NORTHERN TRUST

CAPITAL MARKET ASSUMPTIONS

FIVE-YEAR OUTLOOK: 2019 EDITION

Every year, Northern Trust's Capital Market Assumptions Working Group develops forward-looking, historically aware forecasts for global economic activity and financial market returns that drive our five-year asset class return expectations and inform our asset allocation decisions.

All of this comes together in the form of our long-term strategic asset allocations, which are used by institutional and individual investors worldwide.

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CAPITAL MARKET ASSUMPTIONS

Here's what you need to know about the forces shaping the economic and market landscape during the next five years.

Strong global equity returns and sharply lower interest rates have come together in an uncommon combination. But this is the kind of atypical market that investors now face on a daily basis, topped with a mash-up of slowing growth, muted inflation, easy monetary policy, volatile politics and trade tensions. Positive breakthrough prospects are evenly matched with dire scenarios. Our outlook falls in between, calling for decent risk asset performance and subdued fixed income returns.

Against this backdrop, six key themes have emerged from our global five-year outlook. Some of these themes are a continuation from last year's themes, but each helps explain our long-term outlook. With this in mind, our Capital Market Assumptions team expects:

1 | **GLOBAL GROWTH RESTRUCTURING** — A shifting economic model – due to geopolitical and technological developments – will slow growth.

2 | **IRRECONCILABLE DIFFERENCES** — The fractious U.S.-China relationship will produce a cascade of geopolitical, economic and market changes.

3 | **STUCKFLATION 4.0** — Muted growth in global demand and timid policy responses suggest stuckflation is here to stay.

4 | **EXECUTIVE POWER PLAY** — Solid growth has pacified power grab concerns, but leaders are at risk of overplaying their hands.

5 | **MONETARY MAKEOVER** — Stuckflation has left central banks without a North Star and seeking relevance as their independence is challenged.

6 | **STAKING OUT CLIMATE RISK** — Climate risk regulatory impacts will slowly build, but with high dispersion and sporadic embracement.

2019 ASSET CLASS OUTLOOK

This year's broad themes identify the trends we see affecting the markets and economy over the next five years — and they also underlie our asset class outlooks.

We see single-digit and below-average returns from equities as global economies muddle through ***Global Growth Restructuring***. Valuations are at more reasonable levels but they could move slightly lower in the later stages of the economic expansion. Downward pressure on interest rates should continue, driven by ***Stuckflation 4.0*** and prompting a ***Monetary Makeover.*** All said, we think bond returns will remain low — due to the low-yield starting point — though will remain mostly positive. Real assets should be in line with equities, as low interest rates support global real estate and listed infrastructure.

Equities

Global equity returns will be below long-term historical averages – a consequence of the slow growth environment.

Fixed Income

Low-but-positive returns will persist, as yield curves globally continue to test investor expectations.

Real Assets

Real asset returns will be largely in line with equities; interest-rate-exposed asset classes will be highly valued in portfolios.

Alternatives

Alternatives — private investments and hedge funds —can enhance risk-adjusted portfolio returns through non-traditional means.

EQUITIES

Global equity returns will be below long-term historical averages — a consequence of the slow growth environment.

