MFA's Diversified Multi-asset Class Fund

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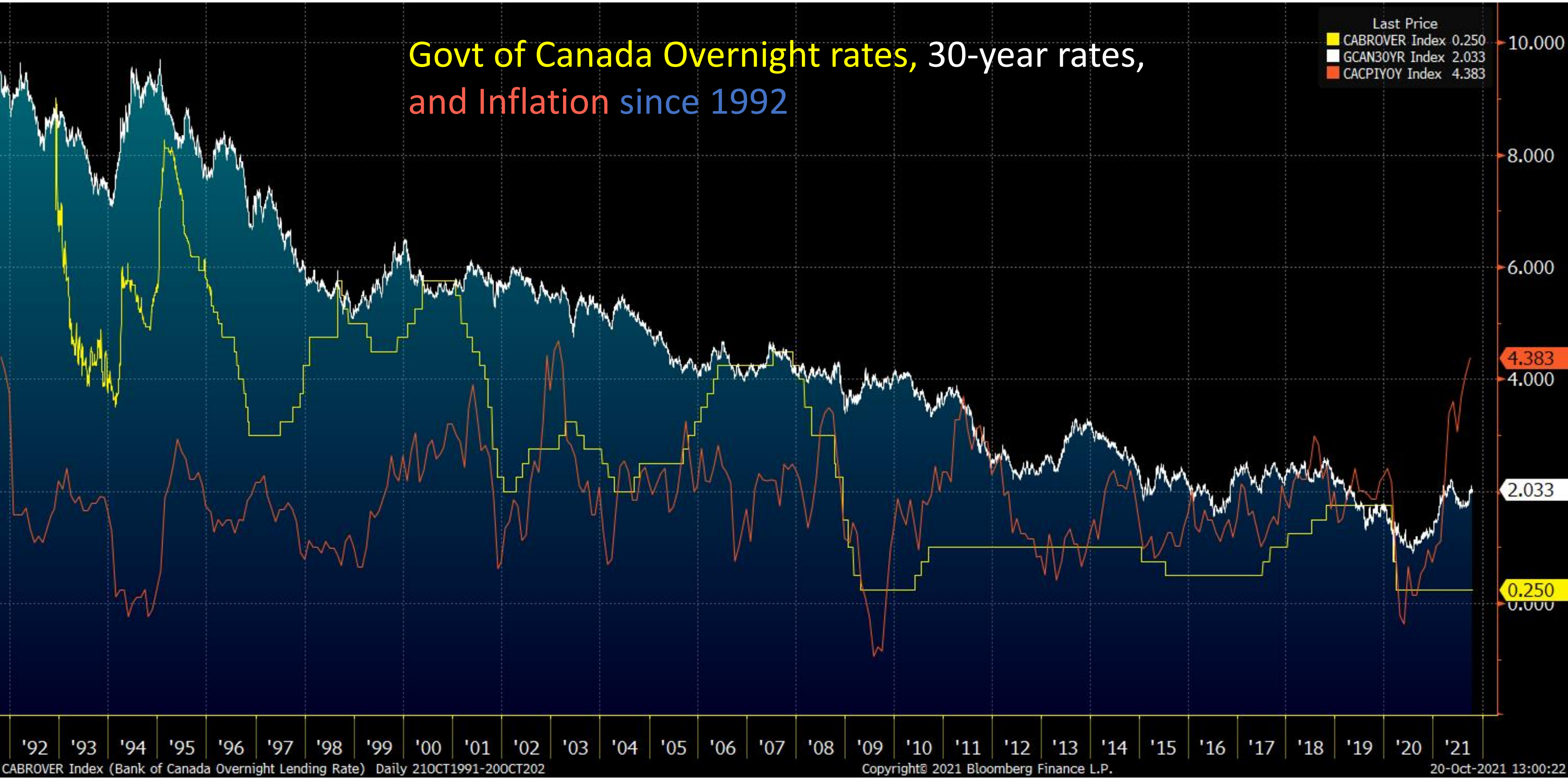
Executive Summary – MFA DMAC

