2018 Global Market Outlook
Step Forward, Look Both Ways
<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>CIO’s View</td>
</tr>
<tr>
<td>04</td>
<td>The Macro Picture</td>
</tr>
<tr>
<td>20</td>
<td>Portfolio Positioning</td>
</tr>
<tr>
<td>25</td>
<td>Investment Ideas for 2018</td>
</tr>
<tr>
<td>37</td>
<td>Investment Themes</td>
</tr>
<tr>
<td>42</td>
<td>Contributors</td>
</tr>
<tr>
<td>43</td>
<td>Research Approach</td>
</tr>
<tr>
<td>44</td>
<td>Glossary</td>
</tr>
<tr>
<td>48</td>
<td>Disclosures</td>
</tr>
</tbody>
</table>

05 Economic Outlook
18 Geopolitical Backdrop
21 Our Model Portfolio
23 Factor Valuations
26 Capture More Upside in Equities
29 Don’t Bet Against Bonds
34 Prepare for Tail Risk
38 Better Days for Active?
40 Maximize the China Opportunity
With global growth more evenly distributed and expected to return to its historical trend rate of 3.7%, while inflation remains muted, we think the coming year should be supportive of risk assets.

We favor equities, though we are mindful of elevated valuations in some sectors like the FAANG tech stocks and regions like the US where the cycle is more advanced. Therefore we are looking to areas like Europe and Japan and select opportunities in sectors like financials, healthcare and cycicals.

Emerging markets like Russia and Brazil seem to have turned a corner as oil and commodity prices have recovered from their 2016 lows. Meanwhile, China’s better-than-expected performance indicates an orderly deceleration of growth and a slowing of credit expansion, paving the way for another strong year as markets overstate debt fears.

For fixed income, we think moderate growth and inflation will keep interest rates well anchored around a lower level. Despite the elongated cycle, we still see select opportunities in credit and suggest staying invested in EM local currency debt with a tilt towards quality.

Yet there are enough structural uncertainties to suggest that investors adopt a more defensive posture in 2018 and consider what kind of defenses they want for their portfolios and, importantly, at what price.
Economic Outlook

A slow but steady improvement in growth, coupled with modest inflation, is conducive for stronger global equity markets.

Geopolitical Backdrop

While there are many potential flashpoints, none seems material enough to derail the global economy or markets.
Economic Outlook

For the first time since 2011, we expect the global economy to reach its historic trend growth level of 3.7% in 2018, building on the synchronized upturn we saw take hold in 2017.

While this is still only an incremental improvement we believe, coupled with modest inflation, it provides the kind of not too hot, not too cold macro environment that can continue to lift markets higher.

Growth is now also more evenly distributed around the world, with some emerging market economies turning the corner.
More than ten years after the first tremors of what would become the global financial crisis (GFC), we expect global growth to return to its trend rate of 3.7% as gross domestic product (GDP) improvements spread around the world. The International Monetary Fund expects only 6 of the 192 economies it covers to fail to grow in 2018. The real question for us is whether this is more than just a cyclical upswing.

This year should build on the improvements we saw last year in both developing and advanced economies. Brazil and Russia finally emerged from deep recessions, India remained vibrant, and the long-awaited Chinese slowdown failed to materialize. Meanwhile the recovery of oil prices boosted the US and Canada, fiscal stimulus supported Japan and domestic demand buoyed the Eurozone.
Global Growth and Inflation Forecasts for 2018

<table>
<thead>
<tr>
<th>2018</th>
<th>Growth</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Growth</td>
<td>3.70%</td>
<td>1.70%</td>
</tr>
<tr>
<td>Advanced Economies</td>
<td>2.20%</td>
<td>1.70%</td>
</tr>
<tr>
<td>US</td>
<td>2.70%</td>
<td>1.80%</td>
</tr>
<tr>
<td>Euro Area</td>
<td>1.90%</td>
<td>1.40%</td>
</tr>
<tr>
<td>Germany</td>
<td>1.80%</td>
<td>1.60%</td>
</tr>
<tr>
<td>France</td>
<td>1.60%</td>
<td>1.00%</td>
</tr>
<tr>
<td>Italy</td>
<td>1.20%</td>
<td>1.20%</td>
</tr>
<tr>
<td>Japan</td>
<td>1.30%</td>
<td>0.70%</td>
</tr>
<tr>
<td>UK</td>
<td>1.60%</td>
<td>2.40%</td>
</tr>
<tr>
<td>Canada</td>
<td>1.90%</td>
<td>2.00%</td>
</tr>
<tr>
<td>Australia</td>
<td>2.40%</td>
<td>2.30%</td>
</tr>
<tr>
<td>Developing Economies</td>
<td>4.90%</td>
<td>4.60%</td>
</tr>
</tbody>
</table>

Source: SSGA Economics as of September 30, 2017. Projected forecasts are based upon estimates and reflect subjective judgments, assumptions, and analyses made by SSGA. There can be no assurance that developments will transpire as forecasted and that the estimates are accurate.
Global Trade and Productivity Growth Tick Up

Broad measures of global real activity have improved. World trade, industrial production and manufacturing have all rebounded and labor markets have strengthened. The end of the energy and commodities recession is a favorable trend. Capex is bottoming out and commodity exporters are doing better on stronger terms of trade.

We are also seeing early signs of an improvement in productivity growth, though still below the long-term trendline. Several reasons are offered for the slowdown in productivity growth, from mismeasurement of improvements from technology and services, to the end of the postwar productivity miracle, to a temporary slowdown in capital spending since 2008 to a lag effect of investments that have not paid off yet.

**Measures of Global Real Activity Have Improved**

**OECD Productivity Growth**


Source: OECD (Organization for Economic Co-operation & Development) as of 2016.
Is the relationship between lower unemployment and wage and price inflation still intact? Although unemployment has continued to fall in advanced economies, we have not seen the pick-up in inflation we would normally expect. Still, central banks have begun modest tightening of policy rates even as they continue to undershoot inflation targets.

For 2018, we expect rate hikes in the US, the UK, Canada and Australia. We expect the European Central Bank will leave rates unchanged but begin to taper asset purchases, while the Bank of Japan is unlikely to make changes because inflation remains so far below target.

**Policy Interest Rate**

Sources: Macrobond, Bloomberg, European Central Bank (ECB) as of September 19, 2017.
Despite a soft patch in early 2017, the US economy continues to show a great deal of fundamental strength. How it develops this year largely depends on the size and timing of the tax cuts the administration has tried to enact.

