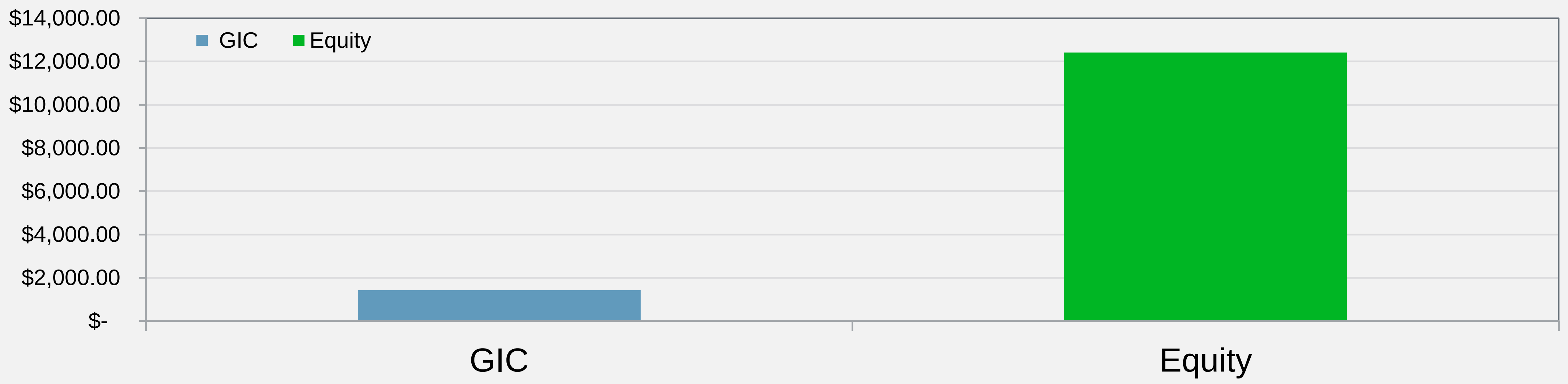
TD Asset Management

Are Equity Returns Predictable?

Amol Sodhi, CFA
Vice President & Director
TD Asset Management Inc. (TDAM)

Why Investing Matters?

How much you can withdraw monthly after investing
$1,000 per month for 30 years….

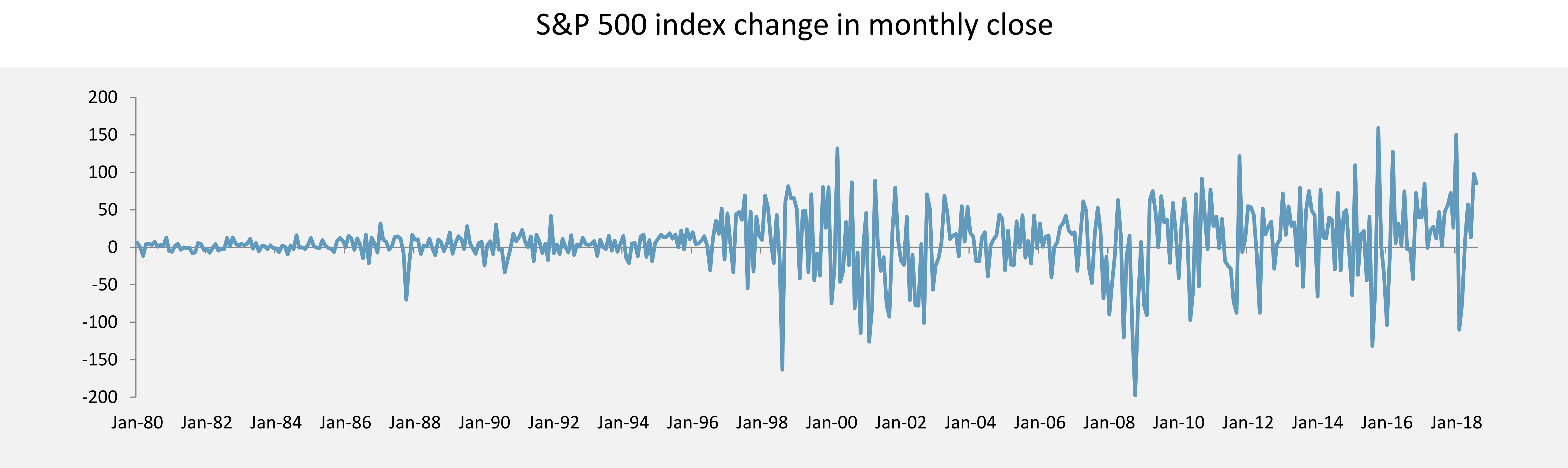


Historically clients on average could withdraw <u>~8 times</u> less with GICs!

Clients Choices include: Save More, Invest or Withdraw Less

Source: TDAM calculation, Bloomberg Finance L.P. Equity returns are average S&P 500 returns and GIC returns are average 1 year Canadian Yields minus inflation from Sept 1953 to Sept 2018 .
Note: For illustrative purposes only.

But Then Why Not Invest?

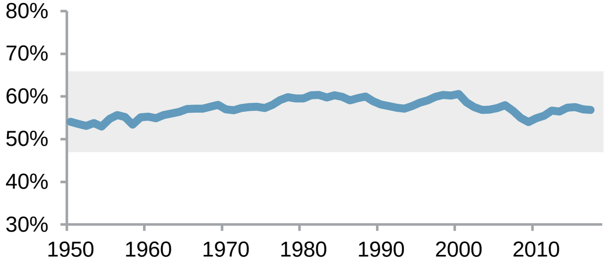


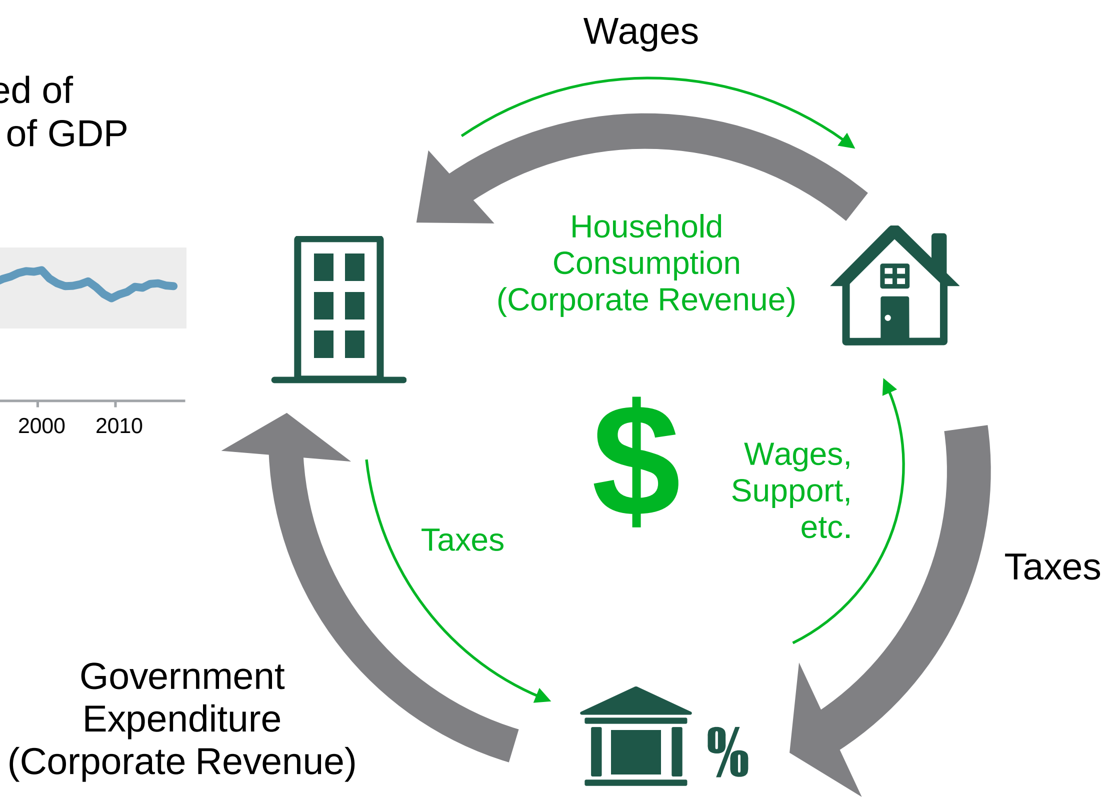
What if equity returns were predictable and not only higher but safer than GICs?

