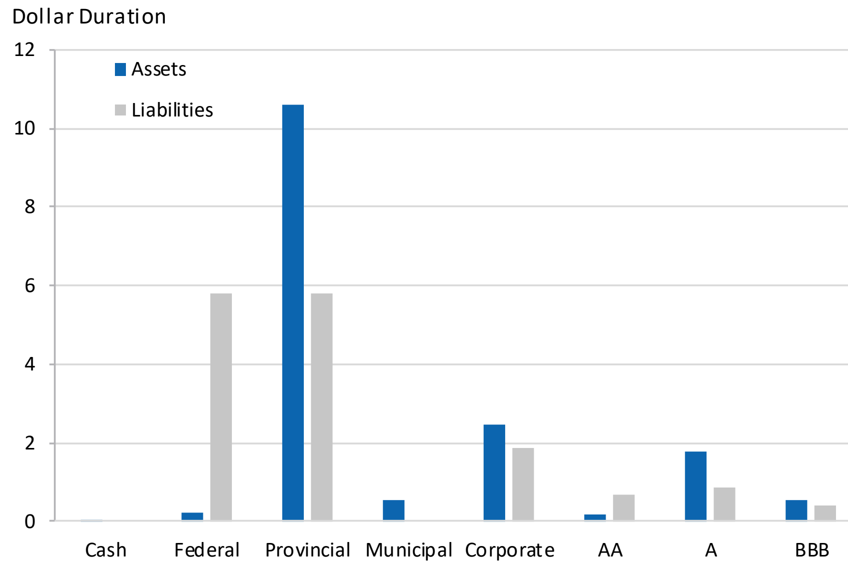
Portfolio Characteristics

Sector Weights



Weights	Assets	Liabilities
Cash	0.2%	0.0%
Federal	2.2%	43.0%
Provincial	54.1%	43.0%
Municipal	7.2%	0.0%
Corporate	36.3%	14.0%

Sector Duration Contribution



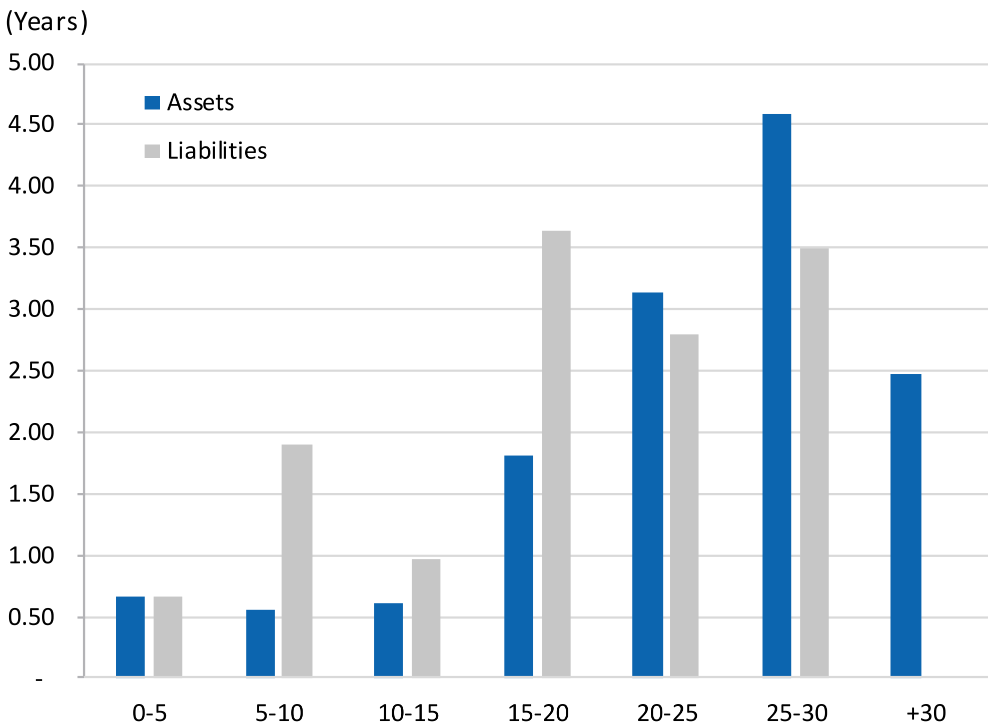
Duration Contribution	Assets	Liabilities
Cash	0.00	0.00
Federal	0.21	5.78
Provincial	10.62	5.78
Municipal	0.54	0.00
Corporate	2.46	1.88
AA	0.18	0.66
A	1.75	0.85
BBB	0.52	0.38
Total	13.82	13.45