We expect growth to reach 2.7% this year, aided by what we expect will be a more modest tax cut of about $1.0 trillion (or about 0.5% of GDP) over the next decade, which could help lower the unemployment rate even further to 4.0%. Even without fiscal stimulus, however, we expect growth to get a bump from the post-hurricane rebuilding and gathering momentum in the mining and manufacturing sectors.
Not surprisingly, consumer spending and business fixed investment remain the major drivers of growth and have helped strengthen corporate earnings and lift equity markets even further. Both areas of the economy would benefit from lower personal and corporate tax rates. Corporate earnings growth continues to be the main driver of equity market multiples and is likely to benefit from this year’s benign macro backdrop of stable growth and contained inflation.

S&P® 500 Earnings Per Share (EPS) Growth

Source: Bloomberg Finance L.P., as of October 12, 2017. Past performance is not a guarantee of future results.
Europe was one of the largest upside surprises of 2017 and is expected to have another strong year. As the worst electoral fears in the Netherlands, France and Germany failed to materialize last year, investors refocused on the region’s strong fundamentals.

For 2018, we expect a slight moderation of growth to 1.9%, reflecting the recovery of oil prices, the appreciation of the euro and the impending tapering of the ECB’s asset purchase program. The Eurozone’s big three economies continue to diverge: Germany’s unemployment (around 5.7%) continues to fall to levels not seen since before unification, while unemployment in France is elevated (9.2%) and Italy is struggling with the highest rate of the three (11.2%).

---

**Eurozone Manufacturing PMIs At Multi-Year Highs**

- France
- Italy
- Germany
- Euro Area

**Unemployment Now Declining At Faster Rate in the Eurozone**

- Euro Area, Unemployment, Total Population
- United States, Unemployment, National, 16 Years & Over

**Sources:** Macrobond, SSGA Economics, IHS Markit as of September 19, 2017.

French President Emmanuel Macron announced structural reforms to the EU last year, aimed at addressing the tension between a single monetary policy and widely disparate fiscal conditions among EU member states. But Chancellor Angela Merkel’s position has been weakened post-election as she joins Macron’s call for the fiscal transfers that are needed to make the EU work.

Without reform, strong members like Germany will be doomed to boom, while weaker members like Italy will be doomed to bust. However, the comparison below between Spain and Italy’s real GDP underscores that the euro is not to be blamed for all the member countries’ ills. Unlike Italy, Spain underwent painful but necessary structural reforms in the wake of the GFC. These have helped Spain outperform its southern neighbor significantly.

**Spain Much Better At Dealing With Euro Constraints – Why?**

Sources: Macrobond, SSGA Economics, Italian National Institute of Statistics (Istat), Spanish National Statistics Institute (INE) as of September 12, 2017.
United Kingdom

The UK economy has fared better than most had dared hope in the immediate aftermath of the Brexit referendum. Moreover, it does not appear that conditions in either the labor market or the economy as a whole are about to take an abrupt turn for the worse. We expect growth of 1.6% for 2018, assuming that the country will reach a transitional agreement with the EU, which will limit any weakening of fixed investment. Still there remain significant risks to the downside in the case that a hard Brexit is reached without any agreement with Brussels.

UK Recovery In Line With US But Unprecedented Policy Divergence

While Japan still struggles with demographic headwinds that constrain GDP growth, Abenomics may finally be having an effect on economic growth. Last year, industrial production broke to the upside, retail sales picked up and GDP rose to its best performance in four years (1.6%) — although we think this represents a high-water mark.

Meanwhile, Japanese equities were one of the best performing asset classes in 2017. New governance incentives have motivated companies to focus on returns, dividends and repurchasing shares. Price-to-book and price-to-earnings multiples in Japan are now on par with developed country peers. Dividend yields have also increased impressively, almost equal to those in the US.
We believe both domestic macro signals and international dynamics suggest only a modest deceleration to 6.4% growth in China for 2018 from 6.8% last year. Although there has been growing acknowledgement of risks associated with excessive indebtedness among Chinese policymakers, a sharp slowdown in credit growth seems unlikely.

Rather than a substantial cut in overall credit availability, we believe the upcoming “tightening” is more likely to involve a reorientation in the sources of credit (from riskier lending through the shadow banking system toward more traditional lending channels). The threat of US trade protectionism is still very real, but the immediacy of the North Korea crisis may drive a more collaborative and less confrontational US-China bilateral relationship in coming months.
This year, we think EM growth will likely quicken to a five-year high of 4.9%, assuming China focuses on reining in debt gradually and Brazilian politics do not derail either the (hesitant) progress on structural reforms or the budding cyclical recovery. Russia’s economic recovery turned a corner last year, with the recession ending and growth firming to 1.5%. This year should be at least as good.

Politics aside, four fundamental factors should sustain EM growth over the next year:

- pick-up in global trade
- higher commodity prices
- weaker US dollar
- shift in monetary policy to a pro-growth agenda
While 2018 holds fewer electoral milestones than last year, we still believe market participants need to stay acutely aware of geopolitical developments because so much of the global political order is now shifting.

As many of the trade and security assumptions of the last 70 years seem less certain, investors need to discern what a new global order might look like. That will have direct implications for political risks, trade flows, commodity markets and ultimately global growth.
Low Probability, High Impact Geopolitical Risks Worry Investors

The Macro Picture / Geopolitical Backdrop

Sources: SSGA Official Institutions Group as of November 1, 2017.
## Portfolio Positioning

<table>
<thead>
<tr>
<th>Our Model Portfolio</th>
<th>A balanced overweight to global equities, which continue to benefit from the synchronized recovery of earnings growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor Valuations</td>
<td>Value and size are currently on the costly side of historical ranges, while quality is well priced</td>
</tr>
</tbody>
</table>
In 2018, the fundamental backdrop for growth assets remains favorable, as we expect economic expansion to strengthen around the world. So we are keeping our general risk-on positioning in multi-asset portfolios, maintaining a balanced overweight to equities going into the new year.
For our tactical multi-asset portfolios, we maintain a general risk-on positioning. As demonstrated by the US model portfolio below, we have a balanced overweight to global equities, which continue to benefit from the synchronized recovery of earnings growth, with the largest exposure developed markets outside the US where valuations look most favorable. We have smaller overweight positions in US and emerging market equities.

Responding to firming inflation expectations, central banks are likely to raise short-term interest rates and wind down stimulus programs. We are underweight intermediate US bonds and global government bonds outside the US, where higher yields bring weaker performance. We have a slight overweight to long-duration fixed income. With spreads near cycle lows, we are slightly underweight high-yield credit, as we see more downside to spread widening in a maturing business cycle.