5.7%

DEVELOPED MARKET EQUITIES TOTAL RETURN FORECAST

6.1%

EMERGING MARKET EQUITIES TOTAL RETURN FORECAST

Developed Markets

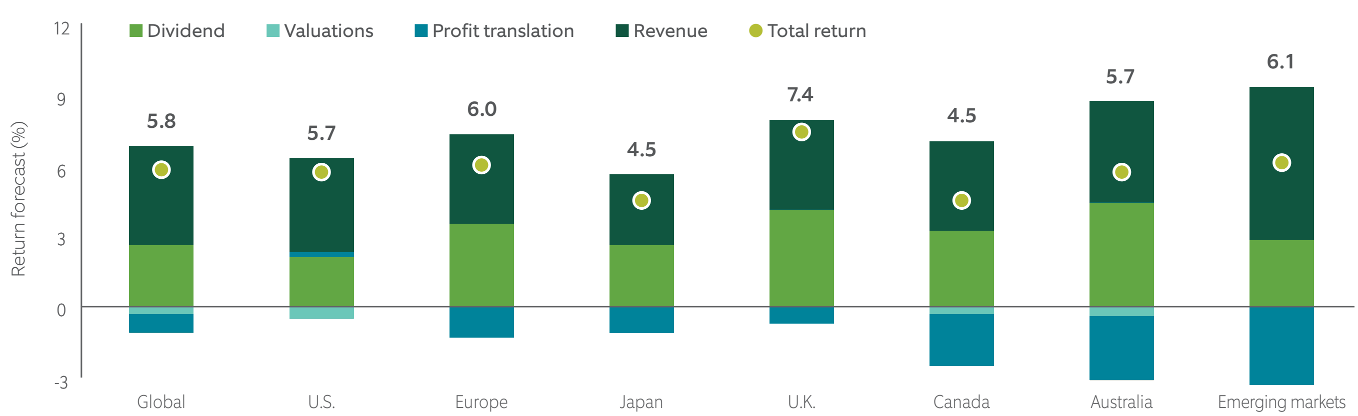
We expect developed markets to return 5.7% annually. Slow revenue growth — consistent with our ***Global Growth Restructuring*** theme — will be further pressured by some negative profit translation (the impact of profit margins and share count when "translating" revenue growth into earnings growth). Share repurchases will remain elevated but will be unable to offset lower profit margins, wherein cost increases — albeit muted — will eat into profits in a low top-line growth environment. We assume some of the valuation contraction that is often found in the late stages of economic expansion. Yet, given our expectation for continued low interest rates, we view this as a cyclical valuation contraction within a higher structural range. Indeed, we acknowledge the risk that valuations could actually go higher.

Emerging Markets

Our expectation for emerging market equity returns of 6.1% is a material reduction from last year's forecast of 8.3%, and represents a mere 0.4% return premium to developed markets. Thematically, we expect ***Global Growth Restructuring*** and ***Irreconcilable Differences*** to negatively impact the region's return potential. Still-superior revenue growth will be muted by continued (and well-documented) share issuance. Valuations, while inexpensive, are not expected to move higher given greater uncertainties surrounding current economic models – particularly China's.

EQUITY BUILDING BLOCKS

Slowing earnings growth and some valuation and margin pressures lead to subdued returns.



Source: Northern Trust Global Asset Allocation.

FIXED INCOME

Low-but-positive returns will persist, as yield curves globally continue to test investor expectations.

2.1%

GLOBAL INVESTMENT GRADE TOTAL RETURN FORECAST

4.8%

GLOBAL HIGH YIELD TOTAL RETURN FORECAST

Interest Rates

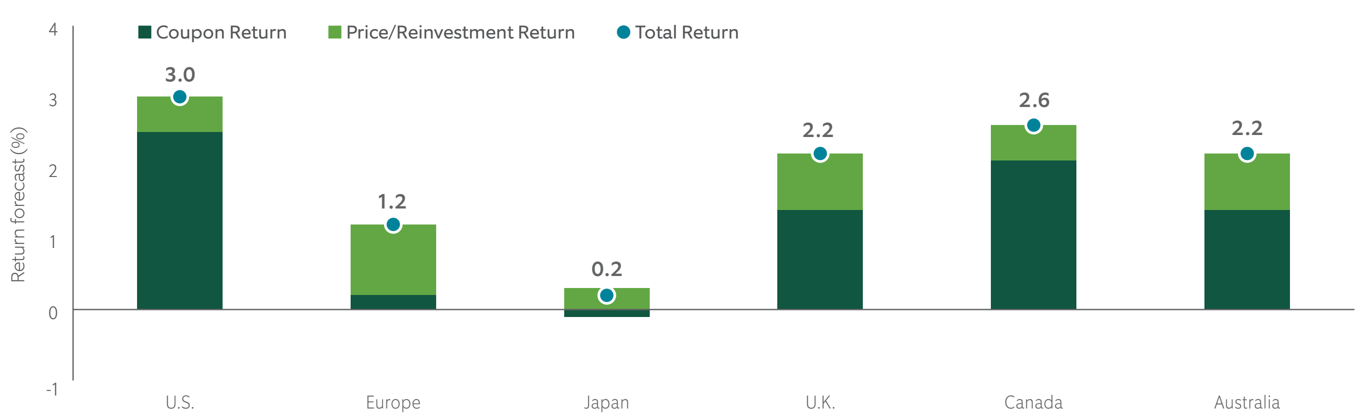
Our *Global Growth Restructuring*, *Stuckflation 4.0* and *Monetary Makeover* themes all reflect our belief that the stage is set for a new global easing cycle that was kicked off by the Federal Reserve and its 0.25% rate cut in July. Alongside the new global easing cycle, we expect steeper yield curves as short-term yields drop. The U.S. will continue to have higher rates across the curve than most developed markets. In Europe, German interest rates are expected to remain near (or even below) zero across the curve. Countries with fundamental credit concerns (e.g. Italy) will have higher rates than Germany, though likely still below those of the U.S. thanks to heavy involvement by the European Central Bank. In this sense, Europe is looking ever more like Japan, whose yield curve will remain very flat, stuck close to zero. Yield curves in other major economies — including the U.K., Canada and Australia — are expected to regain positive slopes.