Source: TDAM calculation, Bloomberg Finance L.P. As of August 31, 2018. Equity returns are average S&P 500 returns.
Note: For illustrative purposes only.

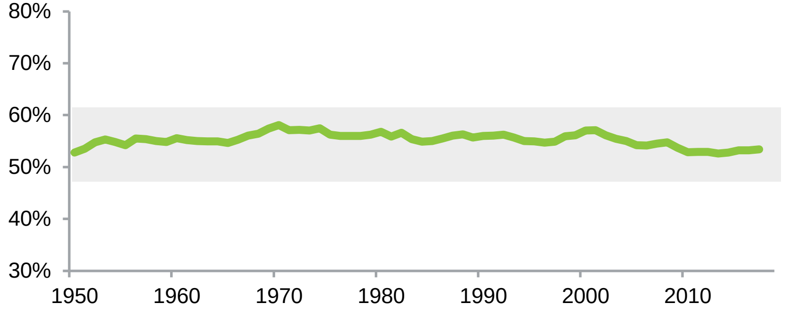
How Corporate Revenues and the Economy are Connected

Gross Value Added of Corporations as a % of GDP

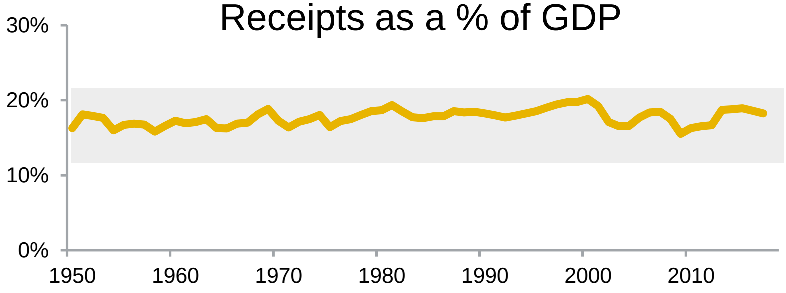




U.S. Compensation of Employees as a % of GDP



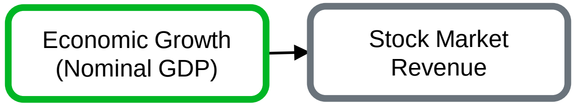
U.S. Federal Government Tax Receipts as a % of GDP

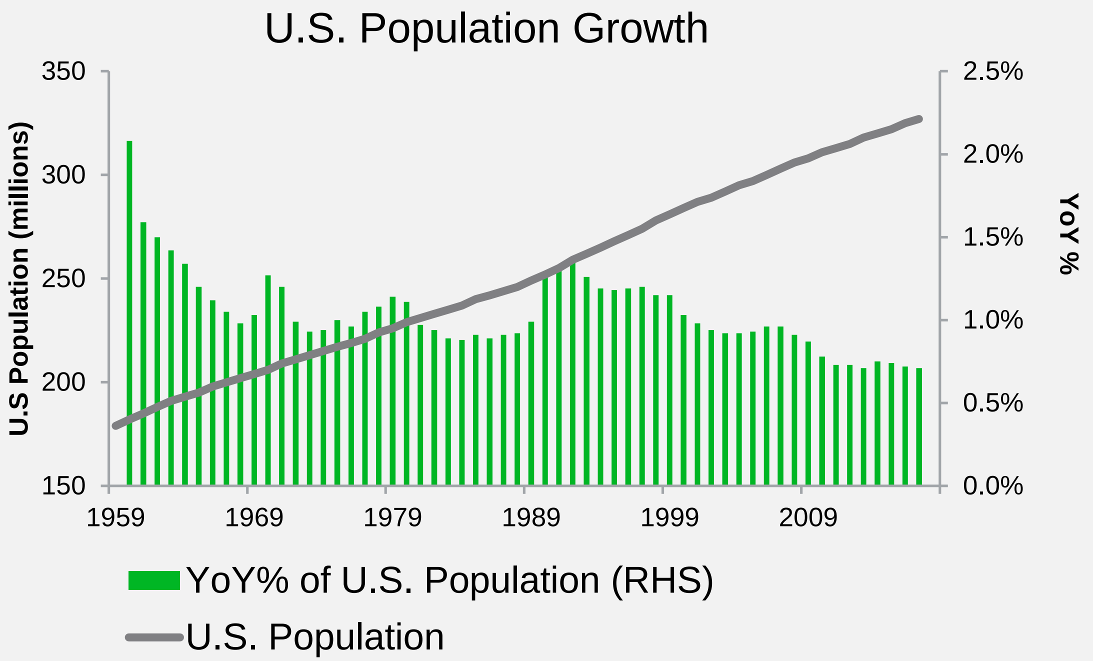


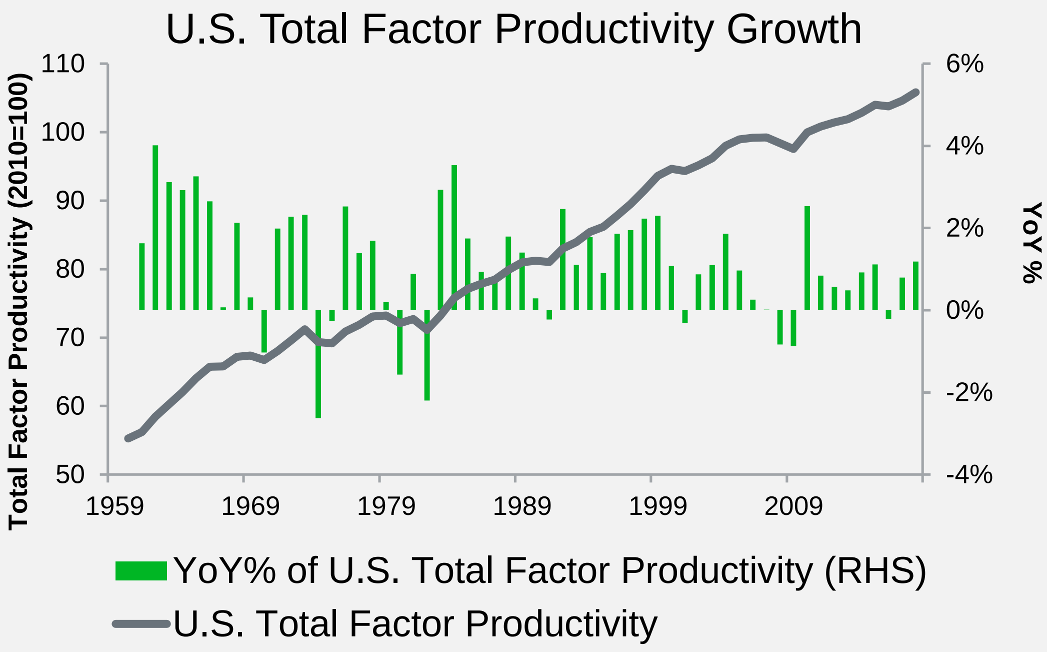
Economy (GDP) is interconnected with Markets (Corporate Sales)