Source: SSGA as of November 8, 2017

**US Model Portfolio Tactical Position vs Benchmark**

Illustrative purposes only - as of November 8, 2017
Factor Views

Value and Size
On Costly Side of Historical Range

We use the book-to-price ratio to estimate how attractive or expensive each factor is, compared to its own history. Value and Size are within one standard deviation of their historical average spreads. Size is on the costly side of the range. And the macro environment has been conducive to Value becoming more expensive over the year. But historically high valuation dispersion warrants taking a selective approach to the Value factor.

Source: SSGA Investment Solutions Group (ISG) as of October 9, 2017. MSCI World Index data from January 1, 1987 to September 30, 2017. The data displayed is based on empirical research for illustrative purposes only and is not indicative of the past or future performance of any SSGA strategy.
Factor Views

Quality Well Priced, Low Vol Near Neutral

According to our median book-to-price spread analysis, Quality and Low Volatility are also within one standard deviation of their historical average spreads. Quality — low debt/equity and EPS variability, high return on equity — remains attractive, while Low Volatility has returned to neutral or fair value the historical average from the previous year’s more expensive extreme.

Source: SSGA Investment Solutions Group (ISG) as of October 9, 2017. MSCI World Index data from January 1, 1987 to September 30, 2017. The data displayed is based on empirical research for illustrative purposes only and is not indicative of the past or future performance of any SSGA strategy.
Capture More Upside in Equities

Don’t Bet Against Bonds

Prepare for Tail Risk

Choose equities for growth but mind valuations and cast a global net.

Seek relative value opportunities across countries and in emerging market debt.

Late in the cycle, hedge risk but consider how and at what price.
To those who claim that equities have gone too far, too fast, we would point out that bull markets — like economic recoveries, as Fed Chair Janet Yellen famously said — do not die of old age.

Valuations, through frothy in some sectors, remain below fair value at current levels of interest rates. Given our outlook for slow but steady growth supporting earnings strength in 2018, we still favor equities.

But given the late-cycle environment, we recommend that investors take a risk-aware approach, being selective about sectors and going further down the cap structure.
US Equities Charge Into Ninth Bull Year

The S&P 500 has climbed significantly since the bear market trough in March 2009, making this the second longest bull market on record. To exceed the longest US equity boom ever, the current bull market would need to keep charging — without a 20% dip — through June 2021.

We think the equity bulls still have room to run. Valuations may be frothy in some sectors. But when we compare stocks to bonds, equity valuations remain below fair value at current interest-rate levels. Judging fair value is difficult because historic multiples were established at a time when the 10-year Treasury was yielding 5-7%, not the range of 2-2.5% of today.

Even if US large cap valuations have become stretched, we believe investors can still find opportunities further down the cap spectrum and in other developed markets outside the US, where earnings growth has been more robust and multiples have compressed — making them even better values.

Japan is particularly attractive thanks to relatively low interest rates, improving corporate governance and a weaker currency, enabling Japanese companies to deliver strong earnings. And if we see a normalization of relative risk between Europe and the US, along with the region’s favorable valuations, we think local currency returns in the Eurozone may have more room to run.

Global Equity Market Price to Book Ratios (P/B)

Sources: Bloomberg Finance L.P., State Street Global Advisors as of September 30, 2017. Characteristics are as of the date indicated and should not be relied upon as current thereafter. Past performance is not a guarantee of future results.
Within bond markets we prefer relative value opportunities further down the capital structure, especially within higher quality high yield issuers, and stay invested in EM local currency debt on a selective basis.

With growth and inflation set to remain moderate, we expect interest rates to stay anchored at a fairly low level this year.

Contrary to some expectations that the unwinding of quantitative easing (QE) could cause interest rates to rise, lower rates and wider spreads remain a possibility.
Without a Breakout in Rates, Don’t Bet Against Bonds

While coordinated global growth and the winding down of quantitative easing might put modest upward pressure on interest rates, secular forces suggest that growth and inflation will remain slow and steady. In that context, we expect rates to stay well anchored around a lower level. We see this in most of the developed world, as highlighted by the weighted average of G6 rates relative to underlying nominal growth, which includes inflation.

To counter the argument that the US Federal Reserve has distorted financial conditions by keeping rates too low for too long, we can plot the Fed funds rate against the classic Taylor Rule estimate based on the output gap. The current rate has converged to reflect the variation of actual from target inflation and of actual from potential GDP.

---

**Interest Rates and the Economy**

G6 Rates Versus Nominal GDP (Weighted Average)

---

**US Fed Funds Rate versus Taylor Rule Estimate**

---

Source: Barclays as of September 29, 2017.

Source: Congressional Budget Office as of September 29, 2017.
With major central banks beginning to taper their accommodative policy, expectations that ending quantitative easing will cause rates to rise merit a reminder that the impact might be counterintuitive.

As we saw in 2008 when the Fed first engaged in QE, interest rates rose and credit spreads narrowed. So as QE unwinds, it is possible we get the opposite — namely, lower rates and wider spreads.

Reaction of 10-Year US Treasury Yields and Option-Adjusted Spreads (OAS) to Quantitative Easing

Source: Bloomberg Finance L.P., as of September 29, 2017. Past performance is not a guarantee of future results.
The majority of fixed income assets are generating yields below the historical average of the global aggregate benchmark. As opportunities for income generation remain scarce, we think investors need to balance duration and credit risks carefully. We expect to see further curve flattening in 2018, as yield movements will be greater at the front end where central banks have more direct influence and demand for duration remains strong.

Credit sectors have performed well over the past few years, and current spreads relative to government bonds are extremely tight, underpinned by positive fundamentals. Flows into credit have little chance of slowing as long as investors seek higher returns, while the economic and policy backdrop looks broadly supportive. Even so, not all credit is created equal. It pays to be selective and assess the balance of risks across sectors.

Global Yield to Worst and Duration vs. Credit Spread over Treasuries

Sources: Bloomberg Finance L.P., as of September 29, 2017. Past performance is not a guarantee of future results. Index returns reflect capital gains and losses, income, and the reinvestment of dividends. Performance is calculated in USD.
In our view, two offsetting positive and negative forces could keep the US dollar range bound in 2018. Above-trend US growth would be enough to keep Fed tightening on track, pushing the dollar up, while coordinated global growth would increase capital flows to Europe and emerging markets, exerting downward pressure. As a result, the dollar will likely remain within a narrow band from 1.15 to 1.25.