Credit Markets

The effect of credit on total return is most noticeable within high yield. Global high yield's credit element (e.g. defaults) leads to five-year annualized returns below starting point yields — historically representing a 1.3% hit. We expect a similar hit over the next five years, with the current 5.8% yield translating to a 4.8% return expectation. Lower interest rates will both drive the ongoing search for yield and support asset class fundamentals (lower interest rates equate to an easier ability to service and roll over debt). Because we expect interest rates to remain below what is priced into forward curves, we anticipate investment grade total returns will continue to outpace starting point yields. For the global aggregate index, we expect the 1.5% starting point yield will translate into a 2.1% annualized total return.

FIXED INCOME RETURN BUILDING BLOCKS

Low fixed income return forecasts are due to low yield starting points.



Source: Northern Trust Global Asset Allocation, Bloomberg. Coupon return calculated as yield-to-worst on 6/30/2019.

REAL ASSETS

Real asset returns will be largely in line with equities. Interest-rate-exposed asset classes will be highly valued in portfolios.

Natural Resources

Our use of an equity-based approach to natural resources is driven by its persistent outperformance of a futures-based approach. Driving this outperformance is its equity market exposure, but commodity prices still play a large role in the return expectation. Slower global growth, the move away from fossil fuels and potential regulatory headaches have prompted us to qualitatively reduce our forecast by 0.5%, leading to an expected 6.1% return. But the asset class should still reduce the impacts of any unexpected inflation.

Global Real Estate

Term and credit risk exposures provide continued support for global real estate as central bankers engage in a new easing cycle. Fundamentals are mixed and continue to be pressured by the decline in retail stores. But these are issues we have flagged for some time. Our 6.3% forecast continues to include a -0.5% qualitative adjustment, but we recognize the potential upside for an asset class that is transitioning to new growth opportunities (away from retail and toward new uses for legacy properties) and providing attractive yields.

Global Listed Infrastructure

Term exposure will provide support and investors may view the asset class as a purer bond proxy than global real estate, without the fundamental challenges. Our ***Staking Out Climate Risk*** theme reflects our belief that a new set of opportunities may open for infrastructure companies, especially as cash-strapped governments rely more on the private sector to invest in (and get paid for) necessary infrastructure improvements to combat climate change. Our 5.8% forecast includes a 0.5% adjustment to capture these potential opportunities and the potential return benefits from the renewed search for yield.