- MFA is offering a new **optional** investment vehicle intended for **long-term** investments by BC local governments ("LGs"): The Diversified Multi-Asset Class pooled investment fund ("DMAC")
- In order to support long-term capital growth and reduce certain risks, MFA endorses the ability for **well-suited** LGs to diversify a portion of investments into a professionally-managed global portfolio of stocks, bonds and alternative assets
- Several jurisdictions already have allowed expanded investment options for LGs for many years (Alberta, Saskatchewan, Ontario, Nova Scotia)
- A multi-asset class global portfolio can offer superior risk-adjusted returns and can enhance some risk characteristics of a fixed-income only reserves portfolio - **as long as the time horizon for the investment is truly long-term in nature**
- The DMAC Fund <u>is not</u> appropriate <u>for all</u> LGs. While MFA will help educate and support LGs, <u>LGs will need to do their own due diligence</u> before investing. LGs are considered professional investors by Canadian securities regulators
- In addition to strict on-boarding requirements (by MFA) to ensure suitability prior to entering into the Fund, the Province has imposed an investment limit of 10 or 25% of a LG's prior years' 'Total Year-end Cash & Investments'

Fixed income investments are likely over-valued

Investors have done well by owning long-term bonds over the last 25 years - as interest rates have fallen. However, locking in long-term interest rates at today's low rates is very risky



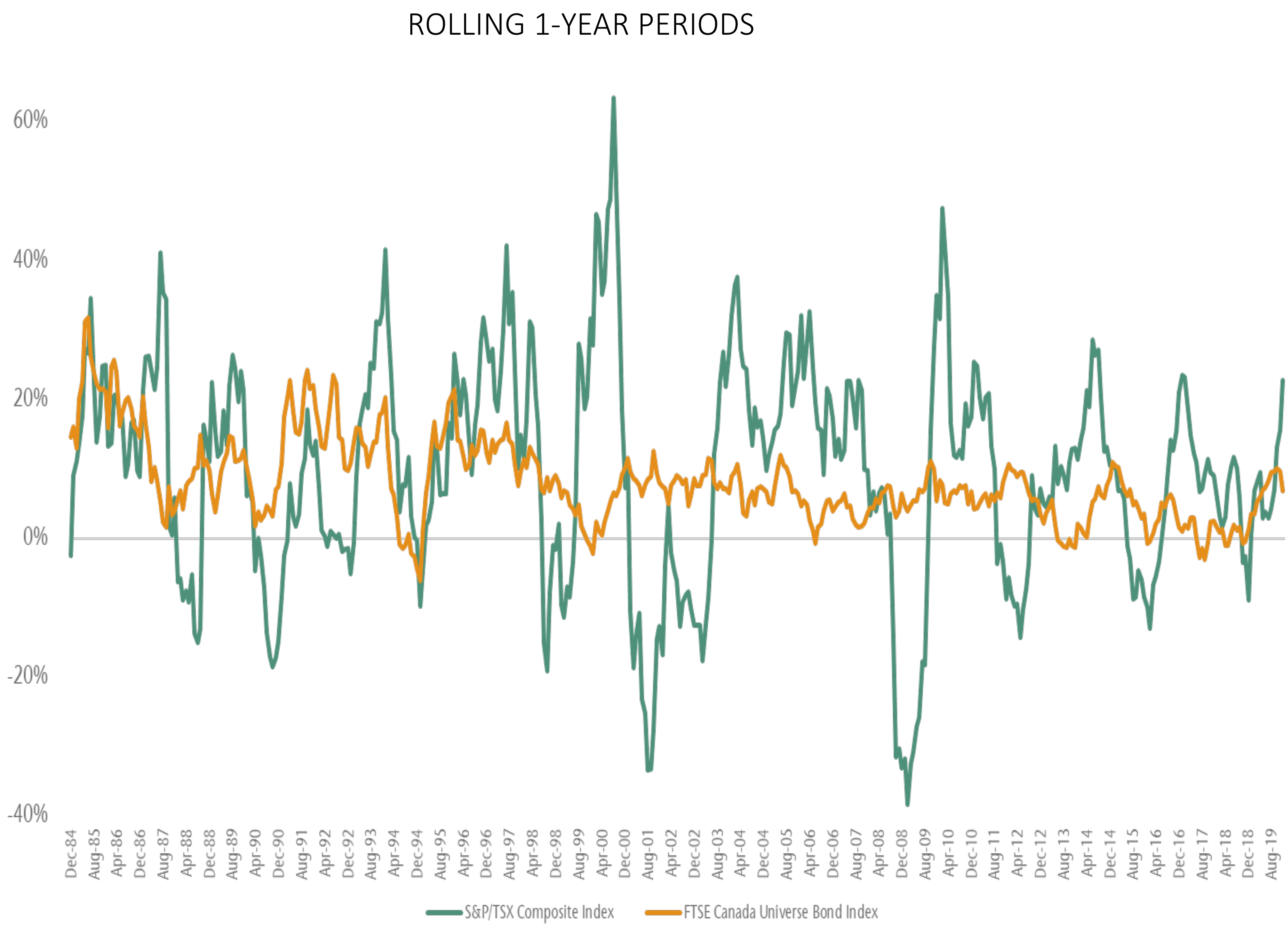
10-year Performance Projections: Various Asset Mixes

