



CalPERS Board Offsite

Kate Moore

Chief Equity Strategist, BlackRock Investment Institute

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BLACKROCK®

2017 Market Outlook

Reflation, Low Returns, and Dispersion

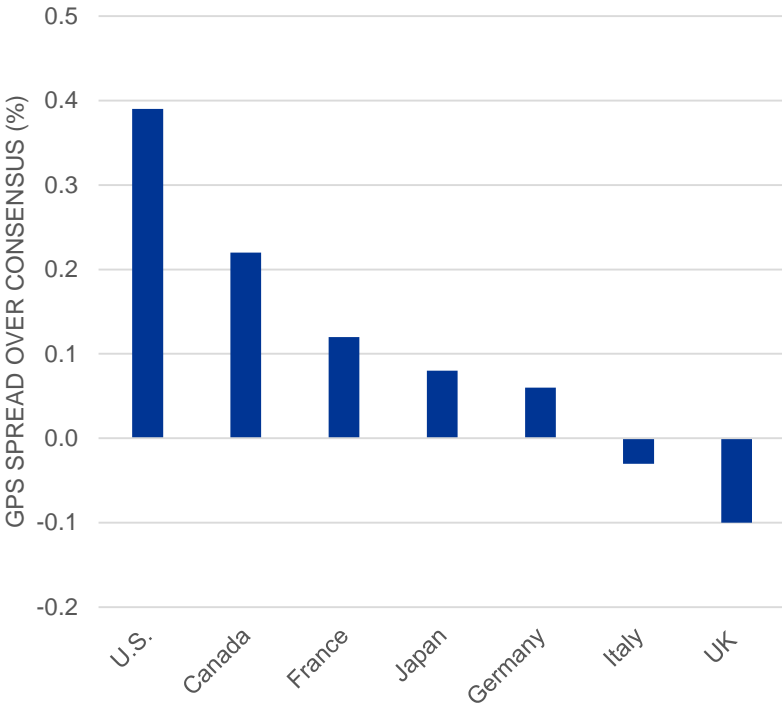
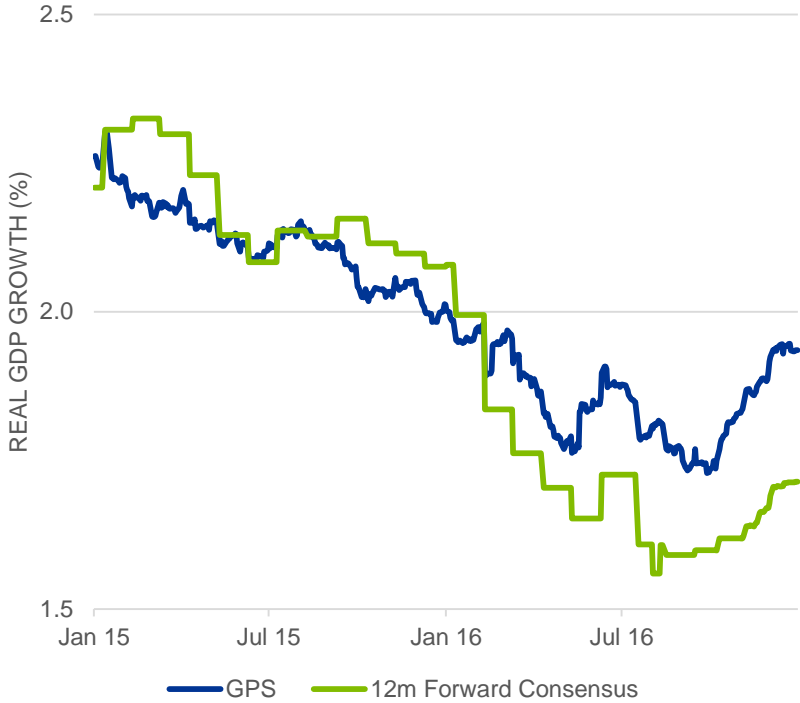
The recovery grinds on, and near-term global growth expectations are too gloomy

We see room for upside surprise in consensus real GDP forecasts for G7 nations

The GPS shows that U.S. growth has the biggest upside

BlackRock Macro GPS for G7 nations, 2015-2016

Difference between Macro GPS and consensus



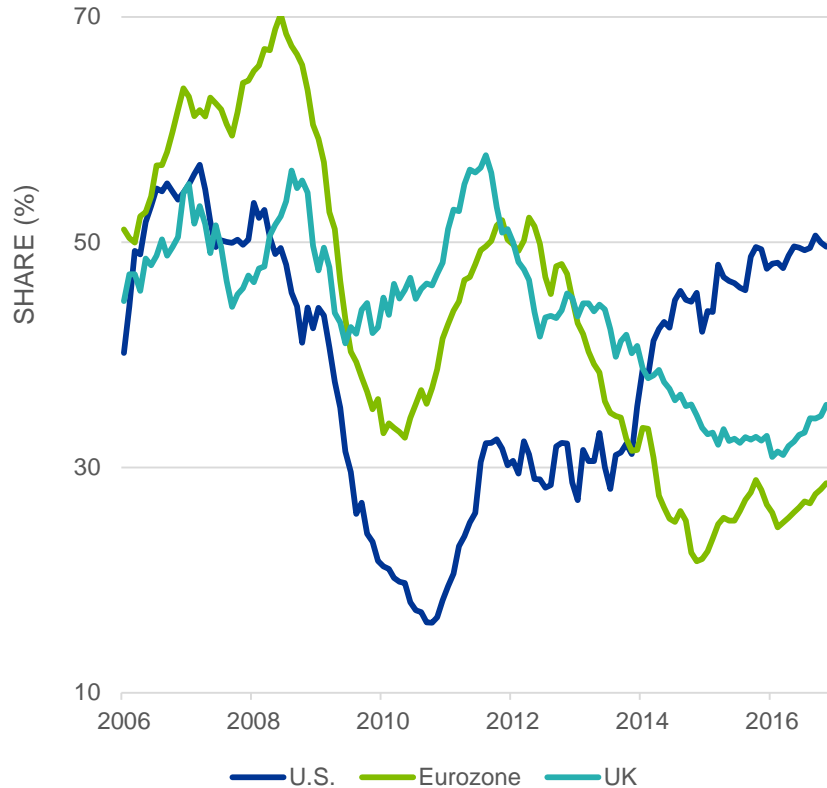
Sources: BlackRock Investment Institute and Consensus Economics, 30th December 2016.

