S&P Dow Jones Indices
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RESEARCH

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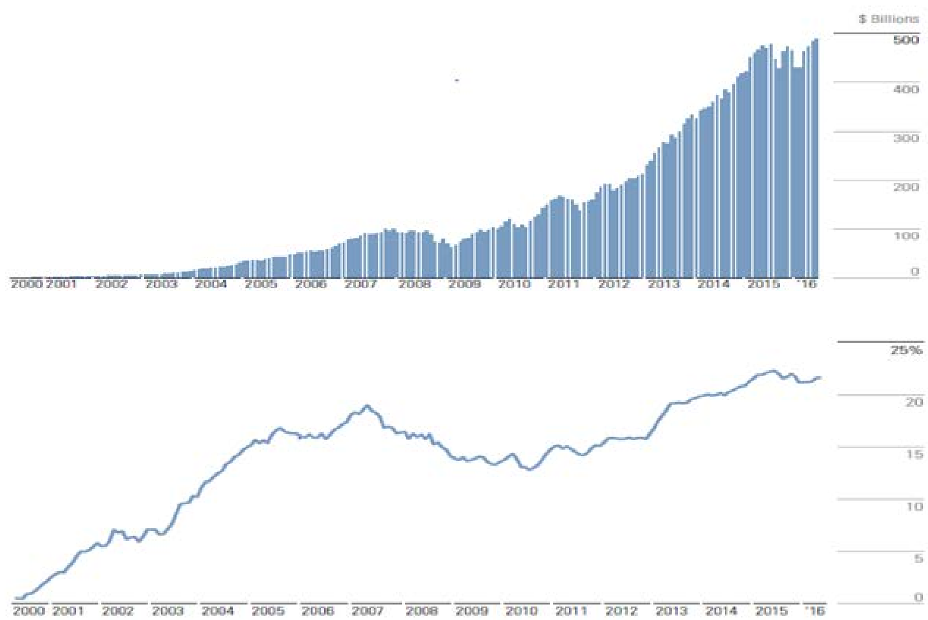
# Mid-Year Research Update – 2017

## EXECUTIVE SUMMARY


- **Most active managers fail most of the time**, at least if we define failure as underperformance of an appropriate passive benchmark. Success, when it does occur, tends not to persist.
- Advances in technology, analytic capabilities, and data availability continue to reshape the investment and indexing landscape.
- Indexed assets have, in consequence, grown dramatically, and are expected to exceed USD 20 trillion within three years.[1]
- Factor and ESG strategies are at the forefront of the evolution in indexing and passive investment and continue to attract investor interest.
- Our research efforts in 2017 are focused on the **continuing development of factor-driven, ESG, and fixed income indices.**


**Exhibit 1: Factor indices lead U.S. ETF growth.**




Source: Morningstar, Global Guide to Strategic Beta ETPs, September 2016. Charts are provided for illustrative purposes.

[1] PWC, "Asset Management 2020: A Brave New World," 2014.

## INTRODUCTION

Even a casual observer of the investment landscape will realize that passive assets under management have grown dramatically, taking share from active managers.[2] The reasons for this are well known and well established, and spring from the inherent performance advantages that attend passive management. Both theoretical argument[3] and empirical observation[4] make it clear that **most active managers fail most of the time**, and that **outperformance, when it occurs, tends not to persist**.

Passive management has itself come to encompass an increasing variety of indices.

What the casual observer might not know is that passive management has itself come to encompass an increasing variety of indices. The earliest generation of index funds was designed to track capitalization-weighted indices that represent an entire asset class—most prominent among them the S&P 500®. A second generation of equity indices reflected subdivisions and extensions of the first generation—subdivisions into sectors and industries, and extensions down the capitalization scale. As with the first generation, the second was designed to replicate the returns of an asset class (a more specialized asset class, granted, but still an asset class), and second-generation indices were also typically capitalization-weighted. In addition, indexing spread from equities to fixed income securities and commodities.