With US interest rates moving sideways and the dollar declining for most of the year, emerging-market assets have done well. Currency contributed to performance in dollar terms, but not by as much as we might have expected. Earnings have been the biggest driver of equity total return for the first time since 2013, while some multiple expansion has been supported by EPS growth.
As the US equity bull market enters its ninth year and with the global economic recovery nearly as long in the tooth, investors are understandably concerned about the next pullback: when will it hit and how severe could it be?

Although the VIX has hovered at historic lows over the last year amid stable global growth and low inflation, the SKEW Index suggests investors are indeed concerned with tail risk events.

While we agree that timing markets is notoriously difficult, there are many ways investors can consider hedging tail risk. But what kind of defensive strategy and at what price?
Of the many market anomalies puzzling investors, the remarkable complacency signaled by historic lows in the VIX index is one of the main ones. Whether it was the surprise outcome of the British snap election or saber-rattling between the US and North Korea, markets have shrugged off all manner of unexpected events. At the same time the SKEW Index continues to be elevated, suggesting that investors continue to be worried about low probability, high impact events, or tail risks.

We believe we are at that point in the cycle when investors should review the tail risk hedging in their portfolios. However, the two main questions remain: what kind of defense does an investor seek and at what price?

Sources: Macrobond, SSGA Economics as of October 16, 2017. Past performance is not a guarantee of future results.
# Tail Risk Hedging: Pros and Cons

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Cost</th>
<th>When will it work</th>
<th>When will it fail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sell Equities</strong></td>
<td>+ Easy / Direct</td>
<td>Foregone Upside</td>
<td>When equities decline</td>
</tr>
<tr>
<td><strong>Purchase Put Options</strong></td>
<td>+ Direct</td>
<td>Puts are very expensive</td>
<td>Sharp / rapid decline in equities</td>
</tr>
<tr>
<td><strong>Managed Volatility (or Min Vol Equity)</strong></td>
<td>+ Fully Invested in the market. High Beta stocks often lag the market, and you are avoiding these.</td>
<td>Management fees if the strategy is run actively.</td>
<td>Period of market distress (2008, 2001). Market with many ups and downs, but a long term upward trend (2010–2017).</td>
</tr>
<tr>
<td><strong>Target Volatility Triggers (TVT)</strong></td>
<td>+ Can be run as an overlay on an entire equity program. Variable equity exposure may be difficult to grasp for asset owners. High Active risk.</td>
<td></td>
<td>In trending markets, in particular if market has a strong downward trend, it can offer significant protection (2000–2002, 2007–2008).</td>
</tr>
<tr>
<td><strong>Managed Futures</strong></td>
<td>+ Momentum based trading at the macro level can offer strong downside protection. CTA managers did well in 2008.</td>
<td>High fees (2 and 20) are often paid to the best CTA managers.</td>
<td>Very similar in effect to TVT</td>
</tr>
<tr>
<td><strong>Flexible Asset Allocation</strong></td>
<td>SSGA Strategy, uses market regime forecast to go risk on or risk off. Multi-Asset. Can be used as an Equity substitute (similar to Diversified Growth Funds in the UK).</td>
<td>Active fees, though much less than standard liquid alternatives.</td>
<td>Similar to TVT and Managed Futures, Has done well in 2017 with a trending up market and persistently low volatility.</td>
</tr>
</tbody>
</table>

The information provided does not constitute investment advice and it should not be relied on as such. See disclosures page 48.
Investment Themes

Better Days for Active?

Choose where, when and how to go active, as the environment improves for alpha generation

Maximize the China Opportunity

With 2018 potentially a break-out year, global investors should revisit their China strategy
Better Days for Active?

Historically low interest rates and policy-driven liquidity since the global financial crisis have sent equity market indexes ever higher and kept asset class correlations high and dispersion and volatility low. These conditions have created additional challenges for active managers to outperform.

But a move away from extraordinary monetary policy accommodation and lower cross-asset class correlations might be creating more conducive market conditions for active managers. Regardless of the market backdrop, investors should consider active opportunities at the asset class, investment process and asset allocation levels.
Active managers have struggled in an environment of low volatility and accommodative monetary policy. But a recent fall in cross-asset correlations as major central banks consider rolling back their extraordinary interventions might be paving the way for the return of the stock pickers. In the year to June 2017, over half of all US equity mutual funds outperformed their benchmarks. Connections between individual shares and broader stock markets weakened sharply in 2017.

While we might be moving toward more conducive conditions for active management, skilled managers can find pockets of opportunity regardless of the environment.
Maximize the China Opportunity

We expect the Year of the Dog to be a pivotal one for China. Notwithstanding the country’s high level of debt to GDP — 257% at the end of 2016 — the government appears prepared to oversee an orderly process of de-leveraging by reducing industrial overcapacity and housing stock.

The rate of overall credit expansion has already begun to slow and the gap between credit expansion and nominal GDP growth has narrowed.
We think the fearmongering over China’s debt has been overstated and 2018 could offer an attractive entry point for long-term investors, provided political stability is maintained.

Consumer spending among the 100 million-plus (and rising) middle class – higher now than in the US – is accelerating and we believe China’s significant contribution to global growth is likely to surprise to the upside in the next 12 months.

Contributors

Rick Lacaille
Global Chief Investment Officer

Lori Heinel, CFA
Deputy Global Chief Investment Officer

George Bicher
Chief Investment Officer, Fundamental, Emerging Market Equities

Elliot Hentov, Ph.D.
Head of Policy and Research, Official Institutions Group

Patricia Hudson
Global Head of Investment Communications

Lorne Johnson, Ph.D.
Senior Portfolio Manager, Investment Solutions Group

Dave Kobuszewski, CFA
Senior Portfolio Manager, Investment Solutions Group

Gaurav Mallik
Chief Portfolio Strategist

Simona Mocuta
Senior Economist

Matthew Nest, CFA
Global Head of Macro Strategy

Laura Ostrander
Emerging Markets Macro Strategist

Christopher Probyn, Ph.D.
Chief Economist

Ric Thomas, CFA
Global Head of Strategy and Research, Investment Solutions Group

Andrew Xiao, Ph.D., CFA
Senior Portfolio Manager, China Equity
As investment challenges grow more complex, our Global Market Outlook is designed to alert investors to portfolio risks and opportunities in the coming year, based on the research of our investment teams.

Research around near-term and longer-term market issues is at the heart of who we are as investors. It drives the kinds of outcome-oriented portfolios we create for clients, drawing on the full range of our beta and alpha solutions as well as our asset allocation expertise.