Notes: The GPS (blue line) shows where the 12-month consensus GDP forecast may stand in three months' time. Consensus forecasts are measured by Consensus Economics. G7 country components are weighted by country GDP. The green line shows the current 12-month economic consensus forecast for G7 economies.

The GPS builds on existing nowcasting models that exploit the information from dozens of macroeconomic indicators to forecast GDP growth – including realized activity, employment, sentiment and survey data. It draws on a wider set of information sources by incorporating proprietary big data insights from BlackRock's Scientific Active Equity team. These include micro insights, such as consumer behavior captured through internet searches, and macro insights such as country business sentiment measured through the text-mining of corporate managers' conference calls. Other big data inputs include online job postings, inflation chatter, satellite images, e-invoicing and traffic patterns.

An inflection point in policy

CPI components with above-average inflation, 2006-2016

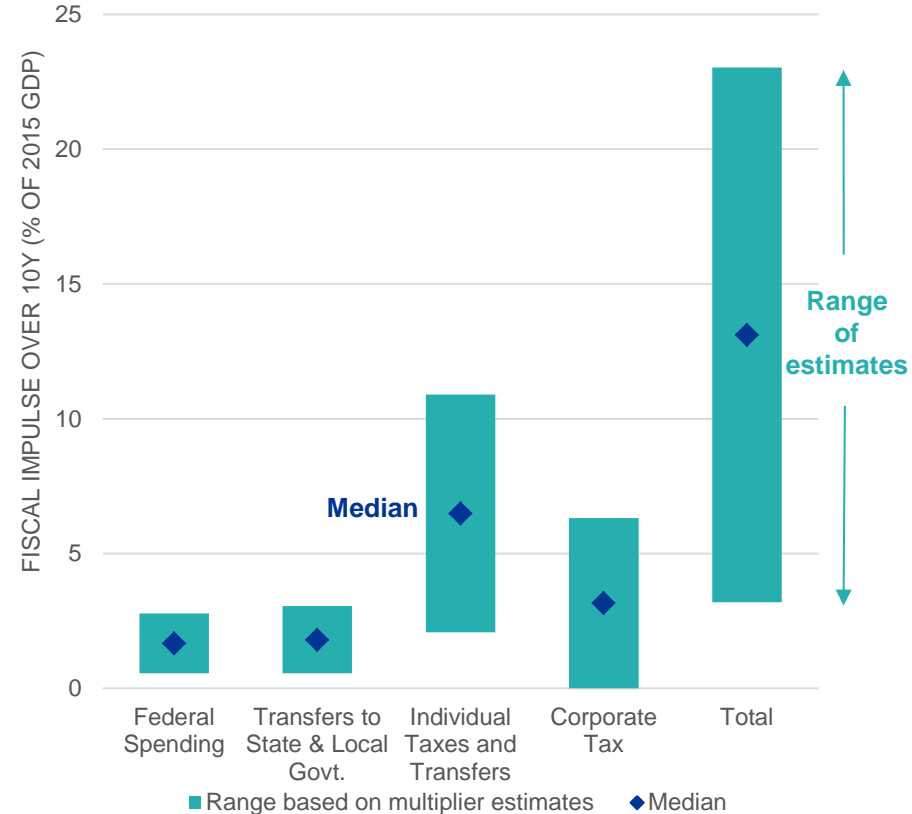


Sources: BlackRock Investment Institute, U.S. Bureau of Labor Statistics, UK Office for National Statistics and Eurostat, December 2016.

Notes: The lines show the percentage of CPI basket components with seasonally adjusted, month-on-month inflation above the average since 1999. The indexes capture 77 components in the U.S., 94 in the eurozone and 85 in the UK.

