

Long Term Asset Class Forecast

Our longer-term asset class forecasts are forward-looking estimates of total return, generated through a combined assessment of current valuation measures, economic growth, inflation prospects, yield conditions as well as historical risk premia. We also include shorter-term return forecasts that incorporate output from our multi-factor tactical asset allocation models. Outlined below is the process we use to arrive at our return forecasts for the major asset classes.

For a copy of the latest quarterly investment commentary from the Investment Solutions Group, please reach out to your State Street representative.

Inflation

The starting point for our nominal asset class return projections is an inflation forecast. We incorporate both estimates of long-term inflation and the inflation expectations implied in current bond yields. US Treasury Inflation-Protected Securities (TIPS) provide a market observation of the real yields that are available to investors. The difference between the nominal bond yield and the real bond yield at longer maturities furnishes a marketplace assessment of long-term inflation expectations.

Cash

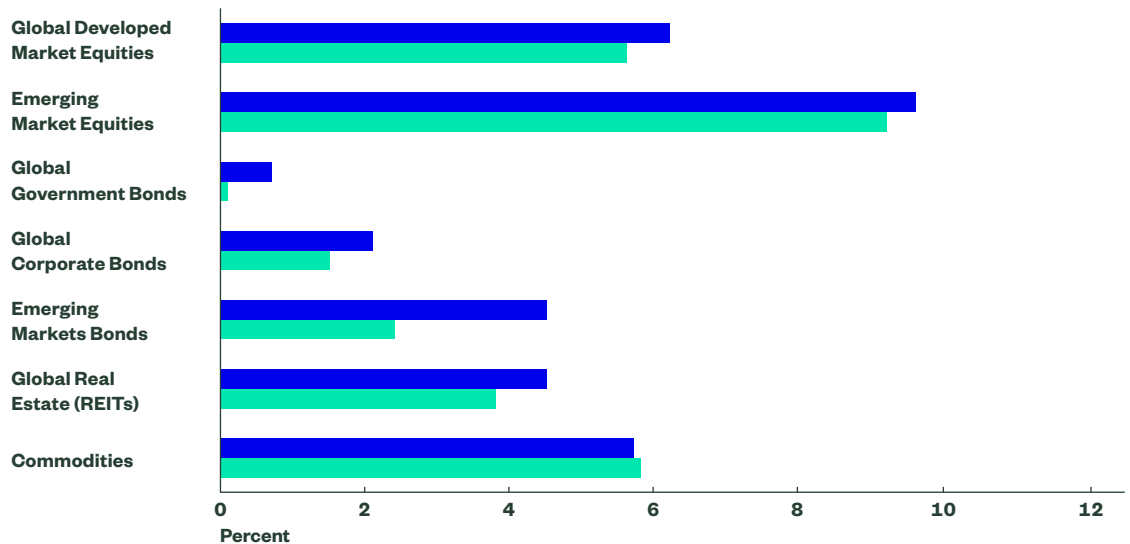
Our long-term forecasts for global cash returns incorporate what we view as the normal real return that investors can expect to earn over time. Historically, cash investors have earned a modest premium over inflation but we also take current and forward-looking global central bank policy rates into consideration in formulating our cash forecast.

Bonds

Our return forecasts for fixed income are derived from current yield conditions together with expectations as to how real and nominal yield curves will evolve relative to historical precedent. We then build our benchmark forecasts from discrete analysis of relevant maturities. For corporate bonds, we also analyze credit spreads and their term structures, with separate assessments of investment-grade and high-yield bonds.

Figure 1
**Forecasted Long-Term
 Annualized Return**

■ Long Term (10+ Years)
 ■ Short Term (1 Year)



Source: State Street Global Advisors Investment Solutions Group as of 12/31/2019.

Forecasted returns are based upon estimates and reflect subjective judgements and assumptions. These results were achieved by means of a mathematical formula and do not reflect the effect of unforeseen economic and market factors on decision-making. The forecasted returns are not necessarily indicative of future performance, which could differ substantially.

Equities

The foundation for our long-term equity market forecasts are estimates of real return potential, derived from current dividend yields, forecast real earnings growth rates and potential for expansion or contraction of valuation multiples. Our enhanced forecasting method incorporates long-run average estimates of potential economic growth based on forecasted labor, capital and productivity inputs to estimate real earnings growth. Across both developed and emerging markets, variations in labor, capital and productivity levels result in region-specific differences in our estimates for real earnings growth, allowing for more region-appropriate forecasts for both developed and emerging market equities.