Source: Thomson Reuters Datastream. As of September 30, 2018

How Corporate Revenues and the Economy are Connected



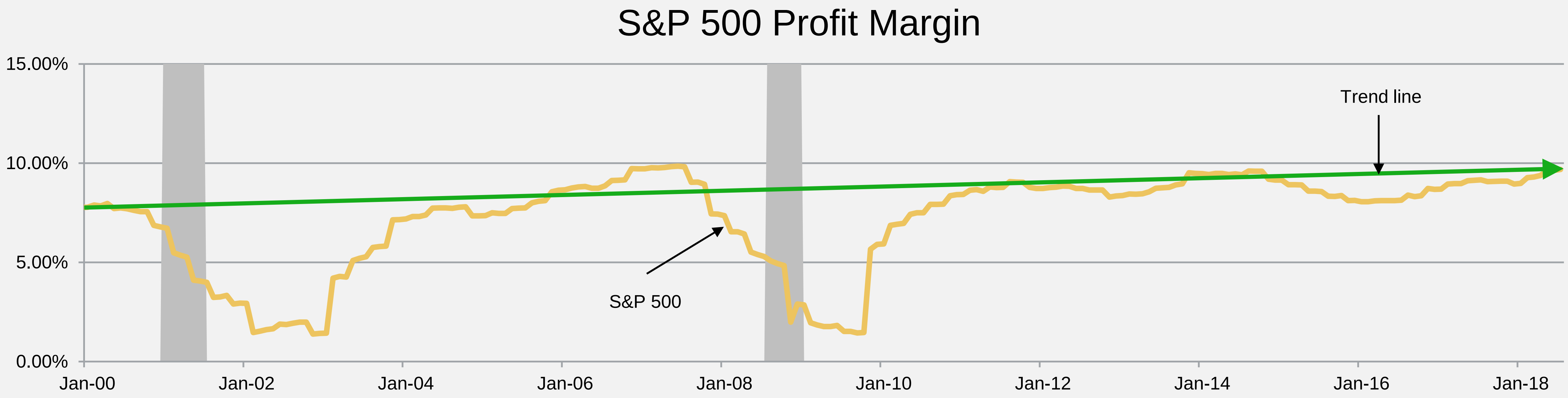




As the economic pie grows so do corporate revenues

Source: Thomson Reuters Datastream. Bloomberg Finance L.P. TDAM. As of September 30, 2018
Note: RHS = Right hand side

Translating Sales to Earnings



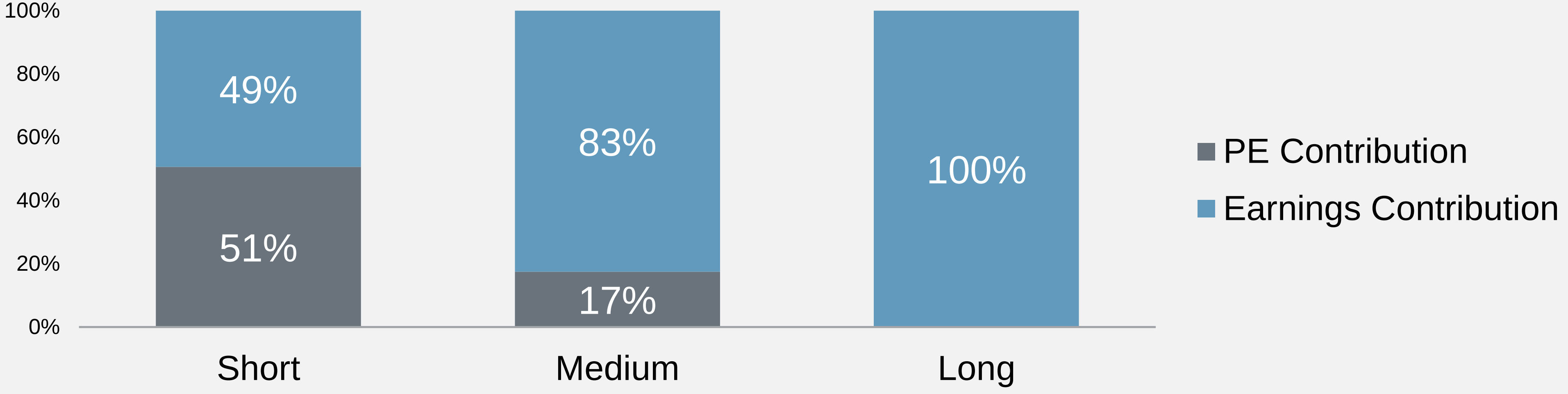
Short term larger changes to margins can have little impact to slowly changing long term margins

Source: TDAM calculation (Calculation = Earnings Per Share/Revenue Per Share), Bloomberg Finance L.P. TDAM. As of July 31, 2018. Equity returns are average S&P 500 returns.
Note: For illustrative purposes only.

Drivers of Equity Returns

Economic Growth (Nominal GDP) → Stock Market Revenue → Earnings/Dividends → Long Term Equity Returns

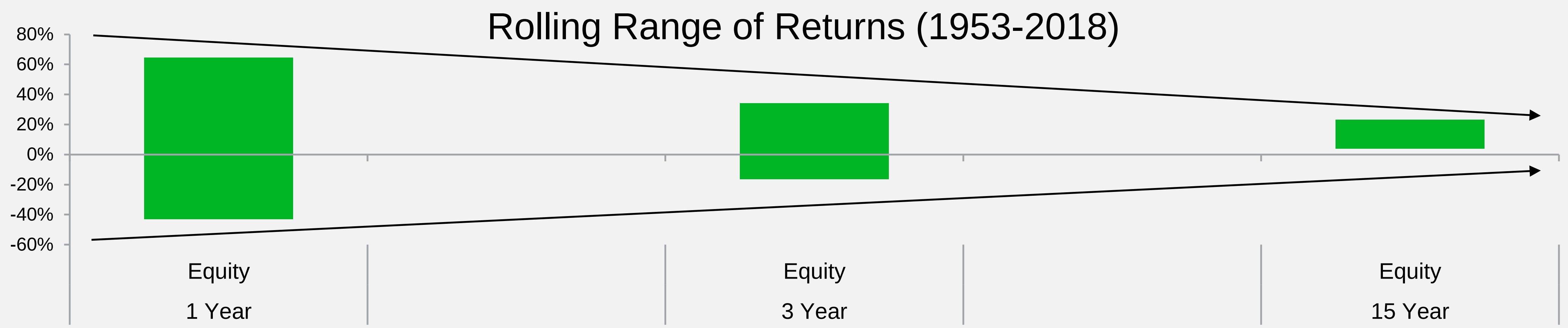
Average U.S. Equity Returns Contribution



Equity returns are largely driven by earnings which are further driven by economic growth

Source: TDAM calculation, Bloomberg Finance L.P. TDAM. As of September 28, 2018. Equity returns are average S&P 500 returns.
Note: For illustrative purposes only. Short = 1 year, Medium = 5 year, Long = 15 year.