As at June 30, 2020

Source: Addenda Capital

Risk Characteristics

Key Rate Durations



Risk Summary	Assets	Liabilities
Duration	13.82	13.45
Convexity Adjustment	0.96	0.67
Average Term	14.9	13.2
Average Yield	1.81%	1.12%

Key Rate Durations	Assets	Liabilities
0-5	0.66	0.67
5-10	0.55	1.90
10-15	0.62	0.96
15-20	1.81	3.64
20-25	3.14	2.79
25-30	4.59	3.50
+30	2.47	0.00

As at June 30, 2020

Source: Addenda Capital

Portfolio Activity Summary

- Modest duration reduction to address inclusion of the new liabilities as several new 10yr issues brought the average duration down slightly
- Reduced spread duration contribution in the corporate credit component as credit spreads have narrowed
- Relative value opportunities enabled the reduction of some energy sector exposure and the reduction of spread duration contribution in this sector
- Added to the infrastructure and financial sectors as spreads widened
- Small real estate sector exposure removed based on our outlook for longer term fundamental challenges for the real estate market

As of June 30, 2020

Impact Positioning

Impact Investments Exposure in the Portfolio

Impact Themes and Categories	Market Values ($M)	Weight (%)
Climate Change	**102.2**	**19.2**
Clean Transportation	7.1	1.3
Renewable Energy	95.1	17.9
Community Development	**10.3**	**2.0**
Credit Unions	7.9	1.5
Development Finance	2.4	0.5
Health and Wellness	**4.4**	**0.8**
Hospitals	4.4	0.8
Total	**116.9**	**22**

As at June 30, 2020

Market Outlook

2020 Strategy Themes

Macro Themes

- Depth of the initial shock from the pandemic is becoming clear. Duration of contraction and the path of recovery is less certain.

→ Portfolio Strategy: Manage interest rate risk (portfolio relative duration) with a long bias.

- The economy and financial markets will continue to rely heavily on monetary and fiscal policy.

→ Portfolio Strategy: Potential for the yield curve to steepen due to worries about the economic recovery and inflation.

- Liquidity issues alleviated in the short term by extraordinary policy measures. Solvency risks remain longer term.

→ Portfolio Strategy: Conservative and selective risk taking in credit

Credit Themes

- Provincial and corporate credits are supported by monetary and fiscal policy measures.

→ Portfolio Strategy: Focus on high-quality fundamentals and securities less sensitive to the weak economy.