6.1%

NATURAL RESOURCES TOTAL RETURN FORECAST

6.3%

GLOBAL REAL ESTATE TOTAL RETURN FORECAST

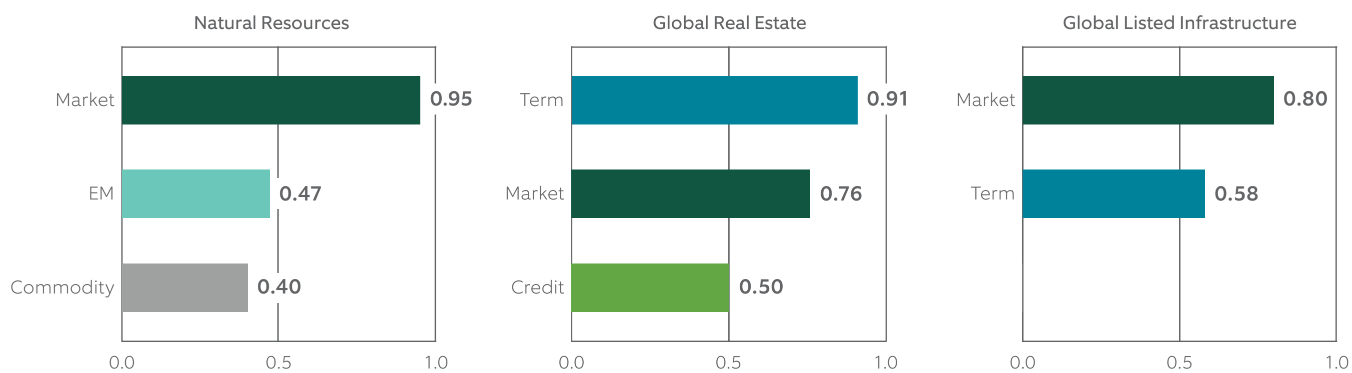
5.8%

GLOBAL LISTED INFRASTRUCTURE TOTAL RETURN FORECAST

WHAT EXACTLY AM I BUYING?

Real assets have a variety of risk exposures that must be understood.

Real Asset Factor Beta



Source: Northern Trust Global Asset Allocation, Bloomberg. Regressions calculating factor exposure (beta) run from 12/31/2002 to 3/31/2019.

ALTERNATIVES

Alternatives — private investments and hedge funds — can enhance risk-adjusted portfolio returns through non-traditional means.

7.7%

PRIVATE EQUITY TOTAL RETURN FORECAST

3.7%

HEDGE FUND TOTAL RETURN FORECAST

Private Investments

Academic research suggests a historic private equity illiquidity premium of 2.5% (this also includes realized alpha generation). Practicing conservatism, we reduce this historically realized return premium by 0.5% to 2.0% and apply it across most public market risk assets to arrive at our respective private investment forecasts. For instance, our 7.7% private equity return forecast represents a 2% premium to our 5.7% public equity forecast, while our private natural resources return forecast of 8.1% represents a 2% premium to our 6.1% public natural resources forecast. To obtain our 5.8% private credit forecast, we apply a smaller 1% premium to our 4.8% global high yield return expectation.

Hedge Funds

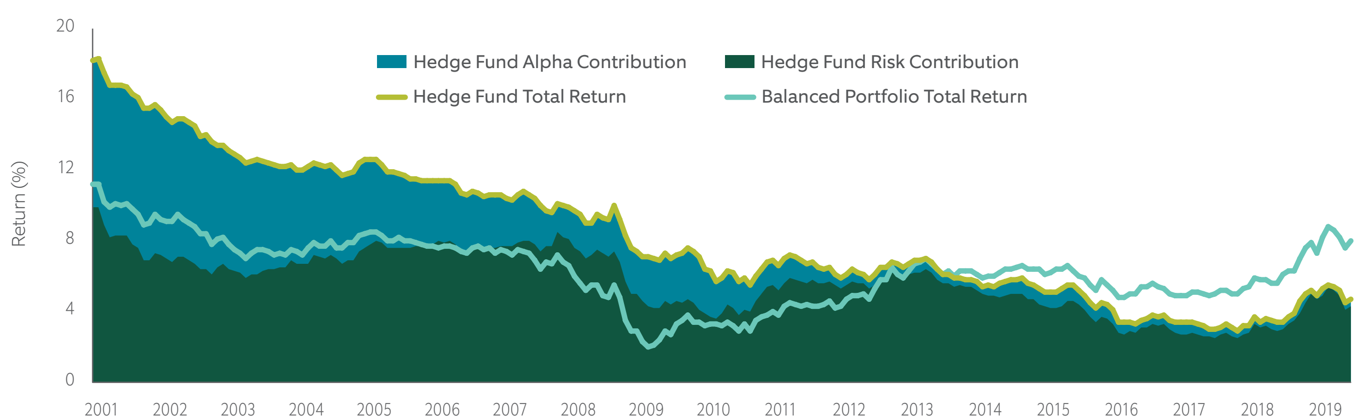
Our 3.7% hedge fund return forecast represents the combination of expected alpha (0.5%) and expected returns from risk exposures (3.2%). Our forecast is based on our risk factor model, which includes the following risk factors: market, term, credit, size, value, momentum, emerging market, commodity and currency. We add an additional market factor, which we lag by one month to capture any accounting issues that might delay asset price "marks."