Private Equity

Our long-term forecast for private equity is based upon past performance patterns of private equity funds relative to listed equity markets and our extrapolation of these performance patterns on a forward basis. According to several academic studies^{1,2} the annual rate of return of private equity funds over the long term appears to be largely in line with that of listed equities, with outperformance relative to listed equities before fees, but relative underperformance after fees. Some more recent academic studies³ find better results, especially for buyout funds. Before fees, we believe that an average private equity fund can outperform small-cap listed equities by perhaps 0.5% over the long run. All else being equal, this makes our long-term forecast for private equities not considerably different to our projections for small-cap stocks, but we also consider additional factors, including financial conditions and capital availability. Because private equity firms have enjoyed available and affordable capital, and have recently realized record-high valuation multiples, our return forecast continues to reflect a more competitive return environment. Since private equity funds tend to use ample leverage and are often much less liquid than publicly traded investments, we rate the long-term risk level of private equity as higher than that of small-cap equities.

REITs

REITs have historically earned returns between bonds and stocks due to their stable income streams and potential for capital appreciation. Hence, we model it as a blend of two approaches. The first approach is to apply the average historical spread of the yields over Treasuries to forecast the expected return. The second approach is to account for inflation and long-term capital appreciation with the current dividend yield.

Commodities

Our long-term commodity forecast is based on the level of world GDP, as a proxy for consumption demand, as well as on our inflation outlook. Additional factors affecting the returns to commodity investors include how commodities are held (e.g., physically, synthetically, or via futures) and the various construction methodologies of different commodity benchmarks. Futures-based investors have the potential to earn a premium by providing liquidity and capital to producers seeking to hedge market risk. This premium is greatest when the need for hedging is high, driving commodities to trade in backwardation, with future prices that are lower than spot prices. When spot prices are lower, however, the market is said to be in contango, and futures investors may realize a negative premium.

Figure 2
**SSGA Tactical/Strategic
Asset Allocation Forecasts**
As of December 31, 2019

Asset Class	Short Term 1 Year (%)	Intermediate Term 3-5 Years (%)	Long Term 10+ Years (%)	Long-term Risk (Std Dev) (%)
Global Equities (ACWI)	6.1	6.6	6.6	14.5
Global Equities (ACWI) ex US	6.2	7.2	7.1	15.2
Global Developed (World)	5.6	6.2	6.2	14.4
Global Developed ex US	5.1	6.1	6.3	15.1
Global Developed ex US Small Cap	5.9	6.8	7.0	15.8
US Large Cap	5.9	6.2	6.1	15.0
US Mid Cap	4.6	6.5	6.4	17.5
US Small Cap	4.3	6.7	6.6	19.1
Europe	6.0	6.5	6.8	15.7
Euro	5.8	6.1	6.3	19.4
Developed Pacific	3.3	5.0	4.7	17.8
Emerging Markets (EM)	9.2	9.9	9.6	21.0
EM Asia	9.6	10.4	9.9	22.2
EM EMEA	9.3	10.9	10.8	19.9
EM Latin America	7.6	7.7	7.8	27.6
Global Government Bonds	0.1	-0.1	0.7	3.6
Global Corporate Bonds	1.5	0.8	2.1	7.2
Non-US Government Bonds	-0.3	-0.6	0.3	3.6
Non-US Corporate Bonds	0.7	0.4	1.3	3.7
US Government Bond	1.1	1.1	1.9	4.9
US Investment Grade Bond	1.5	1.5	2.3	4.3
US High Yield Bond	2.7	2.4	3.9	8.6
US TIPS Bond	2.9	1.4	2.1	6.5
US Long Treasury STRIPS Bond	-0.6	-1.3	-0.2	24.0
Euro Government Bonds	-0.7	-0.7	0.5	4.5
Euro Corporate Bonds	-0.2	-0.4	0.9	3.8
Euro High Yield Bonds	0.1	0.4	2.1	12.3
Japanese Government Bonds	-0.3	-0.7	-0.3	4.0
Japanese Corporate Bonds	0.2	0.2	0.4	2.0
UK Government Bonds	0.3	-0.7	0.5	7.2
UK Corporate Bonds	1.6	1.0	2.0	6.9
Emerging Markets Bonds	2.4	3.2	4.5	13.4
Global Real Estate (REITs)	3.8	4.3	4.5	17.9
Commodities	5.8	4.9	5.7	15.1
Hedge Funds	5.3	5.9	5.9	5.7
Private Equity	5.3	7.2	7.1	24.7
US Cash	1.8	2.1	2.5	1.0
UK Cash	0.8	1.7	2.6	1.2
EMU Cash	-0.5	0.5	1.5	1.1
Canada Cash	1.8	2.1	2.6	1.0

Source: The forecasted returns are annual arithmetic averages based on State Street Global Advisors' Investment Solutions Group December 31, 2019 forecasted returns and long-term standard deviations. The forecasted performance data is reported on a gross of fees basis. Additional fees, such as the advisory fee, would reduce the return. For example, if an annualized gross return of 10% was achieved over a five-year period and a management fee of 1% per year was charged and deducted annually, then the resulting return would be reduced from 61% to 53%. The performance includes the reinvestment of dividends and other corporate earnings and is calculated in the local (or regional) currency presented. It does not take into consideration currency effects. The forecasted performance is not necessarily indicative of future performance, which could differ substantially.

