NEPC, LLC

YOU DEMAND MORE. *So do we.*[SM]

Oklahoma State Pension Commission

Market Update, Outlook

June, 2016

Don Stracke, Senior Consultant
Allan Martin, Partner

255 State Street, Boston, MA 02109 | TEL: 617.374.1300 | FAX: 617.374.1313 | www.nepc.com
BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

Key Market Themes

Extended US Economic Cycle

Federal Reserve Gradualism

China Transitions

Globalization Backlash

Extended US Economic Cycle

Economic cycles don't die of old age

We believe the US economy is in an extended expansionary cycle despite being eight years removed from the last recession

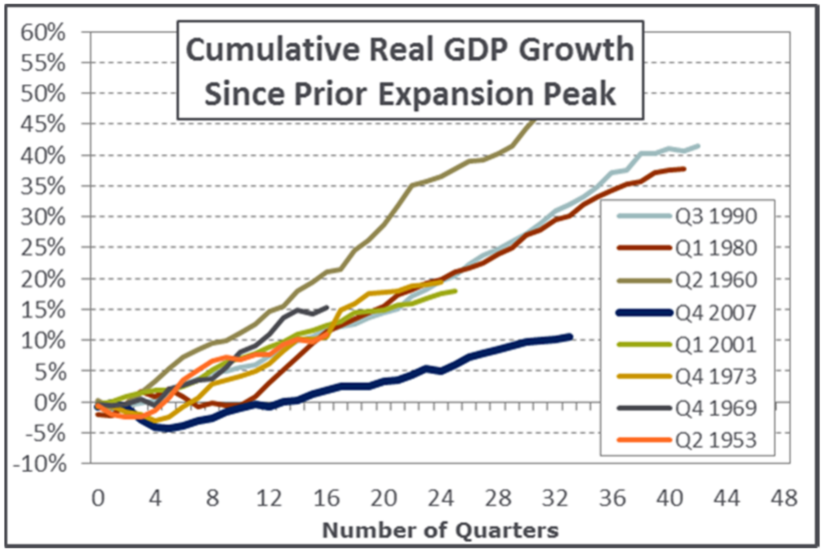
The health of US consumers continue to drive economic growth given relatively low debt levels

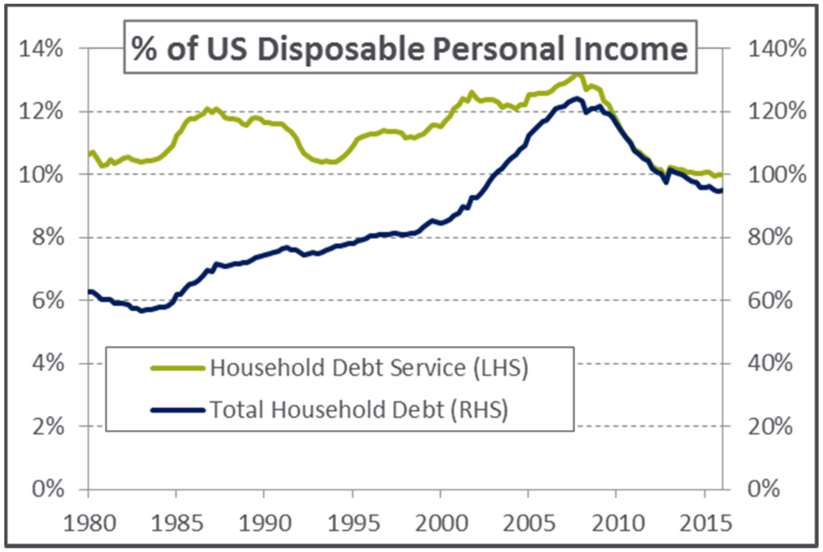
A prolonged US economic expansion can support a continued rally for US equities despite elevated valuation levels

We anticipate inflation will shift marginally higher in the coming years

Improvements in wage growth and the ongoing recovery in housing further support modest upticks in inflation