With this issue of the Global Market Outlook for 2018, we have sought to improve the user experience through more intuitive digital formats (visit ssga.com/gmo).

We hope this new approach makes it easier for you to quickly access relevant content to help you plan for 2018 and beyond.
Abenomics
The nickname for the multi-pronged economic program of Japanese Prime Minister Shinzō Abe that seeks to remedy two decades of stagnation by increasing the nation’s money supply, boosting government spending and enacting reforms to make the economy more competitive.

Active Investing
An investment approach that involves a manager choosing securities to build, say, a fixed income portfolio rather than replicating the securities of a fixed income index.

Bloomberg Barclays 1-3 Month Treasury Bill Index
An index includes all publicly issued zero-coupon US Treasury Bills that have a remaining maturity of less than 3 months and more than 1 month, are rated investment grade and have $250 million or more of outstanding face value. In addition, the securities must be denominated in US dollars and must be fixed rate and non-convertible.

Bloomberg Barclays 1-3 Year Credit Index
An index composed of US dollar-denominated, investment-grade corporate, sovereign, supranational, local authority and non-US agency bonds with remaining maturities between one and three years.

Bloomberg Barclays Aggregate Bond Index
A market value-weighted index that tracks the daily price, coupon, pay-downs and total return performance of fixed-rate, publicly placed, dollar-denominated and non-convertible investment-grade debt issues with at least $250 million par amount outstanding and with at least one year to final maturity.

Bloomberg Barclays Commodities Index
A rolling commodities index composed of futures contracts on 19 physical commodities traded on US exchanges. The index serves as a liquid and diversified benchmark for the commodities’ asset class.

Bloomberg Barclays Emerging Markets (EM) USD Aggregate Index
The index is a hard currency emerging markets debt benchmark that includes US dollar-denominated debt from sovereign, quasi-sovereign and corporate issuers in the developing markets.

Bloomberg Barclays Global Aggregate Index
A benchmark that provides a broad-based measure of the global investment-grade fixed income markets. The three major components of this index are the US Aggregate, the Pan-European Aggregate and the Asian-Pacific Aggregate Indices. The index also includes Eurodollar and Euro-Yen corporate bonds, Canadian government, agency and corporate securities and USD investment-grade 144A securities.

Bloomberg Barclays Global Aggregate Credit Index
A benchmark that covers the global investment-grade and high-yield fixed income markets.

Bloomberg Barclays Global Aggregate Government Index
Represents primarily government bonds within the Bloomberg Barclays Global Aggregate Index.

Bloomberg Barclays High Yield Index
An index that covers the universe of fixed rate, non-investment grade debt. Pay-in-kind (PIK) bonds, Eurobonds and debt issues from countries designated as emerging markets (e.g., Argentina, Brazil, Venezuela, etc.) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included. Original issue zeroes, step-up coupon structures and 144-As are also included.

Bloomberg Barclays Intermediate Credit Index
An index representing the intermediate component of the US Credit Index, which includes publicly issued US corporate and foreign debentures and secured notes that meet specified maturity, liquidity and quality requirements.

Bloomberg Barclays Intermediate Treasury Index
An index that includes all publicly issued, US Treasury securities that have a remaining maturity of greater than or equal to 1 year and less than 10 years, are rated investment grade and have $250 million or more of outstanding face value.

Bloomberg Barclays Long Credit Index
An index that measures the performance of the long term sector of the US investment bond market, which as defined by the Long Credit Index includes investment-grade corporate debt and sovereign, supranational, local authority and non-US agency bonds that are dollar denominated and have a remaining maturity of greater than or equal to 10 years.

Bloomberg Barclays Long Treasury Index
An index that includes all publicly issued US Treasury securities that have a remaining maturity of 10 or more years, are rated investment grade and have $250 million or more of outstanding face value.

Bloomberg Barclays US Aggregate Index
A benchmark that provides a measure of the performance of the US dollar-denominated investment-grade bond market, which includes investment-grade government bonds, investment-grade corporate bonds, mortgage pass-through securities, commercial mortgage backed securities and asset backed securities that are publicly for sale in the US.

Bloomberg Barclays US Credit Index
An index designed to measure the performance of US dollar-denominated, fixed-rate, taxable corporate and government-related bond markets. It is composed of the US Corporate Index and a non-corporate component that includes non-US agencies, sovereigns, supranationals and local authorities.
Bloomberg Barclays US Corporate Bond Index
Measures the investment-grade, US dollar-denominated, fixed-rate, taxable corporate and government-related bond markets. It is composed of the US Corporate Index and a non-corporate component that includes foreign agencies, sovereigns, supranationals and local authorities.

Bloomberg Barclays US Corporate High Yield Index
The index consists of fixed rate, high yield, USD-denominated, taxable securities issued by US corporate issuers.

Bloomberg Barclays US Mortgage Backed Securities (MBS) Index
Measures the performance of investment-grade fixed-rate mortgage-backed pass-through securities of GNMA, FNMA and FHLMC.

Bloomberg Barclays US TIPS Index
An index that includes all publicly issued, US Treasury inflation-protected securities that have at least one year remaining to maturity, are rated investment-grade and have $250 million or more of outstanding face value.

Bloomberg US Treasury Index
A rules-based, market-value weighted index engineered to measure the performance and characteristics of fixed rate coupon US Treasuries which have a maturity greater than 12 months. To be included in the index a security must have a minimum par amount of 1,000MM.

Book-to-Price (B/P) Ratio
A valuation metric used a proxy for how expensive a security is. The B/P ratio is the inverse of the price-to-book (P/B) ratio.

CAPE Shiller P/E
The cyclically adjusted price-to-earnings ratio is a valuation measure usually applied to the US S&P 500 equity market. Defined as price divided by the average of ten years of earnings (moving average), adjusted for inflation.

Chicago Board Options Exchange (CBOE) SKEW Index
An index based on prices of out-of-the-money options on the S&P 500. It is used to gauge the likelihood of tail risk events in the market.

Chicago Board Options Exchange (CBOE) Volatility Index (VIX)
An index constructed using the implied volatilities of a range of S&P 500 options to forecast 30-day volatility.

Citigroup World Government Bond ex US Index
An unmanaged, market-capitalization-weighted index that tracks 10 government bond indices, excluding the United States.

Consumer Board Confidence Index
An index designed to measure the degree of optimism among consumers in the United States.

Consumer Price Index (CPI)
A measure that examines the weighted average of prices of a basket of consumer goods and services, such as transportation, food and medical care. It is calculated by taking price changes for each item in the predetermined basket of goods and averaging them. Changes in the CPI are used to assess price changes associated with the cost of living; the CPI is one of the most frequently used statistics for identifying periods of inflation or deflation.