Trump fiscal stimulus impactful but highly uncertain

Estimated 10-year impact on GDP of Trump's policies



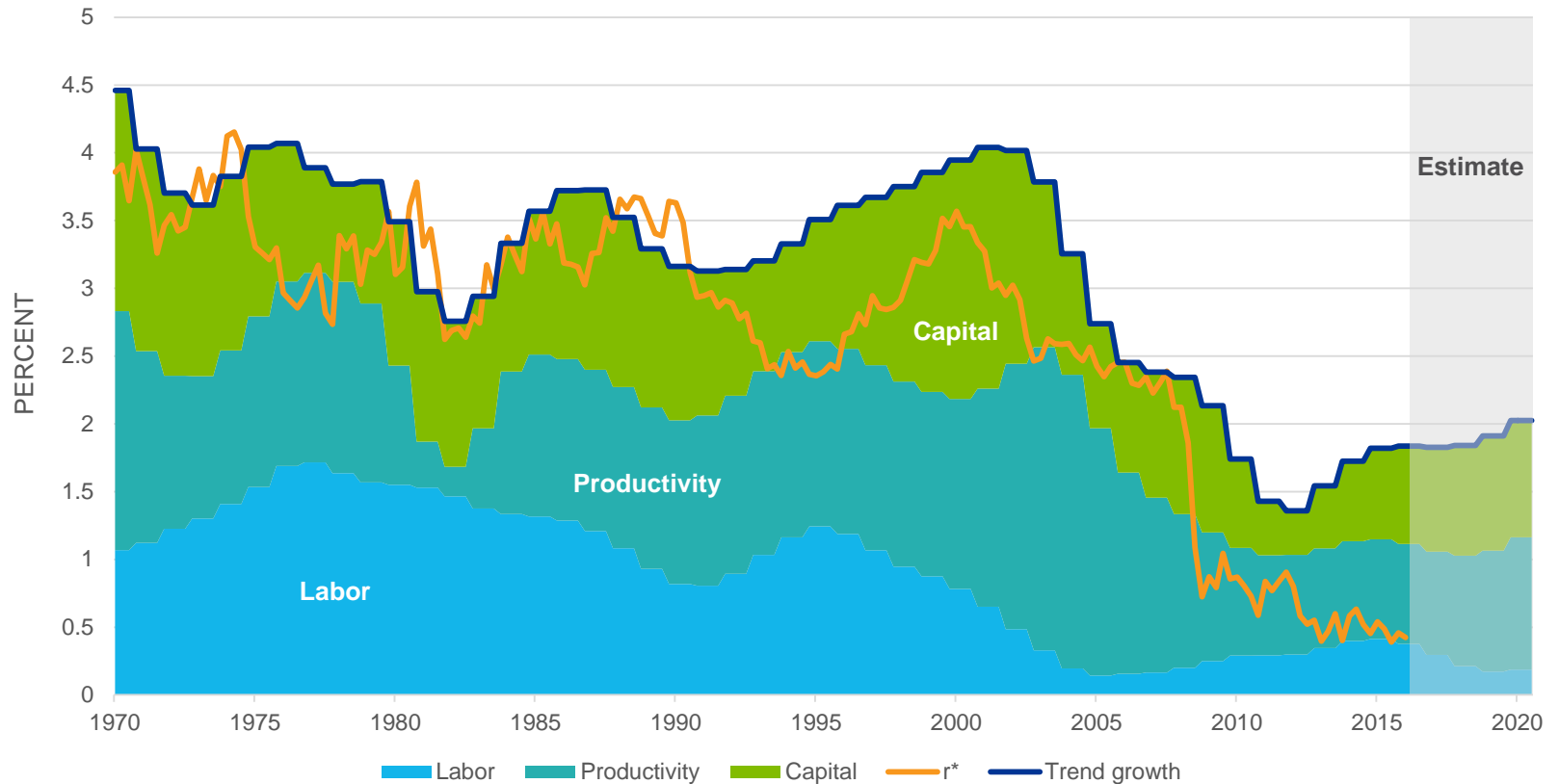
Sources: BlackRock Investment Institute, CBO, Committee for a Responsible Federal Budget (CRFB), 30th November 2016.

Note: Our calculations are based on the central fiscal estimates from the CRFB, and then apply a range of multiplier estimates from the CBO.

We expect structural forces will keep rates lower than historical averages

Lower interest rates are here to stay

U.S. trend growth and neutral rate, 1970–2020



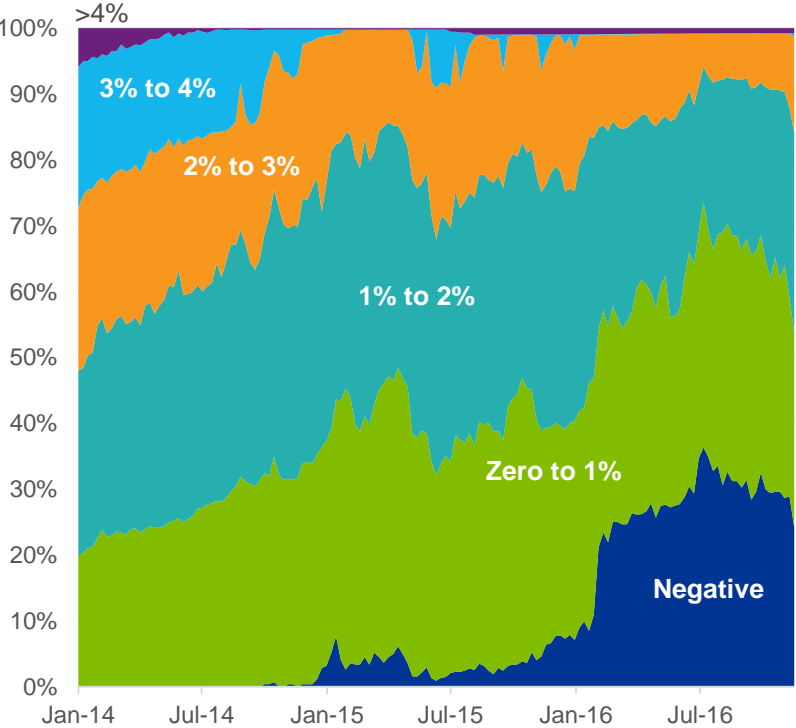
Sources: BlackRock Investment Institute, Holston, Laubach & Williams (2016) and Federal Reserve, November 2016

Note: Based on (1) estimates of the neutral rate, called r^* ; (2) estimates of trend GDP growth rates, and; (3) the real short-term rate. Forward looking estimates may not come to pass.

Bond yields

Government bonds are yielding little...

Global government bonds by yield, 2014-2016

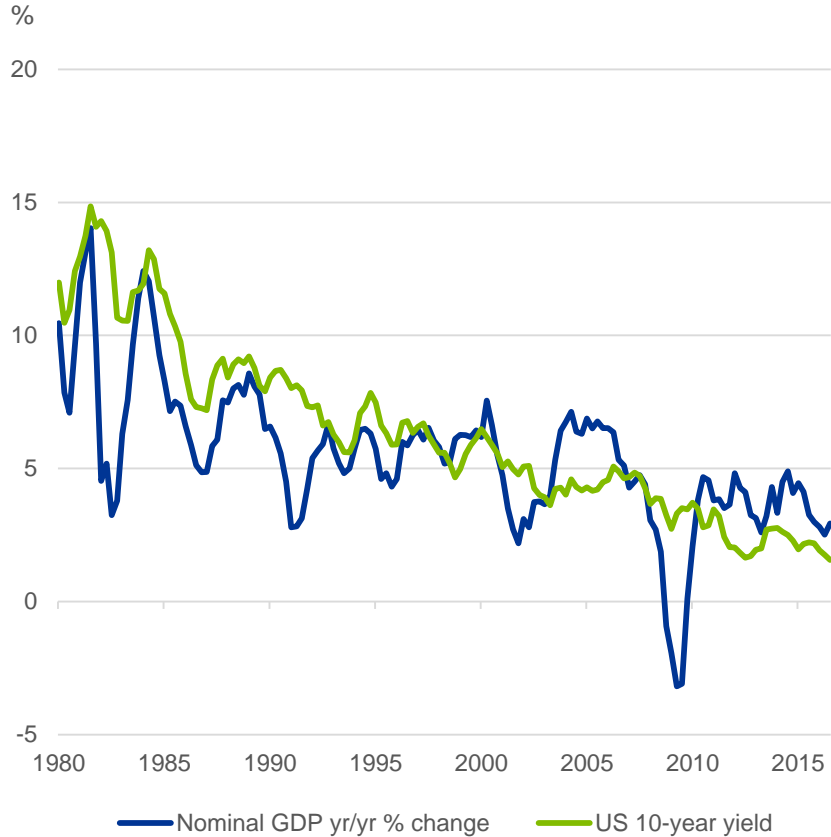


Sources: BlackRock Investment Institute, J.P. Morgan and Thomson Reuters, November 2016.