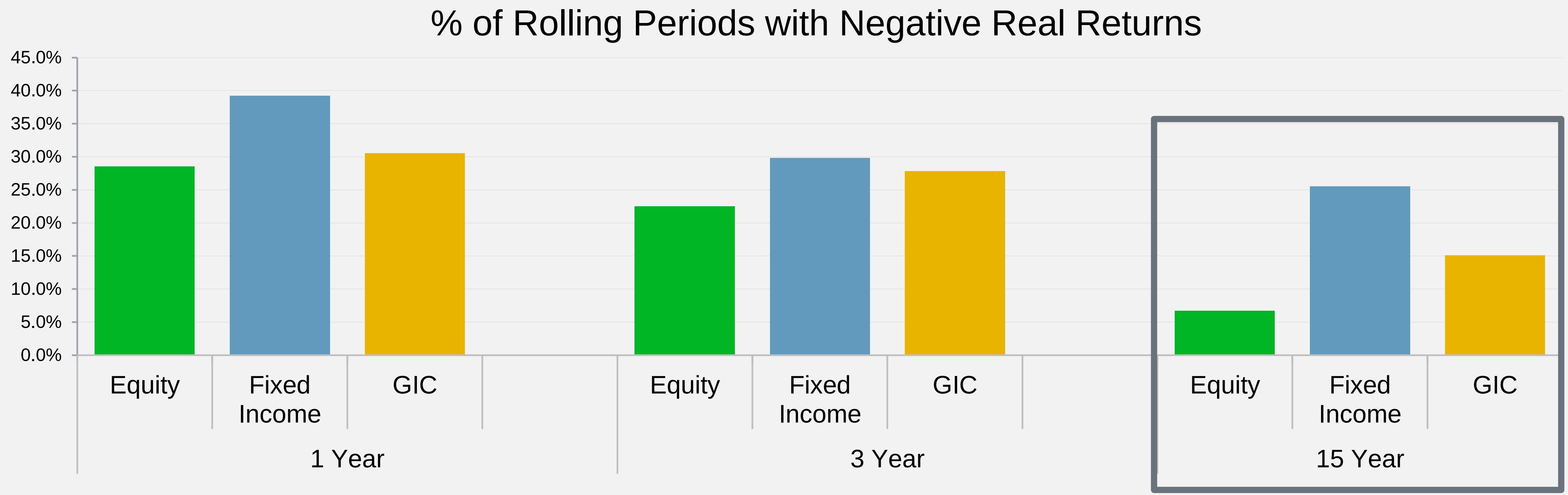
Long term: Are equity returns predictable? (Example)



	Short	Medium	Long	Short	Medium	Long
		Equity			**Fixed Income**	
Volatility	17.8%	7.8%	4.1%	11.9%	4.8%	3.1%
Maximum Gain	64.5%	34.2%	19.3%	12.4%	11.3%	9.7%
Minimum Return	-43.1%	-16.4%	$\boxed{4.0\%}$	-3.3%	0.8%	$\boxed{3.7\%}$

Source: Bloomberg Finance L.P. TDAM. For illustrative purposes only.
Note: Equity Return is based on S&P 500 Index. Fixed Income Return is based on FTSE TMX Canada Universe Bond Index. As of September 28, 2018.

Long Term:
Understanding true risk? (Example)



Long-term GICs / Fixed Income have more often resulted in negative real returns.

Source: Bloomberg Finance L.P.   TDAM. For illustrative purposes only.
Note: Equity Return is based on S&P 500 Index. Fixed Income Return is based on FTSE TMX Canada Universe Bond Index. As of September 28, 2018.

Value at Risk (VaR)

$$Value\ at\ Risk = \boldsymbol{E(R)} * \boldsymbol{Time} - \sqrt{\boldsymbol{Time}} * Confidence\ Interval * \boldsymbol{Volatility}$$

- VaR → Measure of the risk of loss for investments. Estimate of how much the investment might lose given certain assumptions

Assumptions

1) Positive Mean Return

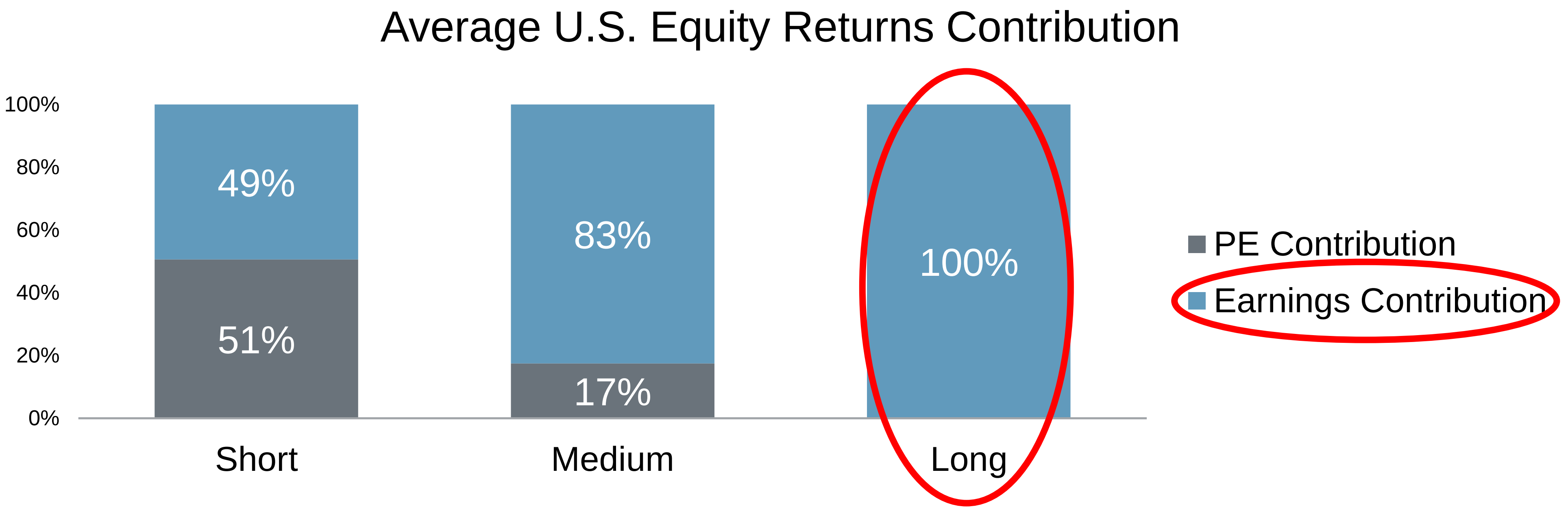
2) Constant Volatility Range

3) Assumes returns are normally distributed

Potential for loss can be mathematically eliminated over time

1) Long Term Expected Returns

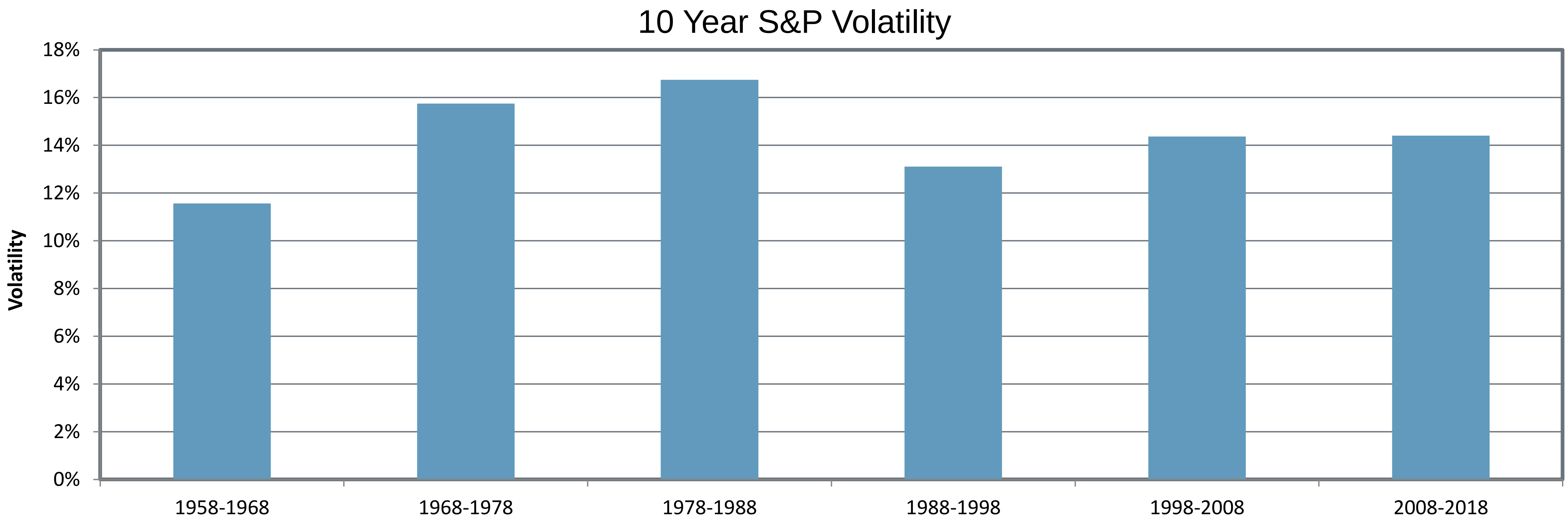
P = P/E * EPS



Long-term investing is about fundamentals

Source: Bloomberg Finance L.P. TDAM. Equity returns are average S&P 500 returns.
Note: For illustrative purposes only. Short = 1 year, Medium = 5 year, Long = 15 year.