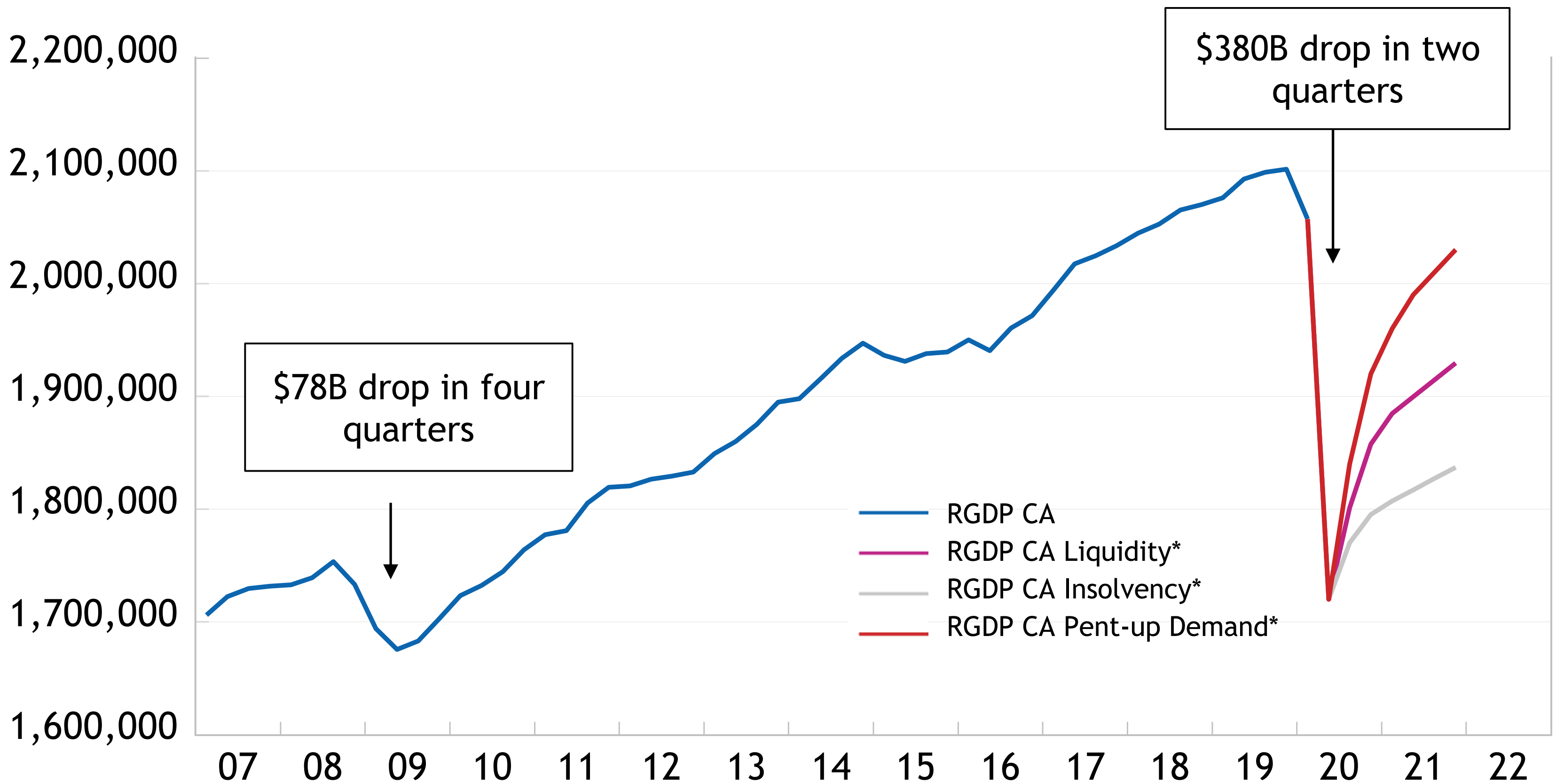
- Uncertainty surrounding the evolution of the pandemic and economic weakness suggests caution.

→ Portfolio Strategy: Reducing spread duration and looking to add to credit and security specific risks at wider spreads opportunistically.

Appendix

COVID-19 in Canada: Five Times Larger Than in 2008-2009

Level of Real GDP ($M)