Notes: The chart is based on the J.P. Morgan Global Developed Government Bond Index. Areas show the proportion of bonds in the index with yields in each range.

Low growth means low bond yields

US GDP vs. bond yields, since 1980

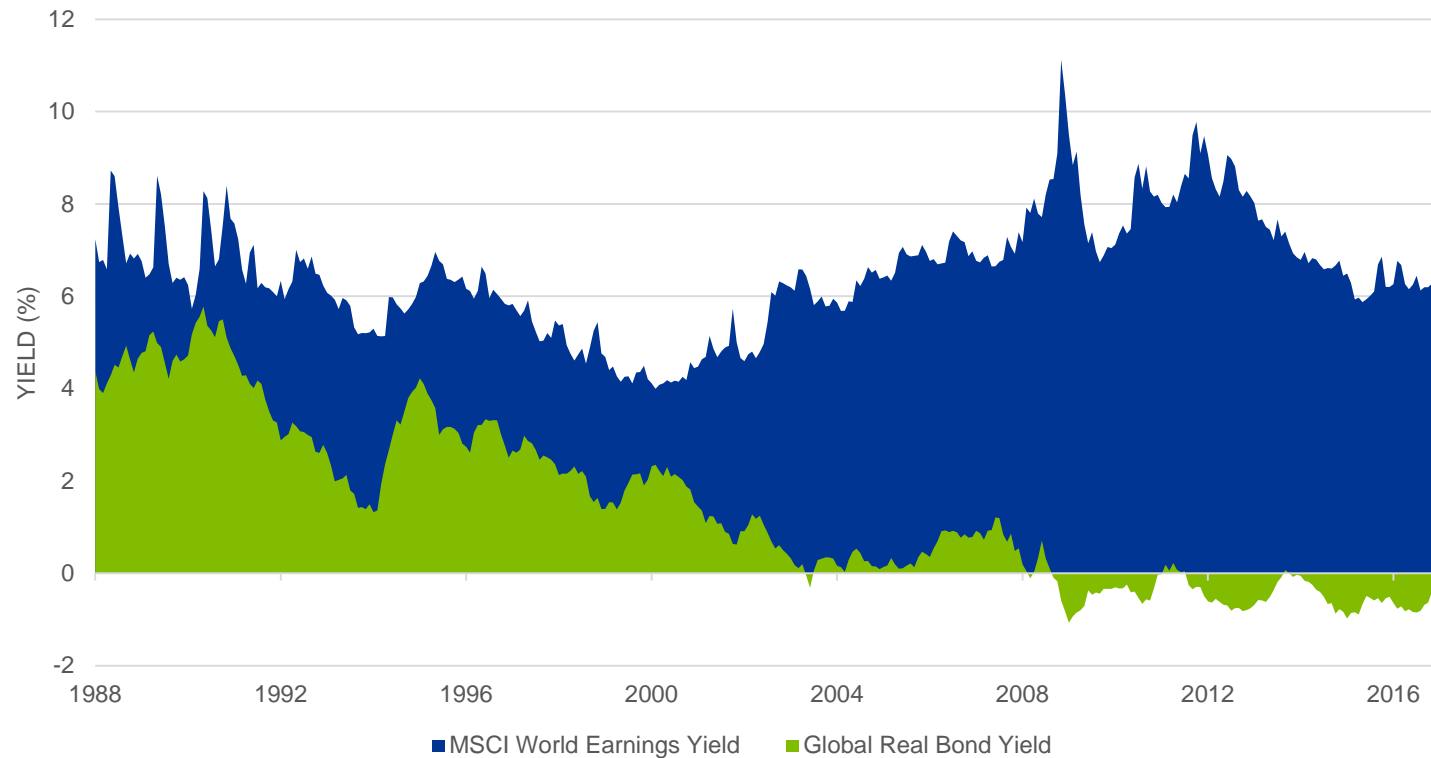


Sources: Bureau of Economic Analysis, Haver Analytics and BlackRock Investment Institute, December 2016

Equities long term

Low bond yields are positive for equity valuations

Global earnings yield vs. real bond yield, 1988-2016



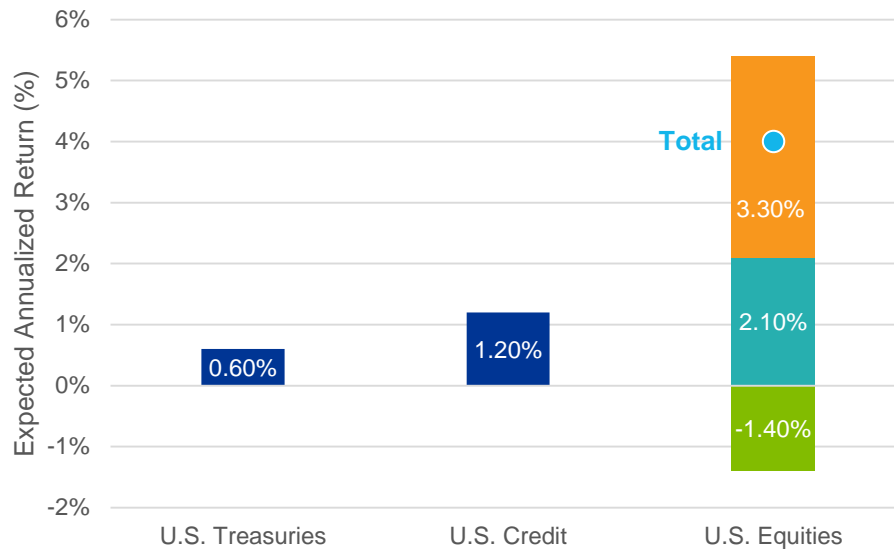
Source: BlackRock Investment Institute and Thomson Reuters, December 2016.