Today most equity index development is focused not on asset class replication but on what we prefer to call *factor indexing*.[5] Factor indices are designed to give their users exposure to a particular pattern of returns or, more generally, to a quality or attribute with which excess returns have historically been associated.[6] S&P DJI's ongoing research initiatives for 2017 fall squarely within this set of developments, emphasizing:

- Factor/smart beta indices
- ESG (environmental, social, governance) indices
- Fixed income indices

[2] For example, it's estimated that, at year-end 2016, the value of U.S.-based indexed mutual funds and exchange-traded funds stood at USD 4.1 billion. See Investment Company Institute, 2017 Investment Company Factbook, April 2017. See also CFA Institute, "Future State of the Investment Profession," April 2017, which reports on a survey of 1,145 investment industry leaders, 70% of whom "expect investors will increase their allocations to passive investment vehicles."

[3] See*, inter alia*, Ellis, Charles D., "The Loser's Game," *Financial Analysts Journal*, July/August 1975 and Sharpe, William F., "The Arithmetic of Active Management," *Financial Analysts Journal*, January-February 1991.

[4] Soe, Aye M. and Ryan Poirier, "SPIVA U.S. Year-End 2016 Scorecard;" Soe and Poirier, "Does Past Performance Matter?: The Persistence Scorecard," December 2016; Poirier and Soe, "Fleeting Alpha: Evidence From the SPIVA and Persistence Scorecards," February 2017.

[5] Factor indices are popularly denoted as "smart beta," an odious designation that we will use interchangeably. "Strategic beta" also has an influential following.

[6] A famous example is provided by Fama, Eugene F. and Kenneth R. French, "The Cross-Section of Expected Stock Returns," *Journal of Finance*, June 1992.

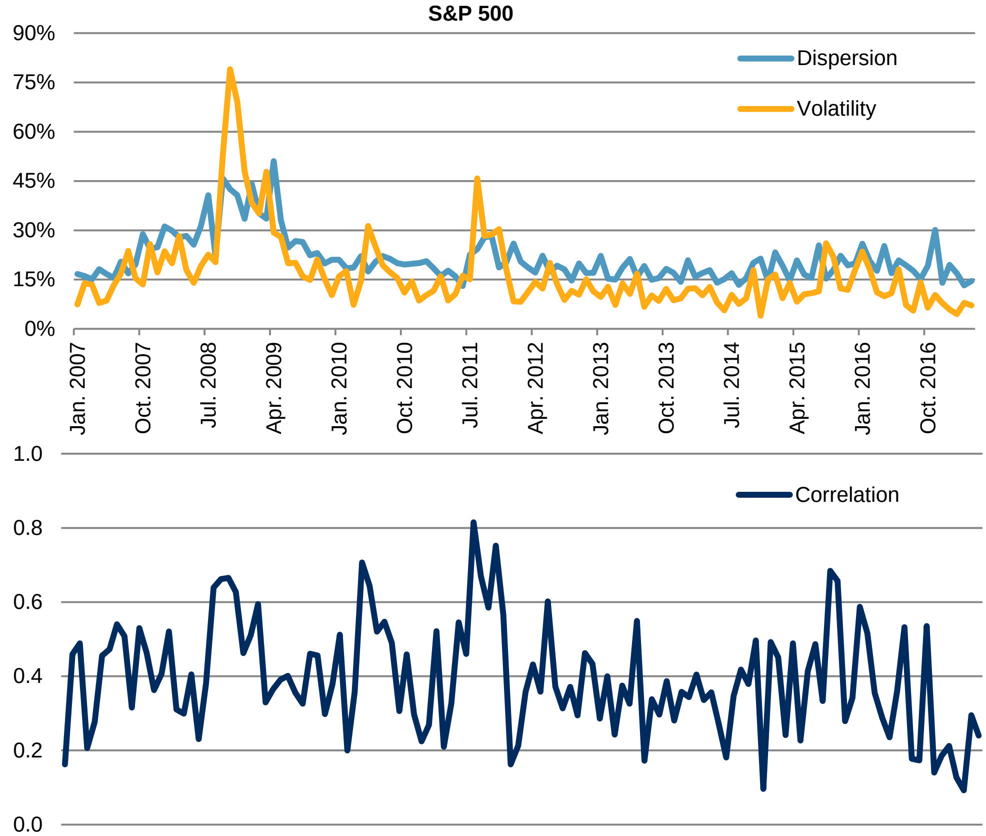
## MACROECONOMIC CONTEXT

Of course index development, like any investment activity, can't be divorced from the economic environment in which it takes place.[7] We'd cite three themes which we think will be germane for market participants and influence returns for the balance of 2017 and beyond.

### Equity Market Volatility (or the Lack Thereof)

Equity market **volatility has been remarkably low** for an extended period. Exhibit 2 shows the components of U.S. market volatility for the last 10 years.