Investing in bonds alone is likely not a suitable strategy for long-term portfolios which are aimed at funding long-term capital investments

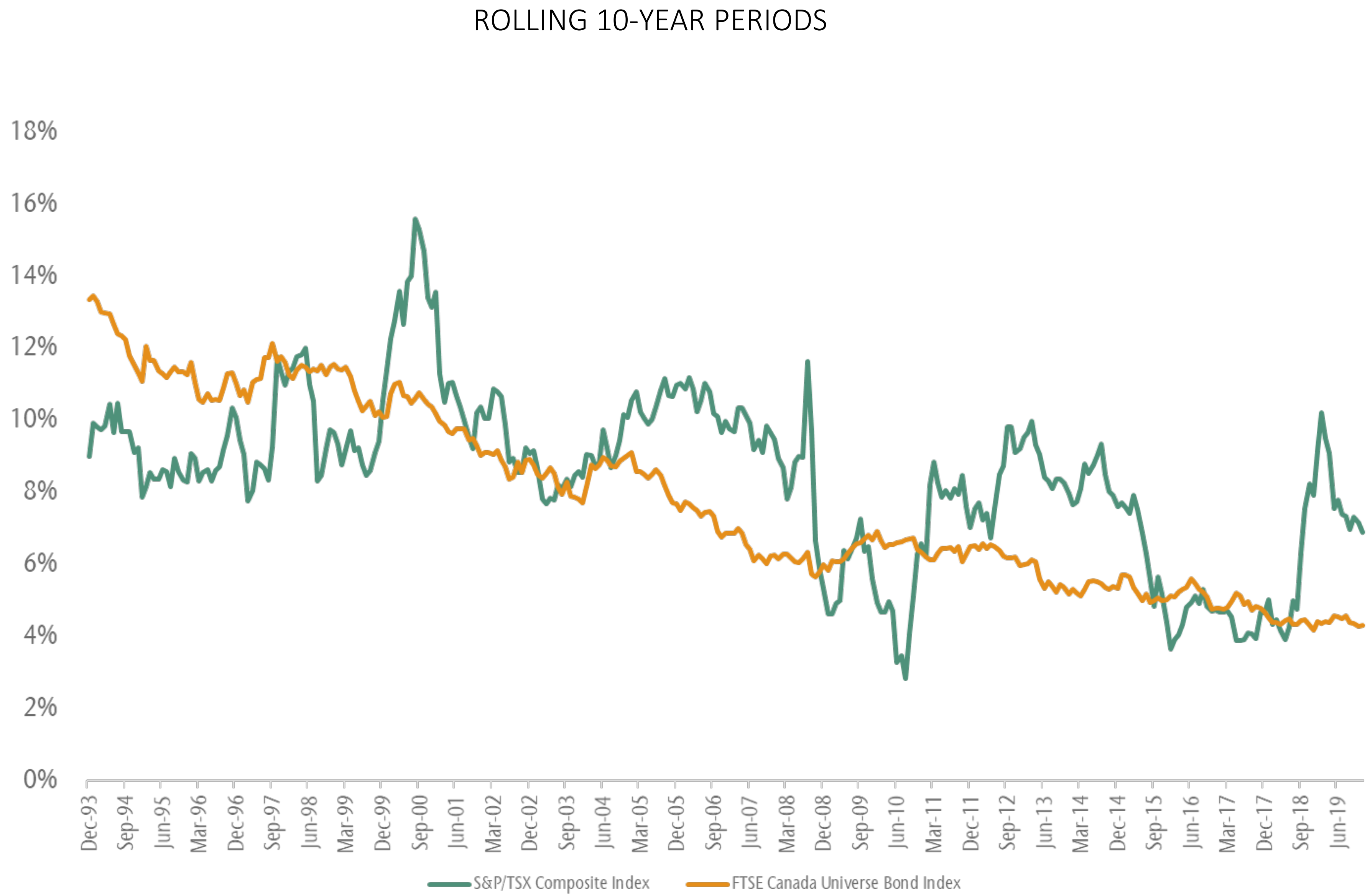
	Portfolio A Govt Bonds	Portfolio B All Bonds	Portfolio C 50 / 50	Portfolio D 25 / 75	Portfolio E 10 / 90
Canadian Government Bonds	100%	0%	0%	0%	0%
Canadian Universe Bonds	0%	100%	0%	0%	0%
Global Universe Bonds (CAD-Hedged)	0%	0%	50%	25%	10%
Global Equities (in CAD)	0%	0%	50%	75%	90%
Long Term Expected Return (10 years)	1.0%	1.3%	4.3%	5.6%	6.3%
Annual Volatility	4.6%	4.4%	7.3%	10.7%	12.9%
Sharpe Ratio (Return per unit of risk)	0.10	0.18	0.51	0.47	0.45