Notes: Earnings yield is based on the inverse of the MSCI World 12-month forward price-to-earnings. The bond yield is based on the Barclays global treasury index yield minus five-year average of US CPI.

The equity risk premium remains attractive

Components of five-year U.S. equity return assumptions

BlackRock 5-year capital market assumptions



Earnings growth: 3.3%
Based on nominal GDP growth forecasts, adjusted for current earnings levels
Income: 2.1%
Dividend yield, adjusted for dilution
Re-pricing and adjustments: -1.4%
Our assessment of the potential for multiple expansion / contraction, and a subjective overlay

Total: 4.0% annualised equity return assumption

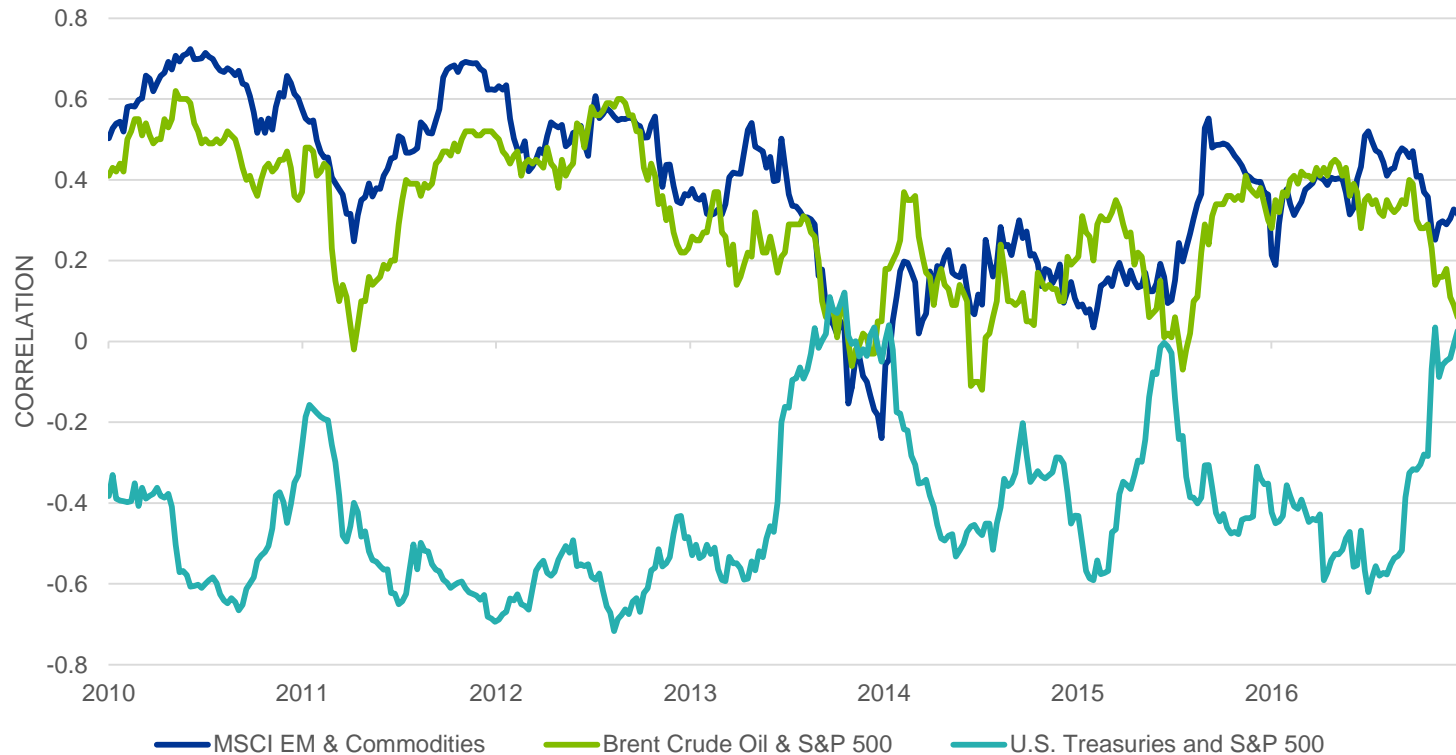
Sources: BlackRock Investment Institute and BlackRock Solutions, October 2016

Notes: This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise of future performance. The dark blue bars show our expected annualized nominal return assumptions for the next five years from a U.S. dollar perspective. Representative indexes used are: Barclays Government Index and Barclays U.S. Credit Index. The grey dot shows our annualized nominal return assumption for U.S. Equities from a U.S. dollar perspective. The representative index is the MSCI USA Index. Indexes are unmanaged and used for illustrative purposes only. They are not intended to be indicative of any fund or strategy's performance. It is not possible to invest directly in an index.

Correlations are becoming less stable

Traditional correlation pairs are breaking down

90-day rolling asset correlations, 2010-2016



Source: BlackRock Investment Institute and Thomson Reuters, 30th December 2016.

Notes: MSCI EM represents the MSCI Emerging Market Equity Index in USD. Commodities are represented by the S&P GSCI Commodity Total Return Index. U.S. Treasuries are represented by the Barclays U.S. Treasury Index.