**Exhibit 2: U.S. volatility, dispersion, and correlation are all below average.**




Source: S&P Dow Jones Indices LLC. Data as of April 30, 2017. Charts are provided for illustrative purposes.

*Dispersion* is a measure of magnitude; it tells us how widely distributed the returns of an index are at any point in time.[8] *Correlation* is a measure of timing; it tells us whether the components of an index are moving up and down at the same time. Decreases in either dispersion or correlation can

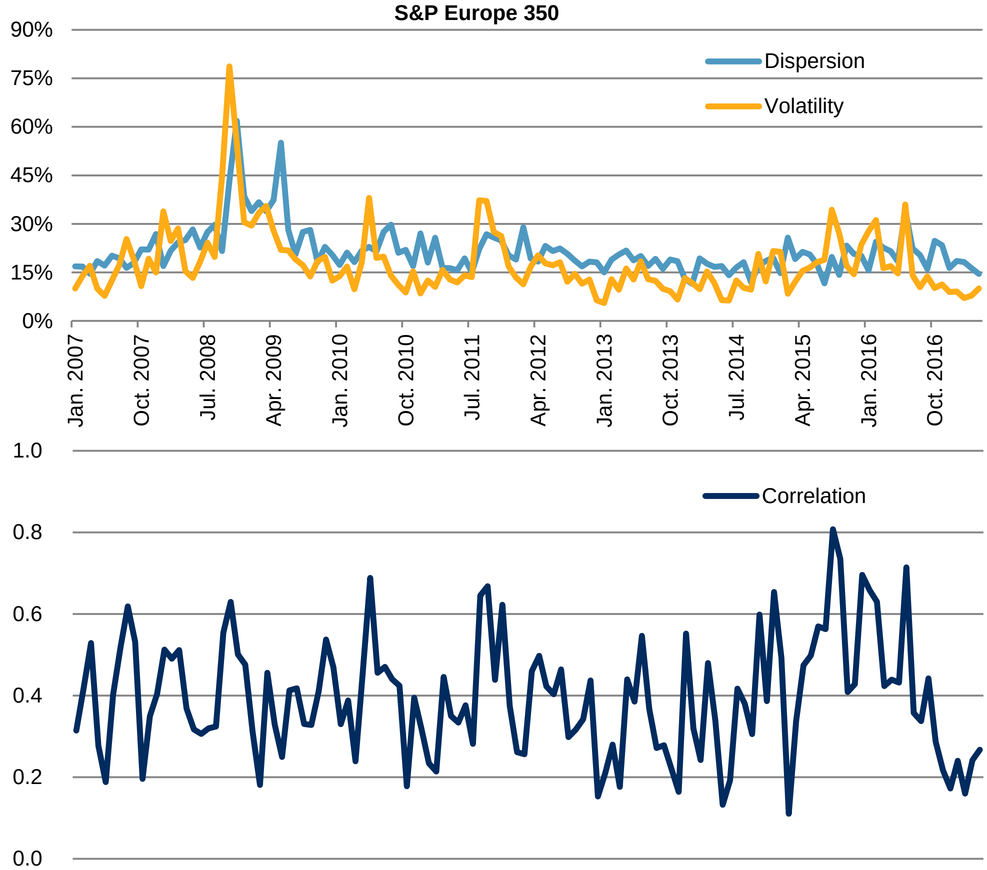
[7] A summary of economic growth forecasts from the S&P Global economics staff is included as an appendix.

[8] Edwards, Tim and Craig J. Lazzara, "Dispersion: Measuring Market Opportunity," December 2013.

drive market volatility downward.[9] Today's low dispersion means that the average gap between winners and losers is below average.[10] Low correlation means that index stocks are moving relatively independently. **The combination has driven volatility to extraordinarily low levels.**

This is not a uniquely American phenomenon, by the way; at this writing, volatility is substantially below average in every major global market. Exhibit 3 shows the data for Europe.

**Exhibit 3: European volatility is also depressed.**




Source: S&P Dow Jones Indices LLC. Data as of April 30, 2017. Charts are provided for illustrative purposes.

Low volatility is not a bad thing in itself, and given the strength of the global equity markets and the generally inverse relationship between volatility and returns, it may even be welcome. But it is also potentially troubling since **low volatility suggests a sense of investor complacency** that might be ill-equipped to deal with unpleasant surprises, should any eventuate.