Hypothetical performance analyses conducted in October 2020, for illustrative purposes only.
There is no guarantee hypothetical returns or projections will be realized.

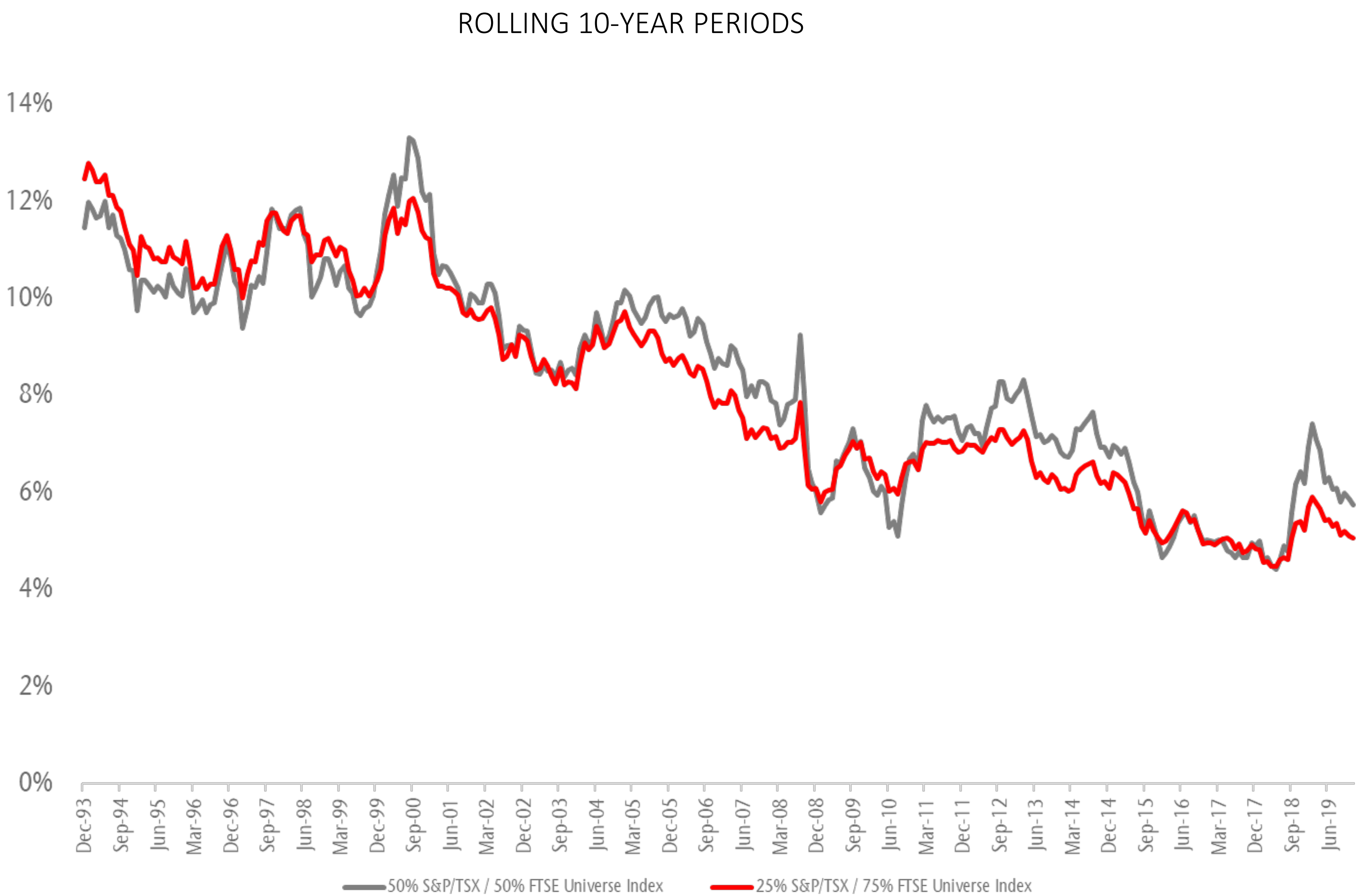
Year over year investment returns are more volatile for stocks vs bonds