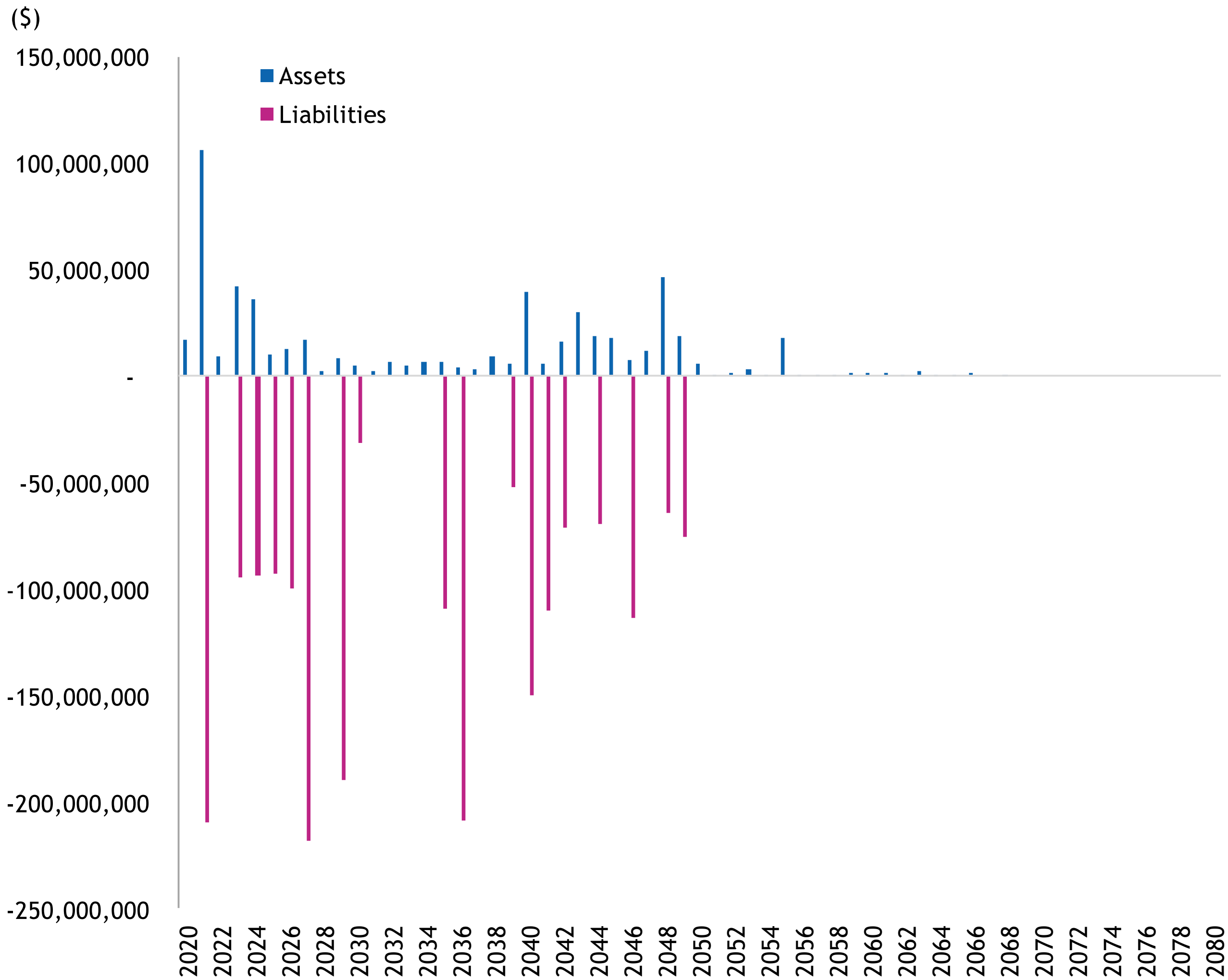


A More Severe Shock in Canada:
a) Major shock to the price of oil
b) High level of consumer debt (pent-up demand is not as strong)

Au at June 4, 2020

*The Real GDP Liquidity, Insolvency, and Pent-up Demand scenarios indicated above are forecasts.
Sources: Refinitiv, Addenda Capital

Cash Flow Present Values - Annual



As of June 30, 2020

Source Addenda Capital

Liability Benchmark Composition Changes

Date	Benchmark Activity	Related Issue	Par Issue Amount	Benchmark Notional Liability
02-Jul-19	Maturity	4.50% 2019-12-02	-280,000,000	-140,000,000
01-Nov-19	Addition	2.65% 2029-11-09	300,000,000	105,000,000
01-Nov-19	Addition	2.60% 2039-09-24	200,000,000	70,000,000
22-Nov-19	Addition	2.80% 2049-11-22	350,000,000	122,500,000
16-Dec-19	Addition	2.65% 2029-11-09	100,000,000	35,000,000
15-May-20	Addition	2.65% 2029-11-09	200,000,000	70,000,000
30-Jun-20	Addition	1.60% 2030-12-02	100,000,000	35,000,000