[9] Edwards, Tim and Craig J. Lazzara, "The Landscape of Risk," December 2014.

[10] Parenthetically, low dispersion is *one* of the reasons that active managers have recently had such a difficult time outperforming passive benchmarks. See Lazzara, Craig, "The Value of Skill," March 20, 2015.

## Policy Risks

One obvious source of surprises is **policy risk**. Political and geo-political risks are evident across the global landscape, and **proceeding from political risk is policy risk**. Variations in public policy can catalyze domestic, regional, and global economic growth, and influence investor expectations of growth, earnings, and sovereign stability. Policy risk affects markets in a variety of ways, including through tax policy, monetary policy, regulatory policy, health policy, trade policy, and environmental policy. Given the complexities in policy formation and economic impact, markets often have difficulty incorporating policy risk into a valuation framework, presenting challenges and opportunities for investors.

In the U.S., for example, the market has risen sharply since the election of the Trump administration and a Republican Congress in November 2016, but that could change if policy takes an unwelcome turn. Moves toward protectionism and a generally mercantilist view of economic policy could be particularly challenging.

The U.S. market has risen sharply since the November 2016 elections, but that could change if political developments take an unwelcome turn.

In Europe, a major source of uncertainty stems from the upcoming negotiations for the U.K. to withdraw from the European Union. There is no precedent for such a development, and there are varying views as to how and how smoothly the negotiations will proceed. A “hard” Brexit (analogous to a particularly acrimonious divorce) could be a source of considerable volatility, both in Britain and on the continent.[11] U.K. Prime Minister Theresa May has called a snap general election for June 8, 2017, hoping to strengthen her hand in the negotiations. If, as expected, her Conservative Party is returned with a larger majority, she will not have to face the voters again until June 2022—well past Brexit’s March 29, 2019, effective date.

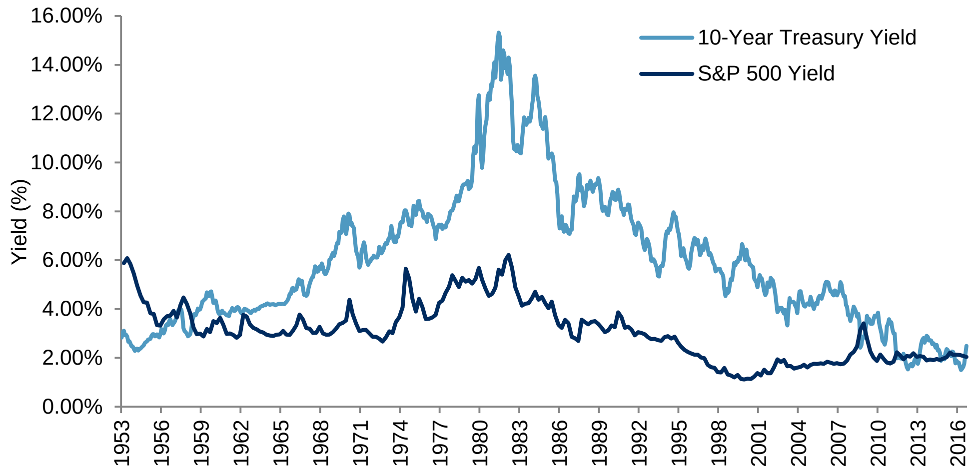
Within the European Union this year, both Dutch parliamentary and French presidential elections have resulted in victories for mainstream pan-European candidates rather than the more nationalist alternatives. French parliamentary elections are set for June 2017, and German parliamentary elections in the fall. French President Macron’s *En Marche!* party (now rebranded as *La République en Marche*) is less than a year old and currently holds no seats in the National Assembly; his victory in the presidential election may not translate into a parliamentary majority, or even a workable coalition. In Germany, Chancellor Merkel’s position currently looks secure, but the future of the euro and perhaps of the European Union cannot be considered unassailable. And **electoral predictions are difficult**. If 2016’s conventional wisdom had been accurate, President Clinton would today be congratulating Prime Minister Cameron for having cemented Great Britain’s place in the EU.

[11] Even a less-acrimonious divorce is no picnic. Trust us on this.