Over 10-year periods, equities investment returns have been positive since the 1980s



Asset class diversification reduces volatility and increases risk-adjusted returns



DMAC aims to provide global diversification and optimize risk-adjusted returns

Asset Class/Strategy	Asset Class/Strategy Characteristics	Exposure Range *	Expected Return Range	Expected Annual Volatility	Expected Annual Downside Risk
Short & Universe Bonds	• Key source of stability and modest income • Tactical management of multi-sector-credit and illiquidity	5.0% to 15.0%	2.0% to 2.3%	2.3% to 4.3%	-3.0% to -7.5%
Multi-asset Global Credit	• Diversified global exposure to investment grade and sub-investment grade credit • Not benchmark driven, providing more flexible approach to credit markets	5.0% to 15.0%	4.0% to 5.0%	9.3%	-18.7%
Canadian & Global Equities	• Actively managed fundamental equities • Significant component of portfolio return • Large global component reduces exposure to concentrated Canadian markets	20.0% to 40.0%	5.6% to 6.4%	14.3% to 17.0%	-25.0% to -27.8%
Low Volatility Equities	• Reduce risk embedded in traditional equity allocations • Typically resilient in drawdowns but trail in strong up-markets	10.0% to 20.0%	5.1% to 5.8%	11.0% to 11.7%	-15.5% to -16.4%
Emerging Market Equities	• Exposure to faster growing emerging markets • Increases portfolio expected return	5.0% to 8.0%	7.6%	23.3%	-33.9%
Alternatives	• High Yield Mortgages, Real Estate, and/or Infrastructure Funds are being considered • Strong risk-adjusted returns that are less correlated with equities and low volatility	10.0% to 20.0%	5.8% to 6.0%	1.7% to 9.6%	-13.4% to -13.9%

* MFA is currently refining the asset allocation parameters - these ranges are preliminary. The Fund Manager will have latitude to operate within approved ranges by asset class to allow for tactical asset allocation decisions and rebalancing.

Change in risk profile: Introducing Equities into a LG's Investment Portfolio

The impact of investing 20% of "City A's" existing portfolio into a global stock portfolio is shown below. This is a conservative illustration of the increased volatility of introducing the DMAC Fund, as that DMAC will have lower risk characteristics than a 100% global stock portfolio.

	City A Current Portfolio (Portfolio Size: $1.7B)	City A Adjusted Portfolio w/ 20% Equity Exposure (Portfolio Size: $1.7B)
Expected Annual Return ($ / %)	$36.0M (2.12%)	$50.2M (2.95%)
Volatility**	+/- $30.8M (1.81%)	+/- $55.7M (3.27%)
Avg. Max. Drawdown†	**-$15.1M (-0.89%)**	**-$42.0M (-2.47%)**
VaR (99%) (~1 in 100)	-$70.3M (-4.14%)	-$157.7M (-9.27%)
Worst Drawdown◊ (~1 in 2,000)	-$101.9M (-5.99%)	-$249.7M (-14.69%)

10-year investment horizon. ** 1 standard deviation; ~67% of the time actual returns are +/- x from the expected return. † Calculated by running 2,000 simulations across 10 years and finding the worst annual peak-to-trough decline by scenario, the average is then taken across those 2,000 scenarios. ◊ Of the 2,000 simulations the worst drawdown; theoretically a 1 in 2,000 scenario.