As of June 30, 2020

Source: Addenda Capital

Monetary & Fiscal Policy Response Highlights

Country	Monetary	Fiscal

Canada	• Policy rate lowered 150bps
	• Large scale asset purchases:
	  ◦ *Money market – Provincial T-Bills, BA's, commercial paper*
	  ◦ *Government of Canada Bonds*
	  ◦ *CMBs ($500 mln/week)*
	  ◦ *Provincial bond ($50 bln max)*
	  ◦ *Corporate Bons ($10 bln max)*
	• CMHC purchase up to $150 bln of insured mortgage pools
	• Easing of OSFI regulations, reporting requirements
		• $153 bln direct heath crisis stimulus (wage, subsidies, grants, tax credits)
		• $86 bln in lending for businesses
		• $85 bln in tax deferrals

United States	• Policy rate lowered 150bps
	• Increased / expanded repo operations
	• Uncapped Treasury / MBS purchases
	• Purchase Facilities:
	  ◦ CPPF – *Commercial Paper Purchase Facility*
	  ◦ MMLF – *Money Market Liquidity Facility*
	  ◦ PPDCF- *Primary Dealer Credit Facility*
	  ◦ PMCCF, SMCCF – *Primary & Secondary Mkt Corp Credit Facility*
	  ◦ TALF – *Term Asset Backed Lending*
	  ◦ PPPLF - *Paycheck Protection Program Lending Facility*
		• $8.3 bln for research & medical supplies
		• $105 bln relief packages for sick leave pay
		• $2 tln stimulus
		  ◦ *Cash to individuals*
		  ◦ *Loans to corporations & state and local govt's*
		  ◦ *$350 bln paycheck protection program (PPP)*
		• $484 bln stimulus ($320 PPP top-up)

As at June 1, 2020

Source: National Bank Financial, Addenda Capital

Disclaimer

FTSE Canada

London Stock Exchange Group plc and its group undertakings (collectively, the "LSE Group"). © LSE Group 2020. FTSE Russell is a trading name of certain of the LSE Group companies. "FTSE®", "Russell®" and "FTSE Russell®" are trade marks of the relevant LSE Group companies and are used by any other LSE Group company under license. All rights in the FTSE Russell indexes or data vest in the relevant LSE Group company which owns the index or the data. Neither LSE Group nor its licensors accept any liability for any errors or omissions in the indexes or data and no party may rely on any indexes or data contained in this communication. No further distribution of data from the LSE Group is permitted without the relevant LSE Group company's express written consent. The LSE Group does not promote, sponsor or endorse the content of this communication.

S&P Dow Jones Indices LLC.

The S&P 500 Index, S&P/TSX Composite, S&P/TSX 60, S&P/TSX Capped REIT, and the Dow Jones Canada Select Dividend Index, ("INDICIES") are products of S&P Dow Jones Indices LLC ("SPDJI"), and have been licensed for use by Addenda Capital Inc. ("Addenda") Standard & Poor's®, S&P® and S&P 500® are registered trademarks of Standard & Poor's Financial Services LLC ("S&P"); Dow Jones® is a registered trademark of Dow Jones Trademark Holdings LLC ("Dow Jones"); and these trademarks have been licensed for use by SPDJI and sublicensed for certain purposes by **Addenda. Addenda**'s Product(s) is not sponsored, endorsed, sold or promoted by SPDJI, Dow Jones, S&P, their respective affiliates, and none of such parties make any representation regarding the advisability of investing in such product(s) nor do they have any liability for any errors, omissions, or interruptions of the indices.

Refer to the Pooled Fund investment policies for more details regarding investment constraints.

Unless otherwise specified, assets are presented in Canadian dollars.