Core Inflation
A measure of inflation that excludes volatile items such as food and energy products.

CPB World Trade Monitor
A monthly time series that aggregates and summarizes data on both international trade and industrial production.

Debt-to-Equity Ratio
Used to measure a company’s financial leverage, calculated by dividing a company’s total liabilities by its stockholders equity. The D/E ratio indicates how much debt a company is using to finance its assets relative to the amount of value represented in shareholders’ equity.

Dividend Yield
A financial ratio that indicates how much a company pays out in dividends each year relative to its share price.

Dow Jones US Select REIT Index
An index that is composed of companies whose charters are the equity ownership and operation of commercial real estate and which operate under the REIT Act of 1960.

Duration
A measure of a bond’s price volatility, expressed in terms of the weighted average term-to-maturity of all the bond’s remaining cash flows.

Earnings-per-Share (EPS) Ratio
The portion of a company’s profit allocated to each outstanding share of common stock. The ratio serves as an indicator of a company’s profitability.

Enterprise Value to EBITDA (EV/EBITDA)
A popular valuation multiple used to measure the value of a company. It is the most widely used valuation multiple based on enterprise value and is often used in conjunction with, or as an alternative to, the P/E ratio to determine a company’s fair market value.

EU 28
The 28 member states of the European Union (EU).

Euro Area 19
The 19 member states of the EU that adopted the Euro as their common currency.

Euro Stoxx 50 Index
A market capitalization-weighted stock index of 50 large, blue-chip European companies operating within Eurozone nations. The universe for selection is found within the 18 Dow Jones EURO STOXX Supersector indices, from which members are ranked by size and placed on a selection list.

FAANG
An acronym that refers to stocks of five large technology companies – Facebook, Amazon, Apple, Netflix and Google (now Alphabet).

Fed Funds Rate
The overnight rate at which banks in the US lend reserves to each other and one of the main mechanisms in US monetary policy. It is influenced by the Federal Reserve’s money market operations, which attempt to ensure that the market rate remains close to the Fed funds target rate set by the Federal Open Market Committee (FOMC).

Global Inflation
A measure of inflation that excludes volatile items such as food and energy products.
GDP Deflator
An economic metric that accounts for inflation by converting output measured at current prices into constant-dollar GDP. This specific deflator shows how much a change in the base year's GDP relies upon changes in the price level.

Gross Domestic Product (GDP)
The monetary value of all the finished goods and services produced within a country's borders in a specific time period.

Group of Six (G6)
Refers to the US, UK, Germany, France, Italy and Japan.

Group of Seven (G7)
An informal bloc of industrialized democracies—Canada, France, Germany, Italy, Japan, the UK and the US—that meets annually to discuss issues such as global economic governance, international security and energy policy.

Headline Inflation
The raw inflation figure as reported through the Consumer Price Index (CPI) that is released monthly by the US Bureau of Labor Statistics. The CPI calculates the cost to purchase a fixed basket of goods, as a way of determining how much inflation is occurring in the broad economy. The CPI uses a base year and indexes the current year's prices according to the base year's values.

Ifo Pan Germany Business Climate Index
A monthly index based on a survey of German firms to gauge their assessment of current business conditions and the economic outlook in the near term.

Institute for Supply Management (ISM)
A not-for-profit supply management association based in the US.

ISM Non-manufacturing Index (NMI)
An index that tracks economic activity in non-manufacturing industries.

ISM Purchasing Managers Index (PMI)
An indicator of the economic health of the manufacturing sector. The PMI is based on five major indicators: new orders, inventory levels, production, supplier deliveries and the employment environment. The purpose of the PMI is to provide information about current business conditions to company decision makers, analysts and purchasing managers.

JPM GBI-EM Index
Comprehensive emerging market debt benchmarks that track local currency bonds issued by Emerging Market governments. The index is the first comprehensive global local Emerging Markets index.

Low Volatility
The volatility factor is a common driver of equity returns that is based on the observation that lower volatility stocks tend to generate a higher risk-adjusted return than high volatility stocks.

M0, M1, M2
Refer to different measures of the money supply in a country. While specific definitions vary from country to country, M0 and M1 tend to refer to coins and notes in circulation, as well as highly liquid cash equivalents. M2 includes M0 and M1, but adds in short-term time deposits and money market funds.

MSCI Emerging Markets (EM) Index
A free float-adjusted market capitalization index designed to measure equity market performance in 23 global emerging market economies: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Qatar, Russia, South Africa, Taiwan, Thailand, Turkey and the United Arab Emirates.

MSCI Europe Index
An index that represents the performance of large and mid-cap equities across 15 developed countries in Europe. The Index has a number of sub-indices which cover various sub-regions market segments/sizes, sectors and covers approximately 85% of the free float-adjusted market capitalization in each country.

MSCI Japan Index
Designed to measure the performance of the large and mid-cap segments of the Japanese market. With 319 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in Japan.

MSCI Pacific Index
An index that represents the performance of large and mid-cap equities across 5 Developed Markets (DM) countries—Australia, Hong Kong, Japan, New Zealand and Singapore—in the Pacific region. With 469 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

MSCI World Index
A broad global equity benchmark that represents large and mid-cap equity performance across 23 developed markets countries. It covers approximately 85% of the free float-adjusted market capitalization in each country and does not offer exposure to emerging markets.

Nominal GDP
A measure of GDP using current prices that is not adjusted for inflation.

North American Free Trade Agreement (NAFTA)
A pact negotiated by Canada, Mexico and the US that came into force in 1994.

Non-accelerating inflation rate of unemployment (NAIRU)
The level of unemployment in an economy that does not cause inflation to rise.

Option-adjusted Spread (OAS)
Removes the effect of the embedded options and shows the average spread the investor will actually earn over a comparable Treasury security.

Organization for Economic Co-operation and Development (OECD)
A group of 35 democratic countries organized to discuss and develop free market economic and social policy. The members are: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the UK and the US.

Phillips Curve
An economic concept developed by A. W. Phillips showing that inflation and unemployment have a stable and inverse relationship.
ISC Glossary

4/4

Price-to-Book (P/B) Ratio
A valuation metric that compares a company’s current share price against its book value, or the value of all its assets minus intangible assets and liabilities.

Price-to-Cash Flow (P/CF) Ratio
A stock valuation measure calculated by dividing a firm’s cash flow per share into its current share price. Financial analysts often prefer to value stocks using cash flow rather than earnings because earnings are more easily manipulated.