The chart below shows rolling 10-year hedge fund returns split between the risk and alpha contribution, all based on the model described above. The hedge fund risk contribution, while showing some cyclicality, has been fairly steady over time and has largely tracked a balanced portfolio (though it has fallen behind more recently). This makes sense. Hedge funds in aggregate are really just one large multi-asset-class portfolio, with notable exposure to market risk in global equities.

INCREASING RISK RELIANCE

The average hedge fund alpha has slipped over time, but varies significantly by manager.

Hedge Fund vs. Balanced Portfolio – 10-Year Rolling Returns



Source: Northern Trust Global Asset Allocation, Northern Trust Portfolio Construction Desk, Bloomberg. Data from 12/31/2000 to 3/30/2019. Balanced portfolio is 50% MSCI ACWI / 50% Bloomberg Barclays Global Aggregate Index. Past performance does not guarantee future results.

DETAILED FIVE-YEAR ASSET CLASS RETURN FORECASTS

All Returns in % Annualized				5-Year Return Forecasts by CMA Year						5-Year Actual Return
		Asset Class	Proxy Index	2019	2018	2017	2016	2015	2014	
Fixed Income	United States	Cash	3-Month U.S. T-Bill	1.1	2.2	1.7	0.5	1.5	0.9	0.9
		Inflation Linked	BBG BarCap U.S. TIPS	2.6	2.9	3.0	2.5	2.5	3.0	1.8
		Investment Grade	BBG BarCap U.S. Aggregate	3.0	3.6	3.2	3.0	3.0	3.0	2.9
		High Yield	BBG BarCap U.S. High Yield	5.0	4.9	4.8	5.3	5.6	5.6	4.7
		Municipal	BBG BarCap Municipal	2.4	3.2	3.2	2.8	3.5	4.0	3.6
	Europe	Cash	3-Month German Bunds	-0.3	-0.3	-0.2	-0.5	0.0	0.4	-0.6
		Inflation Linked	BBG BarCap Euro Inflation Linked	1.0	1.2	1.5	1.4	1.8	2.8	2.6
		Investment Grade	BBG BarCap Euro Aggregate	1.2	1.8	1.5	1.4	2.0	2.8	3.1
	Japan	Cash	3-Month JGB	-0.1	0.0	-0.1	-0.3	0.0	0.1	-0.1
		Inflation Linked	BBG BarCap Inflation Linked JGB	0.2	0.5	0.8	0.8	1.2	1.5	-0.7
		Investment Grade	BBG BarCap Japanese Aggregate	0.2	0.5	0.7	0.5	1.0	1.2	2.3
	U.K.	Cash	3-Month Gilts	0.3	0.9	0.5	0.3	1.5	1.3	0.5
		Inflation Linked	BBG BarCap Inflation Linked Gilt	2.2	1.7	1.6	2.0	2.6	3.0	9.3
		Investment Grade	BBG BarCap Sterling Aggregate	2.2	2.5	2.5	2.6	3.0	3.7	5.7
	Canada	Cash	3-Month Canada T-Bill	0.7	1.6	1.3	0.7	1.5	1.3	1.0
		Inflation Linked	FTSE Canada Real Return Bond	2.0	2.3	2.5	2.5	2.5	3.2	3.4
		Investment Grade	FTSE Canada Universe	2.6	2.9	2.5	2.6	2.7	3.4	3.9
		High Yield	BofAML Canadian High Yield	4.5	4.5	4.5	5.0	5.6	5.6	5.4
	Aus.	Cash	3-Month Australia Gov't Bond	0.8	2.5	2.4	2.0	2.2	2.8	2.0
		Investment Grade	BBG BarCap Australian Composite	2.2	3.5	3.2	3.3	3.5	4.0	5.5
	Global	Investment Grade	BBG BarCap Global Aggregate	2.1	2.7	2.2	2.1	2.5	2.7	3.8
		High Yield	BBG BarCap Global High Yield	4.8	4.6	4.5	5.3	5.8	5.8	5.2
		Emerging Market Debt	JP Morgan GBI-EM Diversified	5.0	5.8	5.3	5.5	6.5	6.0	6.9
Equities	Developed Markets	United States	MSCI United States	5.7	5.8	5.9	4.8	5.6	6.6	10.6
		Europe	MSCI Europe ex U.K.	6.0	6.3	7.2	5.3	6.8	8.2	6.4
		Japan	MSCI Japan	4.5	6.0	6.0	5.6	6.2	6.6	6.1
		United Kingdom	MSCI United Kingdom	7.4	6.3	6.6	5.9	7.0	8.6	5.8
		Canada	MSCI Canada	4.5	5.5	6.0	6.0	6.9	7.1	4.9
		Australia	MSCI Australia	5.7	7.7	7.7	8.0	8.1	9.1	8.8
		Developed Markets	MSCI World	5.7	6.0	6.4	5.4	6.1	7.2	8.8
	Emerg. Markets	Asia	MSCI EM Asia	5.5	8.8	8.9	8.0	8.5	10.0	6.4
		Latin America	MSCI EM Latin America	8.9	6.5	6.9	5.6	5.7	7.0	9.2
		EMEA	MSCI EM EMEA	6.9	7.5	7.3	6.0	6.5	7.9	6.1
		Emerging Markets	MSCI Emerging Markets	6.1	8.3	8.4	7.3	7.8	9.0	6.5
	Global	Global Equities	MSCI All Country World	5.8	6.2	6.9	5.8	6.5	7.4	8.6
Real		Natural Resources	S&P Global Natural Resources	6.1	7.2	7.4	6.9	7.0	7.0	0.7
		Listed Real Estate	MSCI ACWI IMI Core Real Estate	6.3	6.0	6.1	6.3	6.9	8.0	6.4
		Listed Infrastructure	S&P Global Infrastructure	5.8	5.4	5.8	5.6	6.2	7.0	4.8
Alts		Private Equity	Cambridge Global Private Equity	7.7	8.0	8.4	7.4	8.6	9.2	N/A
		Hedge Funds	HFRI Fund Weighted Comp	3.7	4.3	4.4	3.4	4.4	4.3	2.9