## Rising Interest Rates

After a 30-year bull market in bonds, **rising interest rates** are a possibility in the U.S. in 2017, as the Federal Reserve has already begun to raise short-term rates. Declines in bond prices may also have implications for other asset classes, perhaps especially for factor index strategies, which some investors have used as bond substitutes. We have no forecast as to how high rates might go and how long the period of increase might last, nor of potential shifts in the shape of the yield curve. However, we can note that there was a 30-year bear market in bonds from 1953 until the early 1980s, which was then followed by a 30+ year bull market (see Exhibit 4). One of the implications of this is that an entire generation of investors has come to maturity without ever experiencing a secular bear market in bonds. It's reasonable to suggest that some smart beta strategies, by indicizing active management approaches, might be particularly useful in such a context.

**Exhibit 4: Yield-to-maturity of 10-year U.S. Treasury securities and yield of the S&P 500 from 1953 through 2016.**




Source: S&P Dow Jones Indices LLC, Federal Reserve. Data from April 1953 through Dec. 31, 2016. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Outside the U.S., however, many central banks remain steadfast in maintaining their low or even negative interest rate policies. Currently, the Governing Council of the European Central Bank has set the interest rate on main refinancing operations, which provide the bulk of liquidity to the European banking system, at 0%. Moreover, the rate on the deposit facility, which banks use to make overnight deposits within the Eurosystem, is currently **negative** at -0.40%.[12] Asset purchase programs in many regions of the world continue to apply downward pressure on yield curves.

[12] See European Central Bank, 2017.

As a result, income investing remains especially challenging outside the U.S.

## FACTOR INDICES

**Our work in factor indices spans the globe**, and reflects the particular needs and development of the markets in which we operate. Exhibit 5 illustrates a small subset of our factor work.

**Exhibit 5: New and notable factor indices span the globe.**

| CATEGORY | AMERICAS | EMEA | APAC |
|---|---|---|---|
| Income Strategies | S&P 500 Dividend Aristocrats® | S&P Europe 350® Dividend Aristocrats | S&P/JPX Dividend Aristocrats |
| Single Factor | S&P 500 Low Volatility, S&P SmallCap 600 Quality | S&P Europe 350 Enhanced Value | S&P/ASX Quality, S&P Korea Low Volatility |
| Multi Factor | S&P 500 Low Volatility High Dividend, S&P 500 High Momentum Value | S&P 500 Quality, Volatility, Momentum (QVM) | S&P GIVI Japan, S&P Access Hong Kong Low Volatility High Dividend |

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

Our work in factor indices spans the globe and reflects the particular needs and development of the markets in which we operate.

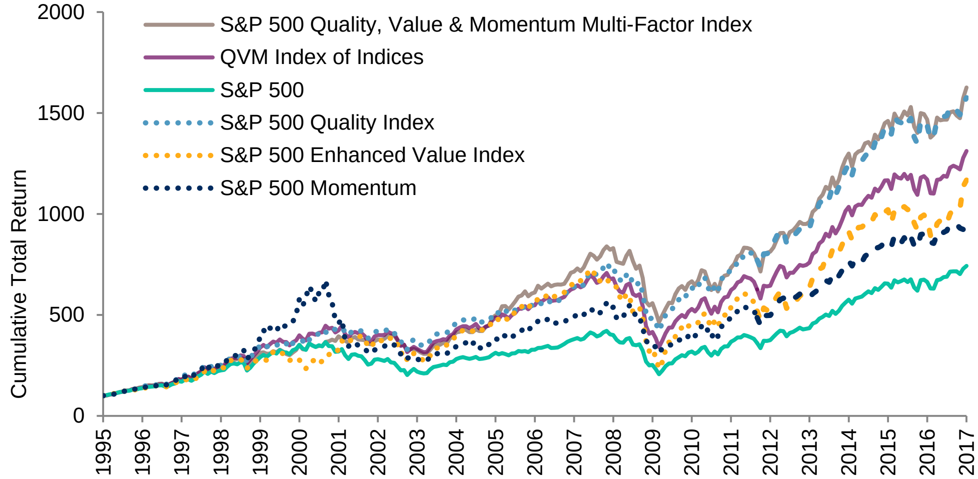
Investor acceptance of factor indexing is further advanced in Europe than in either Asia or the Americas. Factor usage has grown to such a level that over half of European asset owners have a smart beta allocation greater than 20%.[13] The low rate environment in Europe, coupled with memories of the 2008 financial crisis, has created a landscape where an emphasis on risk reduction and return enhancement is prominent. With this backdrop, income strategies remain important within a multi-asset framework. Furthermore, strategies that target a desired level of volatility, with or without tail risk hedging, are increasingly seen as tools that can provide solutions within the insurance and asset owner space.