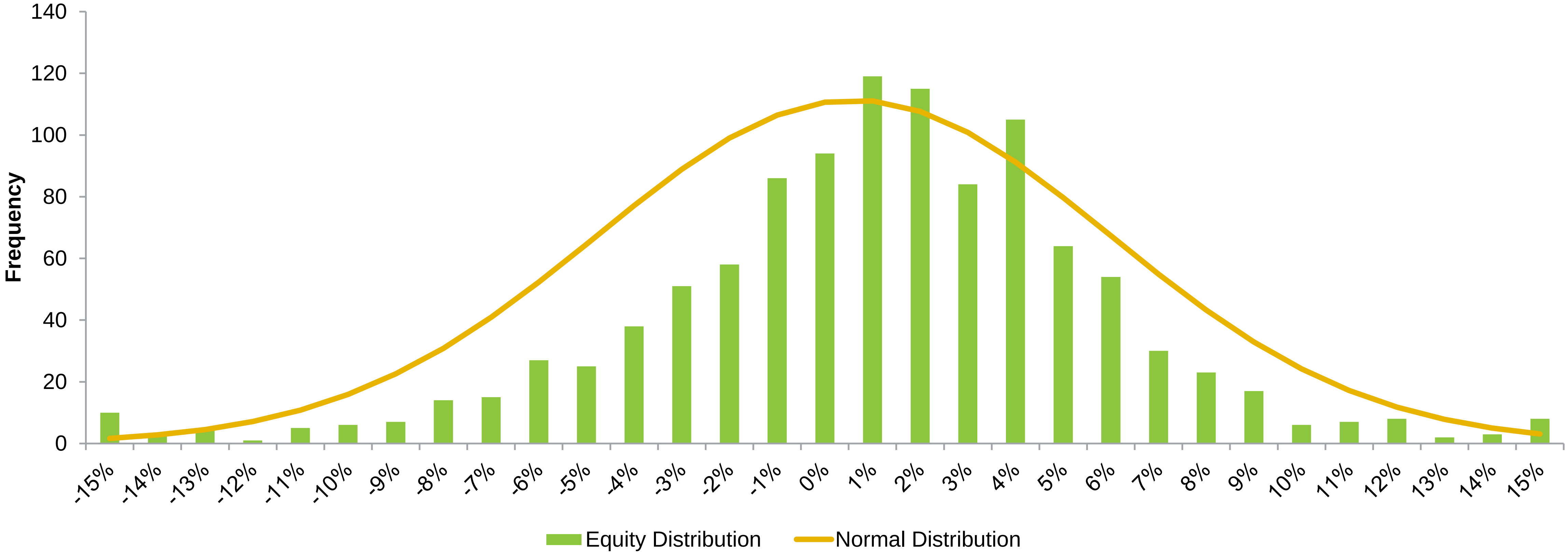
2) Volatility is Constant Over Time



Constant long-term volatility and a positive expected mean return can support long-term equity predictability

Source: Bloomberg Financial L.P. TDAM. As at September 28, 2018.

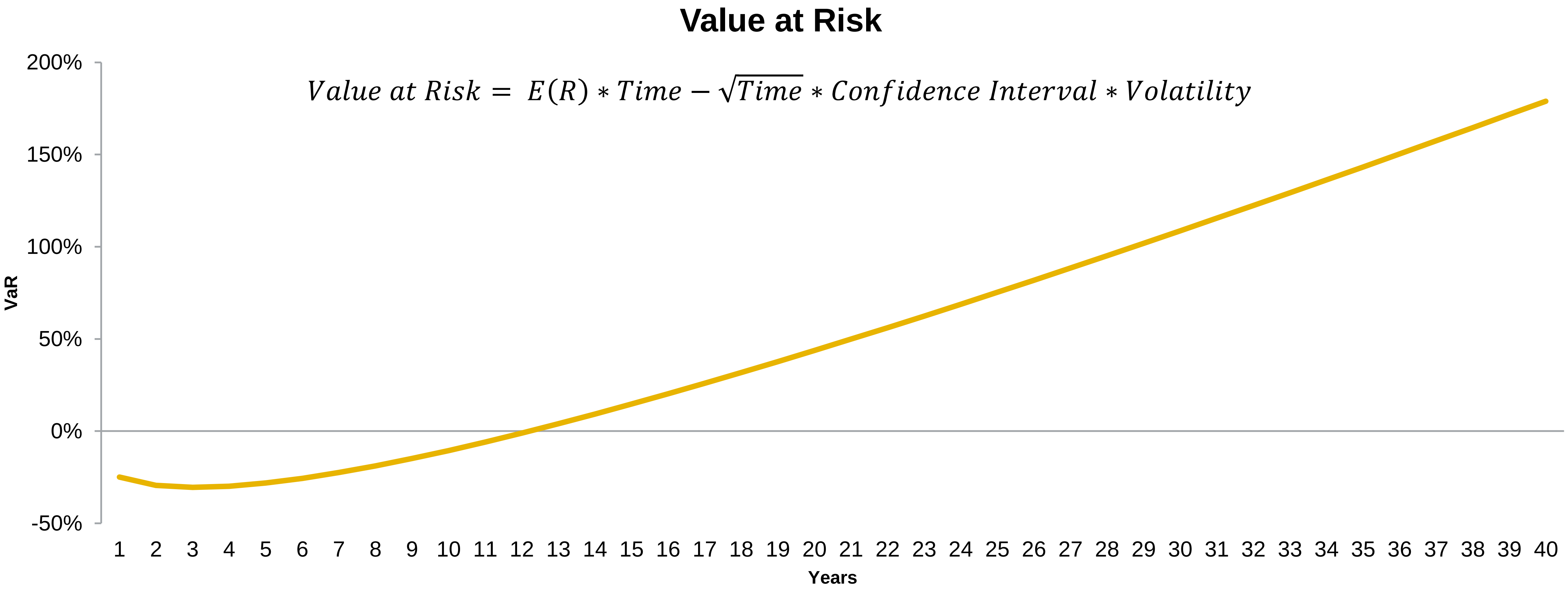
3) Assumes Normal Distribution



Equity returns are similar to normal distribution with some outliers

Source: Bloomberg Finance L.P. TDAM. As of September 28, 2018.
Note: For illustrative purposes only.