Price-to-Earnings (P/E) Ratio
A valuation metric that uses the ratio of the company’s current stock price versus its earnings per share.

Price-to-Sales (P/S) Ratio
A valuation metric for stocks calculated by dividing the company’s market cap by the revenue in the most recent year; or, equivalently, divide the per-share stock price by the per-share revenue.

Purchasing Power Parity (PPP)
Compares different countries’ currencies through a market “basket of goods” approach. According to this concept, two currencies are in equilibrium or at par when a market basket of goods (taking into account the exchange rate) is priced the same in both countries.

Quality
The quality factor is a common driver of equity returns that is based on the observation that healthy companies tend to outperform less healthy companies.

Quantitative Easing
An expansionary monetary policy method in which a central bank purchases government bonds and other securities in an effort to lower interest rates and maintain liquidity in the market.

Real GDP
A measure of GDP that has been adjusted for inflation.

Return on Equity (ROE)
The amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation’s profitability by revealing how much profit a company generates with the money shareholders have invested.

Russell 1000 Growth Index
A broadly diversified index predominantly made up of growth stocks of large US companies.

Russell 1000 Index
An index of approximately 1,000 of the largest companies in the US equity markets, the Russell 1000 is a subset of the Russell 3000 Index.

Russell 1000 Value Index
A broadly diversified index predominantly made up of value stocks of large US companies.

Russell 2000 Index
An index composed of the smallest 2000 companies in the Russell 3000 Index, representing approximately 8% of the Russell 3000 total market capitalization.

Size
The size factor is a common driver of equity returns that is based on the observation that stocks of small companies tend to earn greater returns than stocks of larger companies.

Standard Deviation
A measure of dispersion around an average.

Taylor Rule
An equation introduced by economist John Taylor in 1993 that forecasts the federal funds rate based on values of inflation and estimates for the level of slack in the economy.

Tokyo Stock Price Index (TOPIX)
A market cap-weighted index composed of all the stocks of domestic issuers listed on the first section of the Tokyo Stock Exchange.

Trade-weighted US dollar
A weighted average of the foreign exchange value of the US dollar against a subset of the broad index currencies that circulate widely outside the country of issue. Major currencies index includes the Euro Area, Canada, Japan, United Kingdom, Switzerland, Australia and Sweden.

S&P EPAC Small Cap Index
An index made up of the smallest companies within the S&P Broad Market Index from European and Pacific countries.

S&P Mid Cap 400
An index that tracks the US mid-cap equities sector. To be included in the index, a stock must have a total market capitalization that ranges from roughly $750 million to $3 billion dollars.

Value
The value factor is a common driver of equity returns that is based on the observation that inexpensive stocks tend to outperform more expensive stocks.

Yield-to-Worst
A measure of the lowest possible yield that a bond would earn based on the terms of its indenture.

ZEW Germany Assessment of Current Situation
A monthly survey that tracks sentiment on the economic outlook in Germany among economists and analysts.
Disclosures

The views expressed in this material are the views of SSGA through the period November 2, 2017 and are subject to change based on market and other conditions.

All information contained in this document is as of 21 November 2018 and presented in USD unless otherwise noted. This document may contain certain statements deemed to be forward-looking statements. Such statements are subject to a number of assumptions, risks, uncertainties, many of which are beyond SSGA’s control. Please note that any such statements are not guarantees of any future performance and that actual results or developments may differ materially from those projected in the forward-looking statements.

All information is from SSGA unless otherwise noted and has been obtained from sources believed to be reliable, but its accuracy is not guaranteed. There is no representation or warranty as to the current accuracy, reliability or completeness of, nor liability for, decisions based on such information and it should not be relied on as such.

The trademarks and service marks referenced herein are the property of their respective owners. Third party data providers make no warranties or representations of any kind relating to the accuracy, completeness or timeliness of the data and have no liability for damages of any kind relating to the use of such data.

The whole or any part of this work may not be reproduced, copied or transmitted or any of its contents disclosed to third parties without SSGA’s express written consent.

The information provided does not constitute investment advice and it should not be relied on as such. It should not be considered a solicitation to buy or an offer to sell a security. It does not take into account any investor’s particular investment objectives, strategies, tax status or investment horizon. You should consult your tax and financial advisor.

For use in Australia Issued by State Street Global Advisors, Australia, Limited (AFSL Number 238276, ABN 42 003 914 225) (“SSGA Australia”). Registered office: Level 17, 420 George Street, Sydney, NSW 2000, Australia Telephone: +612 9240-7600 Web: www.ssga.com. The information provided herein does not constitute investment advice and is not a solicitation. It does not take into account any investor's particular investment objectives, strategies, tax status or investment horizon. You should consult your tax and financial advisor.

For use in Switzerland The information provided does not constitute investment advice as such term is defined under applicable Swiss regulation and it should not be relied on as such. It should not be considered a solicitation to buy or an offer to sell any investment. It does not take into account any investor's or potential investor's particular investment objectives, strategies, tax status, risk appetite or investment horizon. If you require investment advice you should consult your tax and financial or other professional advisor. All material has been obtained from sources believed to be reliable. There is no representation or warranty as to the accuracy of the information and State Street shall have no liability for decisions based on such information. This communication is directed at qualified investors (as defined by FINMA) who are deemed both knowledgeable and experienced in matters relating to investments. The products and services to which this communication relates are only available to such persons and persons of any other description (including retail clients) are not entitled to rely on this communication.

For use in EMEA The information contained in this communication is not a research recommendation or ‘investment research’ and is classified as a ‘Marketing Communication’ in accordance with the European Communities (Markets in Financial Instruments) Regulations 2007. This means that this marketing communication (a) has not been prepared in accordance with legal requirements designed to promote the independence of investment research (b) is not subject to any prohibition on dealing ahead of the dissemination of investment research. The information provided does not constitute investment advice as such term is defined under the Markets in Financial Instruments Directive (2004/39/EC) and it should not be relied on as such. It should not be considered a solicitation to buy or an offer to sell any investment. It does not take into account any investor’s or potential investor’s particular investment objectives, strategies, tax status, risk appetite or investment horizon. This communication is directed at professional clients (this includes eligible counterparties) who are deemed both knowledgeable and experienced in matters relating to investments. The products and services to which this communication relates are only available to such persons and persons of any other description (including retail clients) should not rely on this communication.