Current market views

Equities

- ▲ Positive on **dividend growers** and **value** stocks in the reflationary environment
- ▲ Like EM and Japan as global growth picks up
- Neutral on **U.S.** and **Europe**

Fixed Income

- ▲ Like **U.S. investment grade credit**, **Asian fixed income** and selected **EMD**
- Neutral on **European sovereigns** and **credit**
- ▼ Reflationary outlook challenges **U.S. government** bonds. Prefer short duration

Commodities / FX

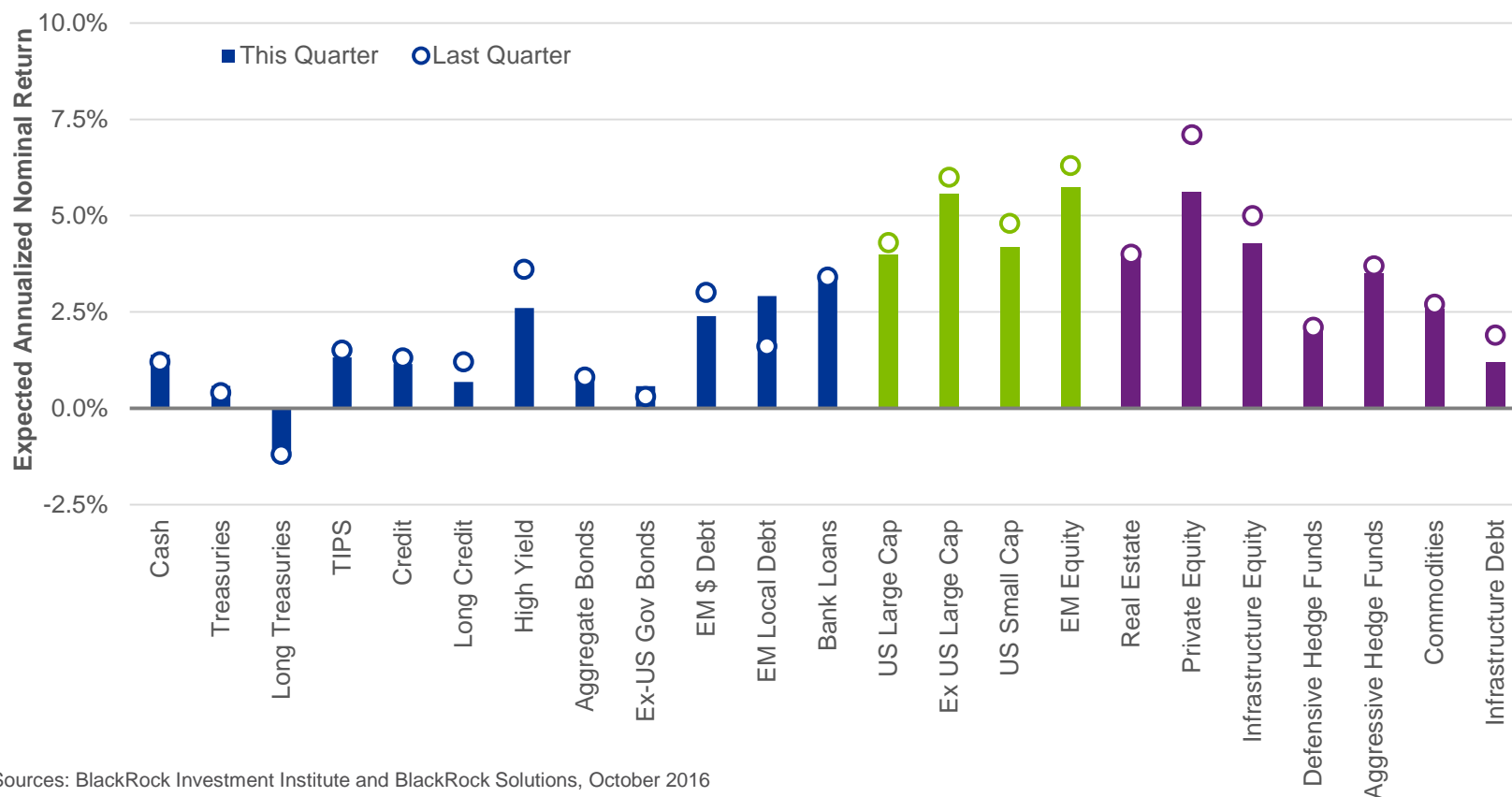
- Supply rationalization and reflation underpin **oil** and **industrial metals** in the near-term
- **U.S. dollar** to strengthen, particularly against the yen and EM currencies

Source: BlackRock. As of December 2016

Long-term Capital Market Assumptions

BlackRock's 5-year Capital Market Assumptions

The 5-year capital market assumptions incorporate medium-term economic and market conditions