Mathematical Approach for Time Diversification



$$Value\ at\ Risk = E(R) * Time - \sqrt{Time} * Confidence\ Interval * Volatility$$

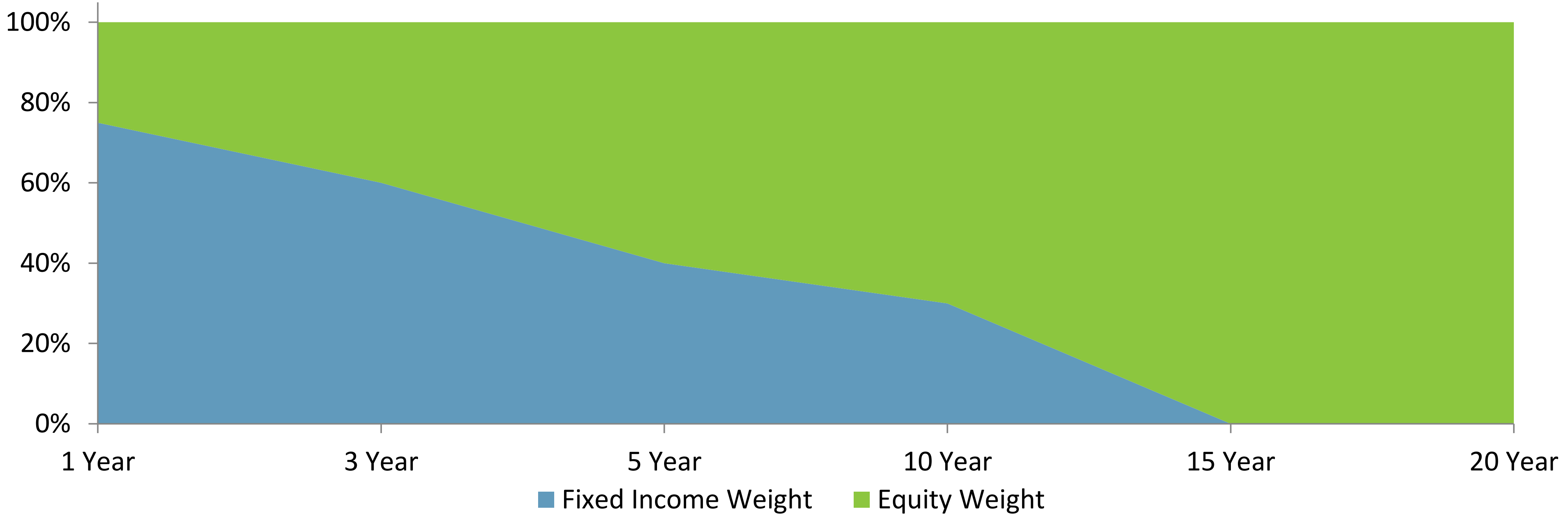
Potential for loss can be mathematically eliminated over time

For illustrative purposes only.

Optimize Asset Mix Based on Time Horizon

Optimization function: Aims to reduce the risk of a negative return over different investment time horizons while maximizing returns

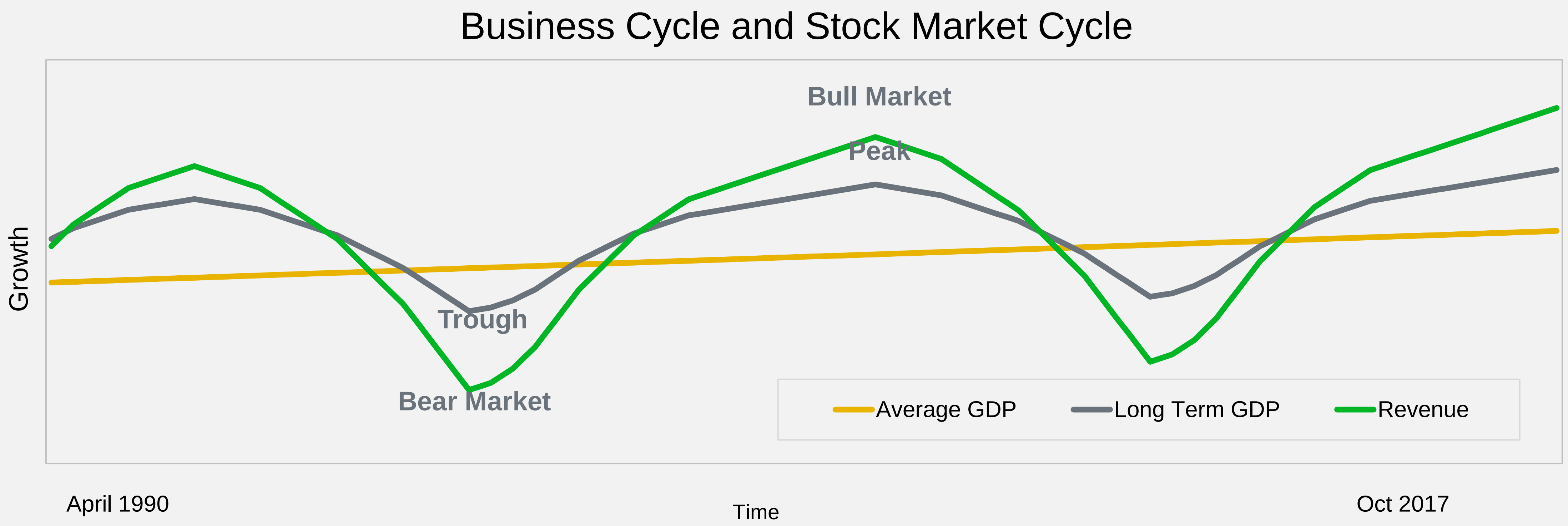
Optimal Allocation Over Time Based on Potential Loss



Higher Equity Weight ≠ Higher Risk

For illustrative purposes only.

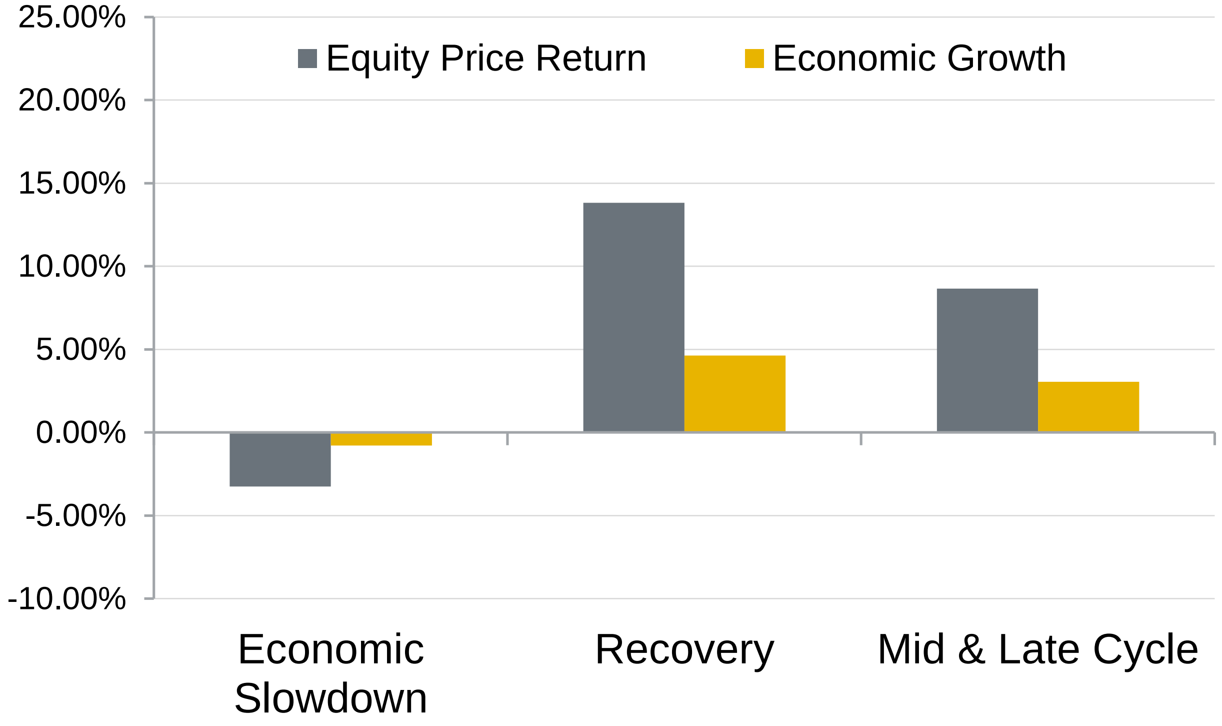
Medium Term:
Economic Growth Can Translate Into Equity Growth



Markets go through cycles creating investment timing risk in the medium term

Source: TDAM. As at September 28, 2018.
For illustrative purpose only. GDP (Gross Domestic Product) is a monetary measure of the market value of all the final goods and services produced in a period of time, often annually or quarterly. Bull markets are characterized by optimism, investor confidence and expectations that strong results should continue, usually for months or years. A bear market is a condition in which securities prices fall and widespread pessimism causes the stock market's downward spiral to be self-sustaining.