Another significant development in Europe has been the **growing use of multi-factor products by institutional investors**. For market participants wishing to avoid the risk of tactical allocation among single-factor strategies, multi-factor indices may offer a viable alternative without compromising on performance. The S&P 500 Quality, Value & Momentum Multi-Factor Index is an example of combining widely accepted risk premia in a transparent rules-based framework.[14]

[13] FTSE Russell, Smart beta: 2016 global survey findings from asset owners, 2016.

[14] Innes, Andrew, "The Merits and Methods of Multi-Factor Investing," April 2017.

**Exhibit 6: S&P 500 QVM multi-factor index outperformed each of Q, V, and M.**




Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 1994, to Jan. 31, 2017. Index performance based on total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations of back-tested performance. The QVM Index of Indices is an equal-weighted hypothetical portfolio that includes the S&P 500 Quality Index, the S&P 500 Enhanced Value Index, and the S&P 500 Momentum Index and is rebalanced semiannually.

For market participants wishing to avoid the risk of tactical allocation among single-factor strategies, multi-factor indices may offer a viable alternative without compromising on performance.

In the U.S., our emphasis is on extending our factor index family—initially based on the S&P 500—to mid- and small-cap market segments. For example, in the first quarter we launched the S&P SmallCap 600® Quality Index, which exploits the much-researched quality premium in small cap. The index employs the S&P DJI quality framework, using three fundamental measures—return on equity, accruals ratio, and financial leverage ratio—to identify the 120 highest quality stocks in the small-cap space. Based on historical data, the index experienced higher excess returns with lower volatility than the S&P SmallCap 600 and the Russell 2000.[15]

As in Europe, our U.S. factor-based research continues to explore multi-factor strategies. For example, the recently introduced S&P 500 High Momentum Value Index is an alternative approach to capturing the value premium by overlaying momentum and value screens in order to avoid value traps. Back-tested data show that the index delivered higher risk-adjusted returns than both a long-only value portfolio and the overall market.

In the Asia-Pacific region, our emphasis in 2017 is on completing the factor index family for Australia, China, and Hong Kong. In Australia, factor-based exchange-traded products (ETPs) represent 9% of total ETP assets, and 73% of the factor-based assets are yield-driven.[16] We expect that

[15] Source: S&P Dow Jones Indices. Data from 01/31/1995 to 02/28/2017. Based on monthly total return data, the Sharpe ratios of the S&P SmallCap 600 Quality Index, the S&P SmallCap 600 and the Russell 2000 Index are 0.84, 0.63 and 0.49 respectively. Past performance is no guarantee of future results. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

[16] Source: Morningstar. Data as of Dec. 31, 2016.

expanding the factor-based ETP market further will require developing factor indices beyond those dependent on dividend yield. Preliminary signs are encouraging—our S&P/ASX 200 factor portfolios based on quality, low volatility, and momentum delivered annualized excess returns of 2.7%, 1.8%, and 1.8%, respectively, in the 15 years ending December 2016.

In China, the launch of the Shenzhen-Hong Kong Stock Connect Programme in December 2016 further reduced the barriers between Hong Kong and mainland Chinese investors, all of whom are now able to trade stocks on the Shenzhen, Shanghai, and Hong Kong stock exchanges. **We expect this to boost the demand for factor-based investing products in these markets.** Low volatility, enhanced value, and low volatility high dividend were the best performing factors among the China A large-mid cap stocks as well as the Stock Connect Hong Kong eligible stocks in the five years ending December 2016.

## ENVIRONMENTAL – SOCIAL – GOVERNANCE INDICES (ESG)

ESG is the lineal descendent of what used to be called "SRI," for "socially responsible investing." Social responsibility, like beauty, is in the eye of the beholder, and not surprisingly the range of development for ESG indices is quite wide.

ESG has remained a key trend in the European market.