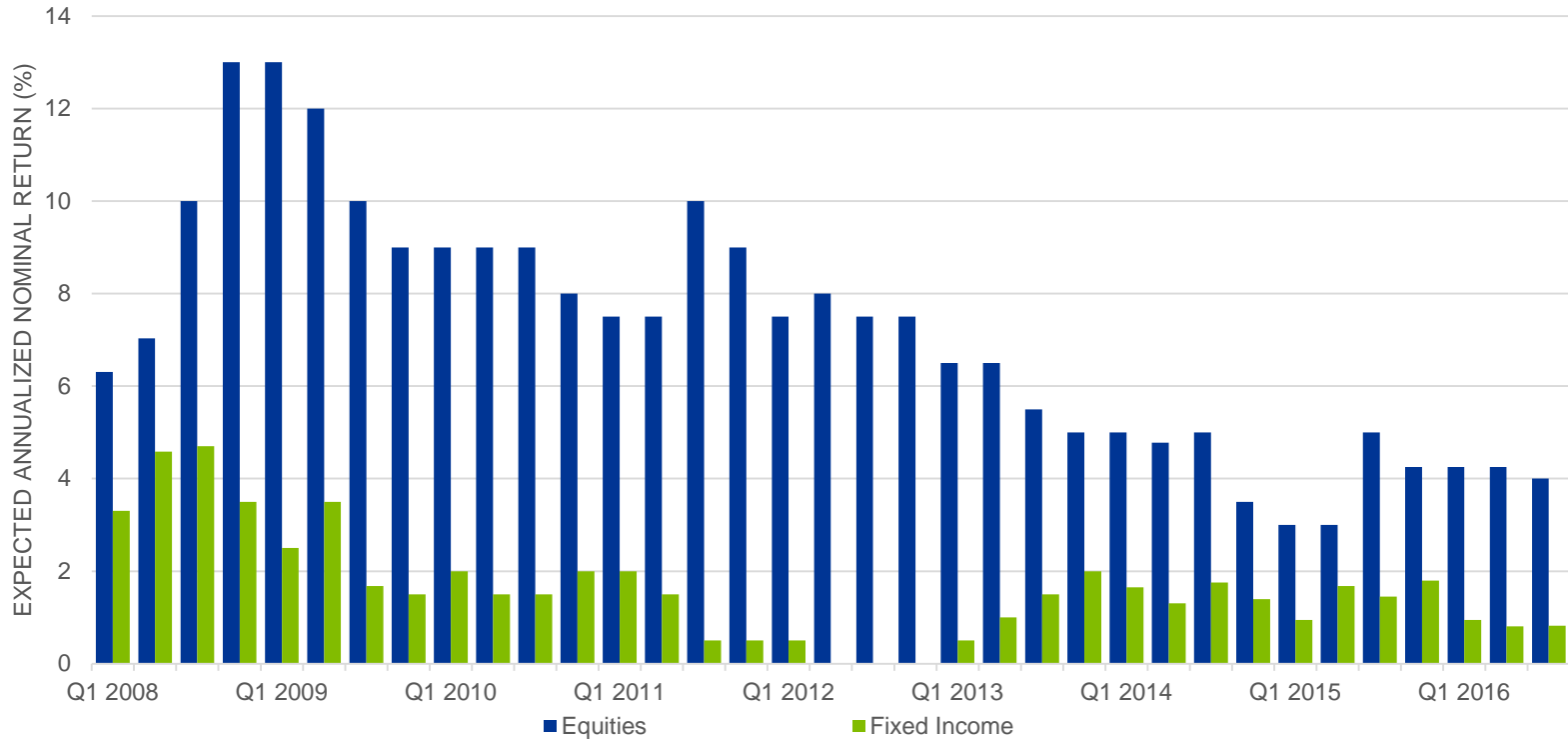


Sources: BlackRock Investment Institute and BlackRock Solutions, October 2016

Notes: Representative indexes used are: Citigroup 3-Month Treasury Bill Index, Barclays Government Index, Barclays U.S. Long Government Index, Barclays U.S. Government Inflation-Linked Bond Index, Barclays U.S. Credit Index, Barclays U.S. Long Credit Index, Barclays U.S. High Yield Index, Barclays U.S. Aggregate Index, Barclays Global Aggregate Treasury Index ex U.S., JP Morgan EMBI Global Diversified Index, JP Morgan GBI-EM Index, MSCI USA Index, MSCI World ex USA Index, MSCI USA Small Cap Index, MSCI Emerging Markets Index, HFRI Relative Value (Total) Index, HFRI Equity Hedge (Total) Index, Bloomberg Commodity Index and 50% Barclays European Infrastructure EUR Index / 50% Barclays US Corporate 10+ Baa3-A3 Utility. Indexes are unmanaged and used for illustrative purposes only. They are not intended to be indicative of any fund or strategy's performance. It is not possible to invest directly in an index. Refer to slide 16 for additional details on our Capital Market Assumptions.

A steady decline in five-year return expectations

History of 5-year expected return assumptions for USD based investor, 2008-2016

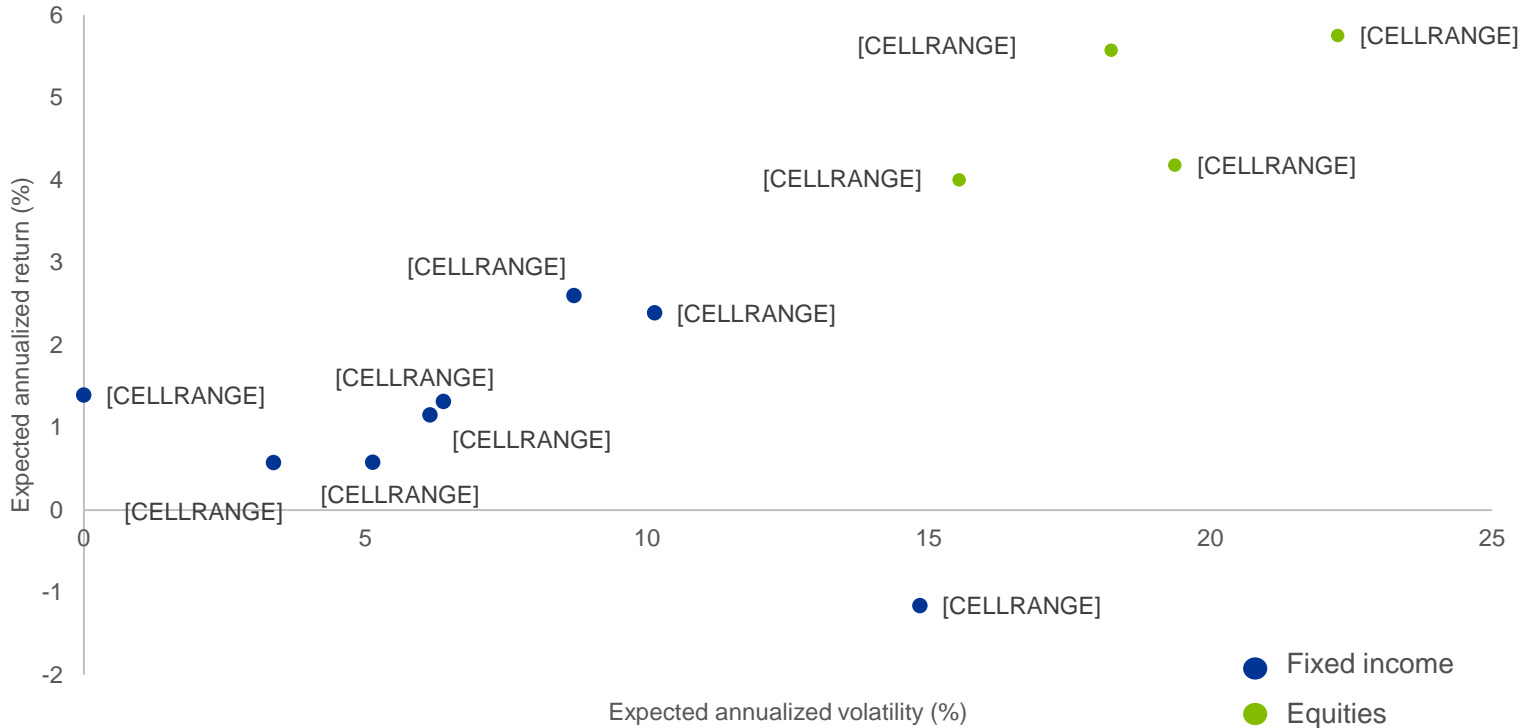


Source: BlackRock Investment Institute and Thomson Reuters, October 2016.