Medium Term:
Need for well diversified dynamic portfolios



3 Year rolling risk Ranges

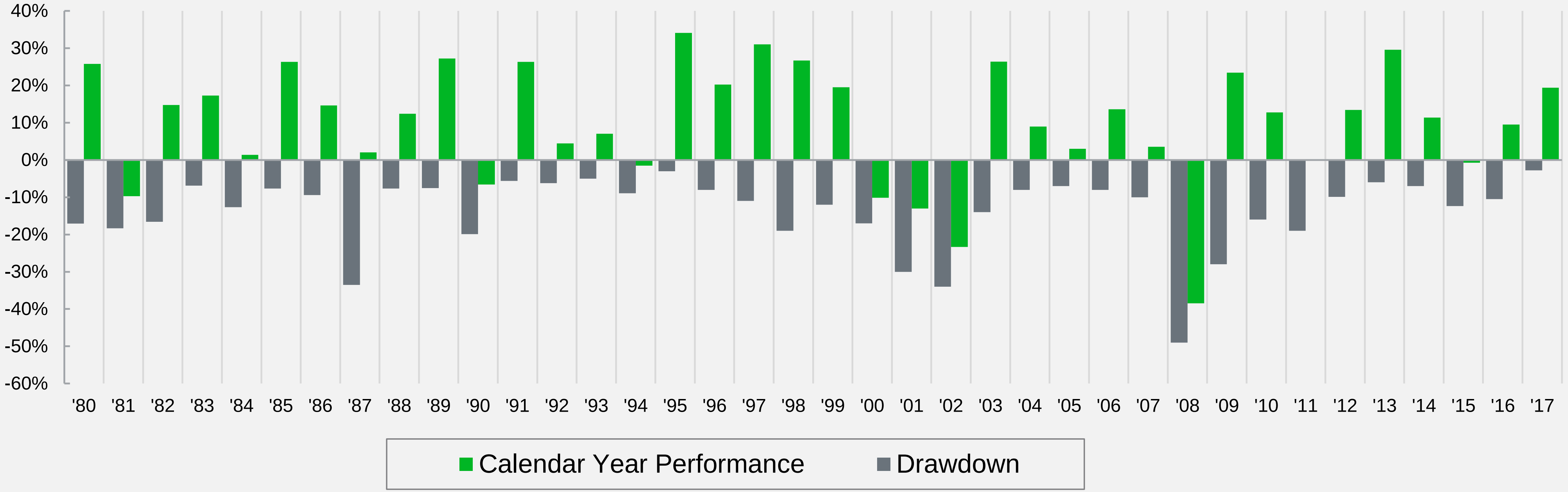
	Volatility	Correlation
Max	16.7%	42.5%
Average	11.0%	-22.7%
Min	6.4%	-78.7%

Static portfolios may have unnecessary higher market risk that can be dynamically managed

For illustrative purpose only.
Source: Bloomberg Financial L.P. & TDAM. As at September 28, 2018.
Data: December 1950 – December 2017

Short Term:
Volatility is a Constant – Even in Positive Markets

S&P 500 Index Calendar Year Returns and Drawdowns



In the short term, equity returns can be unpredictable

Source: Bloomberg Finance L.P., TDAM.
Note: Declines or drawdown refer to the largest price decline from a peak to trough during the calendar year. Data as of December 31, 2017.

What Does All This Mean to Your Client?

Equity Return Predictability ≥ Equity Weight

Short Term Horizon

- **Equities** can be noisy and unpredictable
- **GICs/Fixed Income** can offer stable returns

Medium Term Horizon

- **Risk posed** by the economic cycle and sequence of return
- Consider investing in **dynamic asset allocation** solutions

Long Term Horizon

- Long term growth may lead to **predictable and potential high returns**
- A **high equity allocation** can be preferred for all risk profiles

Investor's Time Horizon

Using the Right Lens for Investment Products
(Examples)

	Conservative Client	Balanced/Aggressive
Short Term	Money Market Instruments	Dynamic portfolio of fixed income and some low volatility equities
Medium Term	Dynamic portfolio of fixed income and some low volatility equities	Dynamic portfolio of fixed income and some equities
Long Term	Low volatility equities, some long term bonds/ alternative investments	High growth equities, some long term bonds/alternative investments

Seeking to improve investor confidence around future expected returns using the correct time horizon can help reduce the fear of investing and enhance client outcomes

For illustrative purpose only.

How can this be applied to our clients?
(Example)

Meet Sally and John

- Sally is 62 and John 64
- **<u>Balanced Client Risk Profile</u>**
- They have retirement cash flows they would like to meet

Sally & John		
Age		62 & 64
Combined Salary	$	150,000
Liquid Assets	$	500,000
Ann. Pension	$	20,000
Possible CPP/OAS	$	15,000
Retirement Income Goals	$	60,000

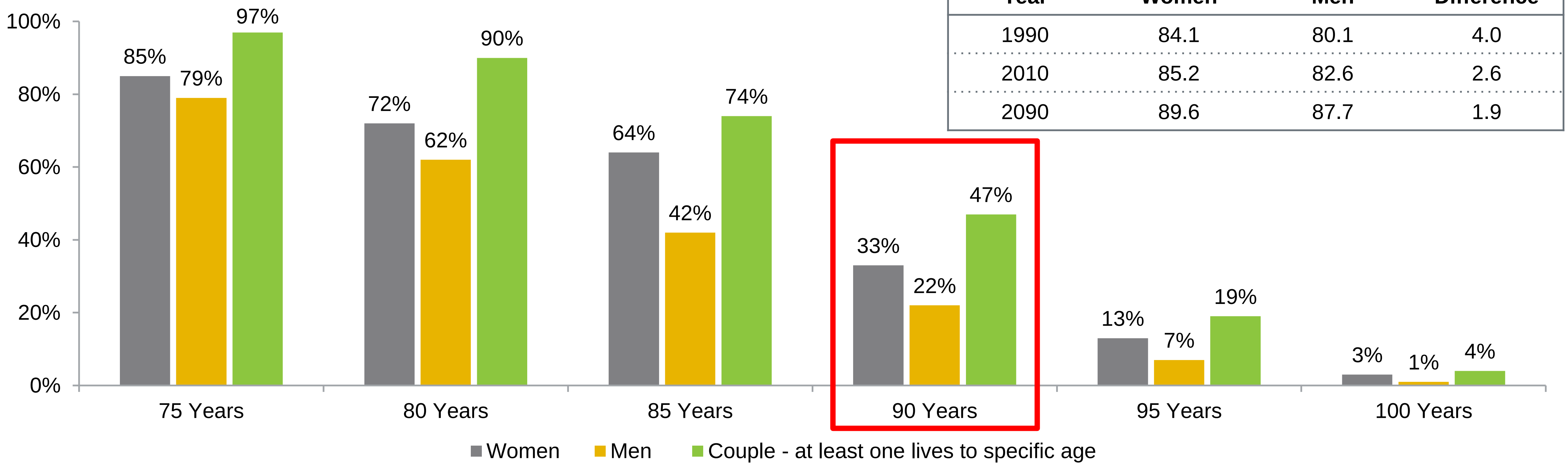
Client Concerns

- *How much can I safely spend?*
- *How much risk can I take?*

For illustrative purpose only.