Summary

Preservation of capital through **diversification** of investments into the broadest selection of asset categories possible, and picking the right **exposures** within those categories, **should be the main priority** for local government investors. However, if the investments are not needed until well into the future, the purchasing power of short dated bonds and deposit investments are being diminished – as inflation is higher than expected returns on those investments.

Cash flow forecasting is critical to the analysis process which supports the ability and accuracy of matching investments with future requirements. A well-designed cash flow forecast can support a longer-term investment horizon and improve risk-adjusted returns.

MFA's DMAC Fund is **professionally designed** for LG reserves not needed for 10 years or longer **at very low cost**. Among the biggest risks involved in buying the DMAC fund is the risk of a LG selling the Fund earlier than originally anticipated (and crystalizing losses during a downturn). **Managing expectations and educating all stakeholders on volatility will be key to limiting bad outcomes. Segregation or "earmarking" of suitable long-term reserves along with education should limit divestment of holdings at inopportune times**. Whether due to accounting practices, or from the actual performance of the Fund, higher than normal volatility should be expected. While MFA cannot dictate how LGs manage their investment process and practices, MFA will require evidence of staff and council discourse about the potential short-term volatility of the DMAC Fund and the intent to hold on to it for the long term.

Investment best practices call for a **Council-approved Investment Policy** to guide risk tolerance and the **Objectives** of an investment portfolio.

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Appendix A: Definitions

Alternative Asset: A financial asset that does not fall into one of the conventional investment categories. Conventional categories include stocks, bonds, and cash. Alternative investments include private equity or venture capital, real estate, infrastructure, hedge funds, and managed futures. Alternative investments typically have low correlation with conventional investment categories.

Drawdown: A drawdown is a peak-to-trough decline of an investment during a specific period for an investment. A drawdown is usually quoted as the percentage between the peak and the subsequent trough.

Emerging Market Economy: An emerging market economy is the economy of a developing nation that is becoming more engaged with global markets as it grows. Countries classified as emerging market economies are those with some, but not all, of the characteristics of a developed market. As an emerging market economy progresses it typically becomes more integrated with the global economy, as shown by increased liquidity in local debt and equity markets, increased trade volume and foreign direct investment, and the domestic development of modern financial and regulatory institutions.

Estimated Long-term Return: Is a hypothetical measure that forecasts an investor's expected return over the life of an investment.

Investment Time Horizon: The projected length of time your money will be invested.

Appendix A: Definitions (cont'd)

Low Volatility Equity (Strategy): A low-volatility investing strategy focuses on reducing volatility or risk compared to an index. This strategy uses risk as the primary measure to determine if a particular stock will be included or excluded in a portfolio, and what the optimal weighting of the included stock will be.

Market Exposure: Market exposure refers to the dollar amount of funds or percentage of a broader portfolio that is invested in a particular type of security, market sector, or industry. Market exposure is usually expressed as a percentage of total portfolio holdings.

Multi-asset Global Credit: Is a diversified investment discipline that aims to capture global credit risk premiums by investing in a range of geographies, asset classes, and credit instruments.

Professional Investor (also: "Accredited Investor"): Financially sophisticated individuals or entities (LGs) assumed to have requisite knowledge and understanding of professional investing concepts and can enter into investment-related contracts with other professional investors. Generally, regulatory investment suitability assessments/obligations are waived for the professional selling services and this results in limited legal recourse for the professional purchasing investment services.

Appendix A: Definitions (cont’d)

Risk-adjusted Return: A risk-adjusted return measures an investment's return after taking into account the degree of risk that was taken to achieve it. There are several methods of risk-adjusting performance, such as the Sharpe ratio for example, with each yielding a slightly different result. In any case, the purpose of risk-adjusted return is to help investors determine whether the risk taken was worth the expected reward.

Sharpe Ratio: Is used to help investors understand the return of an investment compared to its risk. The Sharpe Ratio adjusts a portfolio’s past performance – or expected future performance – for the excess risk that was taken by the investor. A higher Sharpe Ratio indicates better risk-adjusted performance compared to a lower Sharpe Ratio in a comparable asset class, but a standalone Sharpe Ratio value is of little informational value as it varies between asset classes and portfolio types.

Universe Bonds: Highly-rated (investment grade (BBB), or higher) corporate and government bonds which meet minimum liquidity requirements.

Value at Risk (VaR): The estimated maximum loss at a level of confidence (probability), over a given period.

Volatility: Is the tendency of an investment to experience price swings (ups and downs) over a period of time.