The strength of the US dollar is likely to restrain inflationary pressures and offset the potential impact of fiscal stimulus in the US





Source: (Top) Federal Reserve Bank of St. Louis
Source: (Bottom) FRED

Extended US Economic Cycle

US recession concerns are muted

The US economy is likely to experience slow and steady growth as excess capacity is gradually absorbed by the economy

The labor market recovery has been robust but excess capacity remains as many have yet to return to the workforce

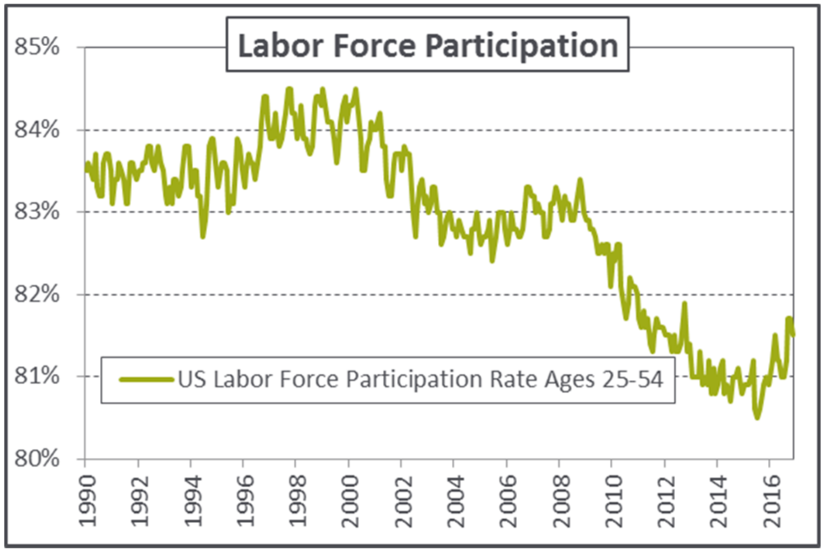
US dollar strength and corporate profitability trends are the primary sources of concern for potential weakness

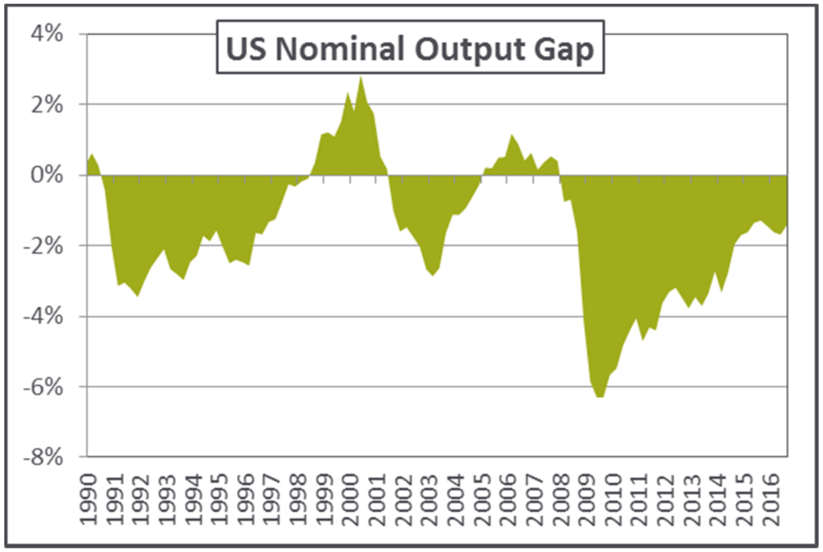
Fiscal stimulus unlikely to push economic growth into a higher gear

Tax cuts and infrastructure spending modestly improve the US growth profile

The potential of higher US growth is likely muted by corresponding dollar strength

US stimulus may benefit non-US developed economies as marginally higher US growth weakens their currencies and improves competitiveness