Forecasts listed here represent total return forecasts for primary asset classes, annualized using geometric averages. Forecast returns are based on estimates and reflect subjective judgments and assumptions. They are not necessarily indicative of future performance, which could differ substantially.

Five-year actual returns are listed in local currency (with the exception of real assets, which are in USD) and annualized for the five-year period ending 6/30/2019.

ABOUT NORTHERN TRUST

Whatever Your Greater, We Can Help You Achieve It.

For more than a century, Northern Trust has worked hard building our legacy of outstanding service, expertise and integrity. Founded in Chicago in 1889, Northern Trust has offices in the United States in 19 states and Washington, D.C., 23 international locations in Canada, Europe, the Middle East and the Asia-Pacific region, and nearly 20,000 employees globally. We serve the world's most-sophisticated clients — from sovereign wealth funds and the wealthiest individuals and families, to the most-successful hedge funds and corporate brands.

Our guiding principles not only survived but thrived during the Great Depression, two world wars and the 2008 financial crisis. We burnished our reputation as a global leader delivering innovative investment management, asset and fund administration, fiduciary and banking solutions enabled by sophisticated, leading technology. And through it all, we continually laid a solid, forward-looking foundation on which future generations can continue growing and achieving greater.

As of June 30, 2019, Northern Trust Corporation had:

- $11.3 trillion in assets under custody/administration
- $8.5 trillion in assets under custody
- $1.2 trillion in assets under management
- $125 billion in banking assets

Explore Our Full Five-Year Outlook

Explore our long-term asset class return expectations and forecasts at **capitalmarketassumptions.com.** Visit today to:

- Gain valuable insights from our investment experts
- Get exclusive access to our full research paper
- Explore our detailed return/risk and correlation matrix

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