Endnotes

- 1 Phalippou, Ludovic and Olivier Gottschalg, 2009, "the Performance of Private Equity Funds". *Review of Financial Studies*, vol. 22, no 4 (April) : 1747-1776.
- 2 Kaplan, Steven N, and Antoinette Schoar. 2005. "Private equity Performance: Returns, Persistence and Capital Flows." *Journal of Finance*, vol. 60, no 4 (August): 1791-1823.
- 3 Robert Harris, Tim Jenkinson, and Steven Kaplan. 2014. "Private Equity Performance: What Do We Know?" *Journal of Finance*, vol. 69, no 5: 1851-1882.

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Our clients are the world's governments, institutions and financial advisors. To help them achieve their financial goals we live our guiding principles each and every day:

- Start with rigor
- Build from breadth
- Invest as stewards
- Invent the future

For four decades, these principles have helped us be the quiet power in a tumultuous investing world. Helping millions of people secure their financial futures. This takes each of our employees in 27 offices around the world, and a firm-wide conviction that we can always do it better. As a result, we are the world's third-largest asset manager with US \$2.95 trillion* under our care.

* AUM reflects approximately \$43.96 billion USD (as of September 30, 2019), with respect to which State Street Global Advisors Funds Distributors, LLC (SSGA FD) serves as marketing agent; SSGA FD and State Street Global Advisors are affiliated.

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Marketing Communication.

Glossary

Bloomberg Barclays U.S. Corporate High Yield Index A fixed-income benchmark of US dollar-denominated, high-yield and fixed-rate corporate bonds. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below. Bonds from issuers with an emerging markets country of risk, based on Barclays' emerging markets country definition, are excluded.

Commodities A generic, largely unprocessed, good that can be processed and resold. Commodities traded in the financial markets for immediate or future delivery include grains, metals, and minerals.

Credit Spreads The spread between Treasury securities and non-Treasury securities that are identical in all respects except for quality rating.

Dividend Equities and Dividend Yield Equity securities that pay dividends. A dividend is a distribution of a portion of a company's earnings, decided by the board of directors, to a class of its shareholders. Dividends can be issued as cash payments, as shares of stock, or other property. Equity, also

known as stock, is a type of security that signifies ownership in a corporation and represents a claim on part of the corporation's assets and earnings. The dividend yield is the ratio of the dividend paid per share of issued equity over the share price.

Inflation An overall increase in the price of an economy's goods and services during a given period, translating to a loss in purchasing power per unit of currency. Inflation generally occurs when growth of the money supply outpaces growth of the economy. Central banks attempt to limit inflation, and avoid deflation, in order to keep the economy running smoothly.

MSCI World Index The MSCI World Index is a free-float weighted equity index. It includes about 1,600 stocks from developed world markets, and does not include emerging markets.

Nominal Bond Yield The annual income that an investor receives from a bond divided by the par value of the security. The result, stated as a percentage, is the same as the rate of interest the security pays.

Private Equity An umbrella term for large amounts of money raised directly from accredited individuals and institutions and pooled in a fund that invests in a range of business ventures.

Real Interest Rates, or Real Yields An interest rate that takes into consideration the actual or expected inflation rate, which is the actual amount of yield an investor receives. The real rate is the calculation of the "nominal" interest rate minus the inflation rate as follows: Real Interest Rate = Nominal Interest Rate - Inflation.

REITs (Real Estate Investment Trusts) Publicly traded companies that pool investors' capital to invest in a variety of real estate ventures, such as apartment and office buildings, shopping centers, medical facilities, industrial buildings, and hotels.

Tactical Asset Allocation Models Illustrate a dynamic approach to asset management that emphasizes exposure to asset classes that are designed to enhance returns or control drawdowns.

Yield Curve (e.g., US Treasury Curve) A graph or line that plots the interest rates or yields of bonds with similar credit quality but different durations, typically from shortest to longest duration. When the yield curve is said to be "flat," it means the difference in yields between bonds with shorter and longer durations is relatively narrow. When the yield curve is said to be "steep," it means the difference in yields between bonds with shorter and longer durations is relatively wide.

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ID140052-29119091.2.GBL.RTL 0120
Exp. Date: 01/31/2021