In Asia, we are seeing increased interest in ESG investing across different markets. In addition to the original best-in-class sustainability indices (e.g., Dow Jones Sustainability World Index), integrating factor and ESG investing is also an emerging trend. For example, the S&P Long Term Value Creation (LTVC) Index framework tracks highly ranked stocks based on fundamental quality and corporate governance criteria, and has historically delivered outperformance when applied to Pan Asia large-mid cap stocks. The S&P Pan Asia LTVC portfolio beat its parent index by 2.1% annually over the past 10 years, with both the fundamental quality and corporate governance factors contributing.[17]

ESG has remained a key trend in the European market. In particular, asset owners cite the financial materiality of ESG risks (20%) and reputational risks (16%) as drivers behind their consideration of ESG in the investment process.[18] The rising popularity of ESG is perhaps unsurprising following significant focus on energy efficiency and renewable energy at events such as the Global Climate Conference (COP21) and increased pressure on institutional investors to improve the quality of their allocations and reporting practices.

[17] Interestingly, the LTVC framework tended to favor Australian and Korean companies and underweight Japanese and Chinese companies compared to the cap-weighted benchmark.

[18] Mercer, 2016 European Asset Allocation Survey.

ESG-driven fixed income, or “green bonds,” have seen heavy interest.

**A category that has seen heavy interest is ESG-driven fixed income, or “green bonds.”** Green bond issuance exceeded USD 40 billion as of year-end 2016, with the potential to reach USD 100 billion.[19] This trend is set to continue, as several countries have issued green bonds and demand continues to exceed supply despite the increase in issuance. Index providers are increasingly playing an important role. For example, the S&P Green Bond Index is designed to track the global green bond market. This pioneering index maintains stringent standards in order to include only those bonds whose proceeds are used to finance environmentally friendly projects.

For the U.S., our work is likely to focus on the development of broad-based domestic equity indices that measure the returns of the underlying markets while **incorporating ESG exclusions and score improvements into portfolio construction**. As in Europe, the first half of the year also saw increased market interest in green bonds. In response, we launched the S&P Green Bond Select Index—representing a liquid, investable subset of the broader S&P Green Bond Index; it measures the performance of green-labeled bonds issued globally, subject to stringent financial and extra-financial eligibility criteria. The index also forms the basis for the world’s first green bond exchange-traded fund (ETF).

## FIXED INCOME

Our fixed income research is focused primarily on **applying the factor index approach to a new asset class**. This work is particularly advanced in the U.S., where we recently introduced the S&P U.S High Yield Low Volatility Corporate Bond Index. This index is an application of low risk investing to the fixed income space, by measuring the performance of U.S high yield corporate bonds that exhibit low volatility characteristics. Using an industry-accepted measure of credit risk, duration times spread (DTS), the index assesses each bond’s incremental contribution to portfolio risk relative to its peers by overlaying the marginal contribution to risk (MCR). Bonds with low MCR are deemed to contribute less credit risk to the portfolio as a whole.

A back-test of the index shows several noteworthy features, including:

- Lower volatility, higher risk-adjusted returns, and lower drawdown levels compared to the broad high yield market
- Lower correlation and therefore less sensitivity to interest rates than the broad high yield market
- Significant improvement in credit quality compared to the high yield market, and an attractive yield compared to the investment grade corporate bond market.

[19] Eurosif, European SRI Study 2016.

A second focus for our fixed income work is on improving fixed income index liquidity. The S&P 500 Bond Index is a corporate bond counterpart to the S&P 500, but even among the bonds of these leading issuers liquidity can vary widely. S&P Dow Jones Indices has recently partnered with MarketAxess, a leading e-trading platform for corporate bonds, to identify the most liquid subset of corporate bonds, thus forming the S&P 500/Market Axess Investment Grade Corporate Bond Index.

Our development of fixed income indices will focus on combining the factor index approach to a new asset class.