Relative value matters

Risk and reward

BlackRock five-year asset return and long-term volatility assumptions in USD, October 2016



Sources: BlackRock Investment Institute and BlackRock Solutions, October 2016

Notes: This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise of future performance. The dots show our expected annualized nominal return assumptions for the next five years from a U.S. dollar perspective versus our long-term annualized volatility assumptions. Representative indexes used are: Barclays U.S. Long Government Index, Barclays Global Aggregate Treasury Index ex U.S., Barclays Government Index, Barclays U.S. Credit Index, Barclays U.S. Government Inflation-Linked Bond Index, Citigroup 3-Month Treasury Bill Index, JP Morgan EMBI Global Diversified Index, Barclays U.S. High Yield Index, MSCI USA Index, MSCI USA Small Cap Index, MSCI World ex USA Index and MSCI Emerging Markets Index. Indexes are unmanaged and used for illustrative purposes only. They are not intended to be indicative of any fund or strategy's performance. It is not possible to invest directly in an index. Refer to slide 16 for additional details on our Capital Market Assumptions.

Five main inputs to our long-term assumption calculations

- 1. The risk-free rate, i.e. the return on cash**
- 2. The beta of each asset class**
- 3. The global equity risk premium**
- 4. Fixed income risk premia (duration, credit and inflation)**
- 5. Illiquidity premia for private markets**

Long-term returns, volatility, and correlation assumptions

Asset Class	Asset	5-year Expected Return	Long-term Expected Return	Long-term Expected Volatility	Long-term Correlation Global Equities	Long-term Correlation Global Treasuries
Fixed income	US cash	1.4%	1.0%	0.0%	0%	0%
Fixed income	US government	0.6%	1.6%	5.1%	-27%	77%
Fixed income	US government (10+ years)	-1.2%	2.4%	14.8%	-25%	77%
Fixed income	US inflation-linked government	1.3%	1.6%	6.4%	11%	54%
Fixed income	US credit (all maturities)	1.2%	2.6%	6.1%	28%	60%
Fixed income	US credit (long bonds)	0.7%	4.2%	12.6%	34%	55%
Fixed income	US high yield	2.6%	3.8%	8.7%	68%	-7%
Fixed income	US aggregate bond index	0.8%	1.8%	4.1%	0%	75%
Fixed income	Global ex-US treasuries	0.6%	1.5%	3.4%	-17%	100%
Fixed income	USD EM debt	2.4%	3.8%	10.1%	48%	32%
Fixed income	Local-currency EM debt (unhedged)	2.9%	3.4%	13.0%	74%	5%
Fixed income	US bank loans	3.3%	2.6%	8.0%	61%	-23%
Equities	US large cap	4.0%	4.9%	15.5%	86%	-18%
Equities	Global ex-US large cap	5.6%	5.4%	18.2%	100%	-17%
Equities	US small cap	4.2%	5.1%	19.4%	88%	-20%
Equities	EM equity	5.8%	4.6%	22.3%	87%	-15%
Alternatives	US core real estate	4.0%	3.0%	15.3%	48%	4%
Alternatives	Global private equity	5.6%	5.8%	24.6%	86%	-26%
Alternatives	Global infrastructure equity	4.3%	5.2%	18.2%	74%	-1%
Alternatives	Defensive hedge funds	2.1%	1.9%	4.1%	66%	-15%
Alternatives	Aggressive hedge funds	3.5%	3.2%	8.9%	88%	-26%
Alternatives	Commodities	2.6%	2.1%	16.2%	50%	-23%
Alternatives	Global infrastructure debt	1.2%	3.0%	8.9%	47%	46%
Portfolio	60% US large cap equities / 40% US aggregate bonds	3.0%	4.0%	9.4%	86%	-5%

Sources: BlackRock Investment Institute and BlackRock Solutions, October 2016

Notes: Representative indexes used are: Citigroup 3-Month Treasury Bill Index, Barclays Government Index, Barclays U.S. Long Government Index, Barclays U.S. Government Inflation-Linked Bond Index, Barclays U.S. Credit Index, Barclays U.S. Long Credit Index, Barclays U.S. High Yield Index, Barclays U.S. Aggregate Index, Barclays Global Aggregate Treasury Index ex U.S., JP Morgan EMBI Global Diversified Index, JP Morgan GBI-EM Index, MSCI USA Index, MSCI World ex USA Index, MSCI USA Small Cap Index, MSCI Emerging Markets Index, HFRI Relative Value (Total) Index, HFRI Equity Hedge (Total) Index, Bloomberg Commodity Index and 50% Barclays European Infrastructure EUR Index / 50% Barclays US Corporate 10+ Baa3-A3 Utility. Indexes are unmanaged and used for illustrative purposes only. They are not intended to be indicative of any fund or strategy's performance. It is not possible to invest directly in an index.

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BlackRock’s Long-Term Capital Markets Assumption Disclosures

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References to future returns are not promises or even estimates of actual returns a client portfolio may achieve. Assumptions, opinions and estimates are provided for illustrative purposes only. They should not be relied upon as recommendations to buy or sell securities. Forecasts of financial market trends that are based on current market conditions constitute our judgment and are subject to change without notice. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. This material has been prepared for information purposes only and is not intended to provide, and should not be relied on for, accounting, legal, or tax advice.

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