Longevity After Retirement

If you're 65 today, the probability of living to a specific age or beyond



Average life expectancy at age 65

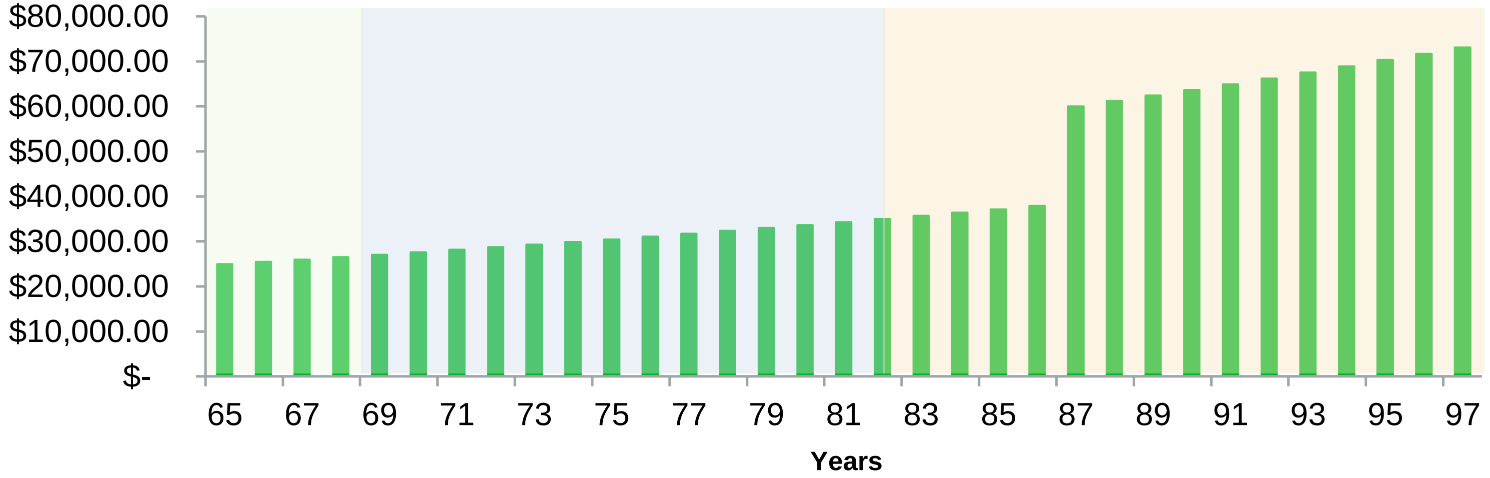
Year	Women	Men	Difference
1990	84.1	80.1	4.0
2010	85.2	82.6	2.6
2090	89.6	87.7	1.9

Retired clients still have a long time horizon

Source: Stats Canada. Data as of December 31, 2017.

Proposed Solution Works Within a Goals-Based Investing Framework

Client's Future Cash Flow Needs



	Traditional	Goal-Based
Average Historical Return[1]	6.0%	9.6%
Probability of Success[2]	Low	High
Average Legacy Amount	-	$3,091,384

For illustrative purpose only.
Source: Bloomberg Finance L.P., TDAM.
[1] The average historical return is based on if the client invested in a balanced 60% Equity (S&P 500 Index) & 40% Fixed income (FTSE Canada Universe Bond Index) portfolio.
[2] Probability of success is if the client was able to achieve their goals, and legacy amount is the money that is left behind after they pass away.
Note: The Goal-Based portfolio uses a liability driven investment approach, which matches the clients investments to their future liabilities. In this case, it is achieved by investing the client in three different portfolio based on time horizon. Probabilities based on hypothetical returns. Calculations reflect TDAM future expected returns for the S&P500 Index using historical returns of the S&P 500 Index for the period of April 1953 to September 2018; investment goal based on a 30-year time horizon.

TD Asset Management

TD Wealth

Thank you!

Questions?

Biography

Amol Sodhi, CFA, CIM, Vice President & Director **10 years experience**

Amol Sodhi joined TD Asset Management Inc. (TDAM) in 2010 and is a Senior Portfolio Manager on TDAM's Asset Allocation and Fund of Funds team. Amol co-manages the TD Comfort Portfolios, TD Retirement Portfolios, TD Strategically Managed Portfolios, and provides guidance with the management of all other Fund of Funds strategies. He is also involved in providing ongoing risk management, strategic portfolio design, tactical asset allocation, top-down macro & quantitative research, and developing innovative solutions. Amol has previous experience at a leading asset management firm providing investment research in equities and fixed income securities for both mutual funds and institutional mandates. He also has experience as a project lead at a multinational software consulting firm. Amol holds an MBA in Finance and a Computer Engineering degree from University of Toronto. Amol is a certified Canadian Investment Manager and a CFA charterholder.

Disclosure

The information contained herein has been provided by TD Asset Management Inc. and is for information purposes only. The information has been drawn from sources believed to be reliable. Graphs and charts are used for illustrative purposes only and do not reflect future values or future performance of any investment. The information does not provide financial, legal, tax or investment advice. Particular investment, tax, or trading strategies should be evaluated relative to each individual's objectives and risk tolerance.

Certain statements in this document may contain forward-looking statements ("FLS") that are predictive in nature and may include words such as "expects", "anticipates", "intends", "believes", "estimates" and similar forward-looking expressions or negative versions thereof. FLS are based on current expectations and projections about future general economic, political and relevant market factors, such as interest and foreign exchange rates, equity and capital markets, the general business environment, assuming no changes to tax or other laws or government regulation or catastrophic events. Expectations and projections about future events are inherently subject to risks and uncertainties, which may be unforeseeable. Such expectations and projections may be incorrect in the future. FLS are not guarantees of future performance. Actual events could differ materially from those expressed or implied in any FLS. A number of important factors including those factors set out above can contribute to these digressions. You should avoid placing any reliance on FLS.

The hypothetical performance information is shown for illustration purposes only and is not based on actual results, which may vary. Hypothetical performance information is subject to inherent risks and limitations, and is shown gross of fees, and is calculated in the local currency of the benchmark. No representations are being made that any proposal will achieve returns similar to the hypothetical information shown. Investors should not take this example or the data included as an indication, assurance, estimate or forecast of future or actual results. The actual performance returns may differ materially from the information shown for reasons including, but not limited to investment restrictions and guidelines, fees, timing of trade execution, investment/reinvestment of cash flows, treatment of dividends, interest fees charged including performance fees, portfolio rebalancing, borrowing fees on shorts, swap fees, the extent of leverage used, any use of derivatives, and fluctuations in the market. TD Asset Management Inc., The Toronto-Dominion Bank and its affiliates and related entities are not liable for any errors or omissions in the information or for any loss or damage suffered.

Index returns are shown for comparative purposes only. Indexes are unmanaged and their returns do not include any sales charges or fees as such costs would lower performance. It is not possible to invest directly in an index.

All rights in the FTSE TMX Index/Indices referred to in this document/publication (the "Index/Indices") vest in FTSE TMX Global Debt Capital Markets Inc. "FTSE" is a trade mark of FTSE International Ltd and is used under licence. "TMX" is a trade mark of TSX Inc. and is used under licence.

The TD Mutual Funds/Products (the " Funds/Products") have been developed solely by TD Asset Management Inc. The Index is calculated by FTSE TMX Global Debt Capital Markets Inc. or its agent. FTSE TMX Global Debt Capital Markets Inc. and its licensors are not connected to and do not sponsor, advise, recommend, endorse or promote the Funds/Products and do not accept any liability whatsoever to any person arising out of (a) the use of, reliance on or any error in the Index or (b) investment in or operation of the Funds/Products. FTSE TMX Global Debt Capital Markets Inc. and its licensors makes no claim, prediction, warranty or representation either as to the results to be obtained from the Funds/Products or the suitability of the Index for the purpose to which it is being put by TD Asset Management Inc.

TD Asset Management Inc. is a wholly owned subsidiary of the Toronto-Dominion Bank.