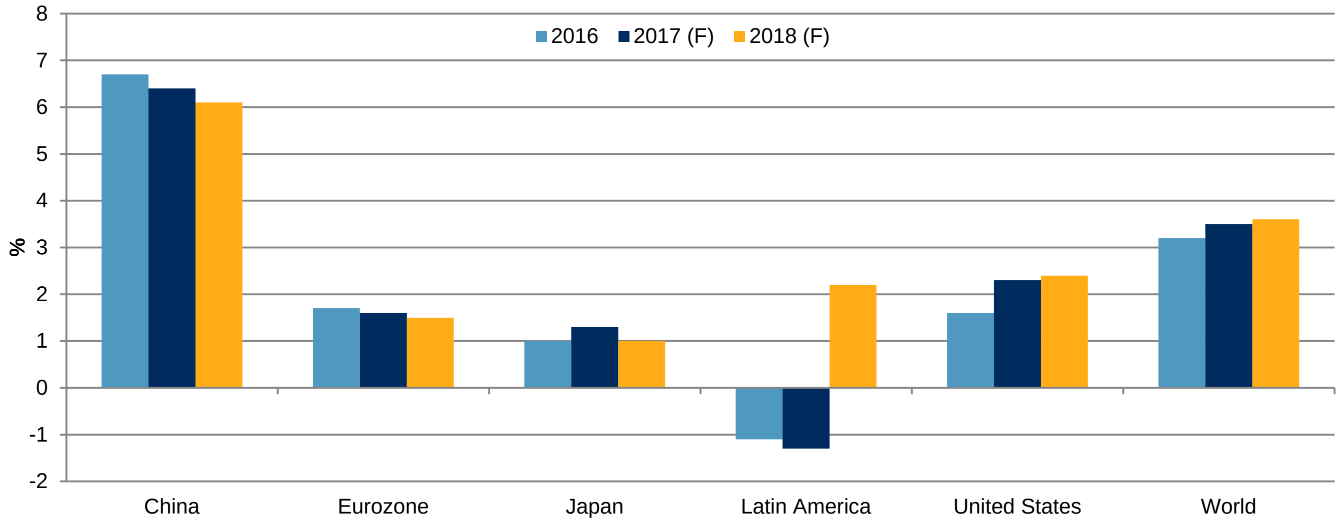
In Europe, the uncertain geopolitical landscape has made income investing particularly challenging. Beyond bonds alone, strategies that maximize investment income within a multi-asset framework may provide an attractive solution. Combining core income strategies, equity dividends, and sovereign debt with assets classes such as infrastructure, real estate, emerging market debt, high yield, and leveraged loans may improve the risk/return profile of a portfolio. Multi-asset portfolios that combine asset classes like these may also improve the quality of the income stream.

*The authors gratefully acknowledge the assistance of their colleagues Fei Mei Chan and J.R. Rieger.*

## APPENDIX: GDP FORECASTS FOR 2017 ARE LED BY CHINA AND THE U.S.

**Exhibit 7: GDP growth rate (%) 2016-2018.**

| REGION | 2016 | 2017 (F) | 2018 (F) |
|---|---|---|---|
| **China** | 6.7 | 6.4 | 6.1 |
| **Eurozone** | 1.7 | 1.6 | 1.5 |
| **Japan** | 1 | 1.3 | 1 |
| **Latin America** | -1.1 | -1.3 | 2.2 |
| **United States** | 1.6 | 2.3 | 2.4 |
| **World** | 3.2 | 3.5 | 3.6 |




Source: S&P Global Ratings. Table and chart are provided for illustrative purposes. Note: World and Latin America growth rates are weighted average of country growth rates, where the weights are PPP-adjusted shares of total GDP.

| | | |
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# PERFORMANCE DISCLOSURE

The S&P 500 was launched on March 4, 1957. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was in effect on the index Launch Date. Complete index methodology details are available at www.spdji.com.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the Index is set at a fixed value for calculation purposes. The Launch Date designates the date upon which the values of an index are first considered live: index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P Dow Jones Indices defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company's public website or its datafeed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index's public release date.

Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index may not result in performance commensurate with the back-test returns shown. The back-test period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper for the Index, available at www.spdji.com for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Another limitation of using back-tested information is that the back-tested calculation is generally prepared with the benefit of hindsight. Back-tested information reflects the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities, fixed income, or commodities markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

The Index returns shown do not represent the results of actual trading of investable assets/securities. S&P Dow Jones Indices LLC maintains the Index and calculates the Index levels and performance shown or discussed, but does not manage actual assets. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the Index or investment funds that are intended to track the performance of the Index. The imposition of these fees and charges would cause actual and back-tested performance of the securities/fund to be lower than the Index performance shown. As a simple example, if an index returned 10% on a US $100,000 investment for a 12-month period (or US $10,000) and an actual asset-based fee of 1.5% was imposed at the end of the period on the investment plus accrued interest (or US $1,650), the net return would be 8.35% (or US $8,350) for the year. Over a three year period, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.10%, a total fee of US $5,375, and a cumulative net return of 27.2% (or US $27,200).

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