For use in Australia Issued by State Street Global Advisors, Australia, Limited (AFSL Number 238276, ABN 42 003 914 225) (“SSGA Australia”). Registered office: Level 17, 420 George Street, Sydney, NSW 2000, Australia Telephone: +612 9240-7600 Web: www.ssga.com. The information provided herein does not constitute investment advice and is not a solicitation. It does not take into account any investor's particular investment objectives, strategies, tax status or investment horizon. You should consult your tax and financial advisor.

You should consult your tax and financial advisor. There is no representation or warranty as to the current accuracy of, nor liability for, decisions based on such information. This communication is directed at institutional and wholesale clients only. The products and services to which this communication relates are only available to such persons and persons of any other description (including retail clients) are not entitled to rely on this communication.
<table>
<thead>
<tr>
<th>Country</th>
<th>Address</th>
<th>Phone Numbers</th>
<th>Fax Numbers</th>
<th>Web Address</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Australia</strong></td>
<td>State Street Global Advisors, Australia, Limited (ABN 42 003 914 225) is the holder of an Australian Financial Services Licence (AFSL Number 238276), Registered office: Level 17, 420 George Street, Sydney, NSW 2000, Australia</td>
<td>Telephone: +612 9240-7600 Facsimile: +612 9240-7611</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dubai</strong></td>
<td>State Street Bank and Trust Company (Representative Office), Boulevard Plaza 1, 17th Floor, Office 1703 Near Dubai Mall &amp; Burj Khalifa, P.O Box 26838, Dubai, United Arab Emirates. Telephone: +971 (0)4-4372800, Facsimile: +971 (0)4-4372818.</td>
<td>Telephone: +971 (0)4-4372800, Facsimile: +971 (0)4-4372818</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>France</strong></td>
<td>State Street Global Advisors Ireland Limited, Paris branch is a branch of State Street Global Advisors Ireland Limited, registered in Ireland with company number 145221, authorised and regulated by the Central Bank of Ireland, and whose registered office is at 78 Sir John Rogerson’s Quay, Dublin 2. State Street Global Advisors Ireland Limited, Paris Branch, is registered in France with company number RCS Nanterre 832 734 602 and whose office is at Immeuble Défense Plaza, 23-25 rue Delarivière-Lefoulon, 92064 Paris La Défense Cedex, France. T: (+33) 1 44 45 40 00. F: (+33) 1 44 45 41 92.</td>
<td>Telephone: +33 (0)1 44 45 40 00 Facsimile: +33 (0)1 44 45 41 92</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Germany</strong></td>
<td>State Street Global Advisors GmbH, Brienner Strasse 59, D-80333 Munich. Authorised and regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht (“BaFin”). Registered with the Register of Commerce Munich HRB 121381. Telephone +49 (0)89-55878-400. Facsimile +49 (0)89-55878-440. <a href="http://www.ssga.com">www.ssga.com</a></td>
<td>Telephone: +49 (0)89-55878-400 Facsimile: +49 (0)89-55878-440</td>
<td><a href="http://www.ssga.com">www.ssga.com</a></td>
<td></td>
</tr>
<tr>
<td><strong>Hong Kong</strong></td>
<td>State Street Global Advisors Asia Limited, 6/F, Two International Finance Centre, 8 Finance Street, Central, Hong Kong Telephone: +852 2103-0288 Facsimile: +852 2103-0200</td>
<td>Telephone: +852 2103-0288 Facsimile: +852 2103-0200</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Japan</strong></td>
<td>State Street Global Advisors (Japan) Co., Ltd., Toranomon Hills Mori Tower 25F 1-23-1 Toranomon, Minato-ku, Tokyo 105-6325 Japan, Telephone +81-3-4530-7380 Financial Instruments Business Operator, Kantio Local Financial Bureau (Kinsho #345) , Membership: Japan Investment Advisers Association, The Investment Trust Association, Japan, Japan Securities Dealers’ Association</td>
<td>Telephone: +81-3-4530-7380 Financial Instruments Business Operator, Kantio Local Financial Bureau (Kinsho #345) , Membership: Japan Investment Advisers Association, The Investment Trust Association, Japan, Japan Securities Dealers’ Association</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ireland</strong></td>
<td>State Street Global Advisors Ireland Limited is regulated by the Central Bank of Ireland. Registered office address 78 Sir John Rogerson’s Quay, Dublin 2. Registered number 145221. T: +353 (0)1 776 3000. Fax: +353 (0)1 776 3300. Web: ssga.com.</td>
<td>Telephone: +353 (0)1 776 3000 Fax: +353 (0)1 776 3300</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Italy</strong></td>
<td>State Street Global Advisors Limited, Milan Branch (Sede Secondaria di Milano) is a branch of State Street Global Advisors Limited, a company registered in the UK, authorised and regulated by the Financial Conduct Authority (FCA ), with a capital of GBP 62,350,000, and whose registered office is at 20 Churchill Place, London E14 5HU. State Street Global Advisors Limited, Milan Branch (Sede Secondaria di Milano), is registered in Italy with company number 06353340968 - R.E.A. 1887090 and VAT number 06353340968 and whose office is at Via dei Bossi, 4 - 20121 Milano, Italy Telephone: 39 02 32066 100 Facsimile: 39 02 32066 155.</td>
<td>Telephone: +39 02 32066 100 Facsimile: 39 02 32066 155</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Netherlands</strong></td>
<td>State Street Global Advisors Netherlands, Apollo Building, 7th floor Herikerbergweg 29 1101 CN Amsterdam. Netherlands: 31 20 7181701. SSGA Netherlands is a branch office of State Street Global Advisors Limited. State Street Global Advisors Limited is authorised and regulated by the Financial Conduct Authority in the United Kingdom</td>
<td>Telephone: +31 20 7181701. SSGA Netherlands is a branch office of State Street Global Advisors Limited. State Street Global Advisors Limited is authorised and regulated by the Financial Conduct Authority in the United Kingdom</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Switzerland</strong></td>
<td>State Street Global Advisors AG, Beethovenstr. 19, CH-8027 Zurich. Authorised and regulated by the Eidgenössische Finanzmarktaufsicht (“FINMA”). Registered with the Register of Commerce Zurich CHE-105.078.458. Telephone +41 (0)44 245 70 00. Facsimile Fax: +41 (0)44 245 70 16. <a href="http://www.ssga.com">www.ssga.com</a></td>
<td>Telephone: +41 (0)44 245 70 00. Facsimile Fax: +41 (0)44 245 70 16</td>
<td><a href="http://www.ssga.com">www.ssga.com</a></td>
<td></td>
</tr>
</tbody>
</table>


**United States**: State Street Global Advisors, One Lincoln Street, Boston, MA 02111-2900.