Source: (Top) FRED
Source: (Bottom) Congressional Budget Office, Bloomberg

Federal Reserve Gradualism

The Federal Reserve is expected to slowly increase interest rates

Expected path of Fed policy through 2019 matters more than timing of the next hike

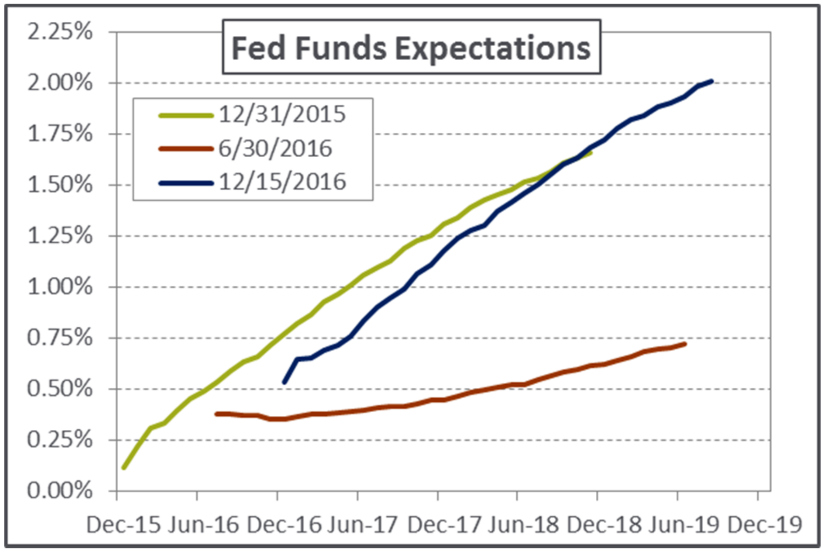
Fed has stated a willingness to let the economy "run hot" and accept some inflation to repair the deflationary effects of the past eight years

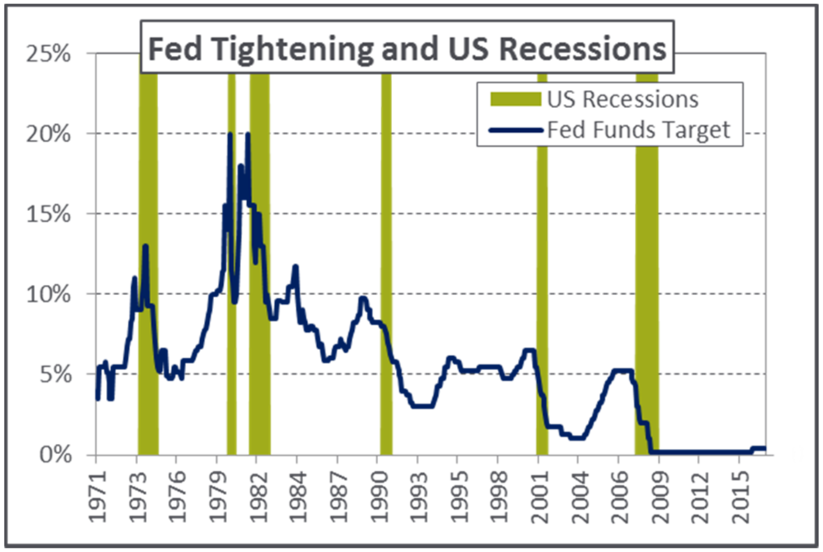
A relatively accommodative Fed is likely to continue, unless there is a dramatic acceleration in inflation

Historically, rapid tightening of Fed policy precedes a US recession

Tighter monetary policy slows inflation by decreasing economic activity

The Fed's monetary policy statements are closely scrutinized and deviations from "lower for longer" can materially impact the market outlook





Source: (Top) Federal Reserve, Bloomberg
Source: (Bottom) Federal Reserve, NBER, Bloomberg

Federal Reserve Gradualism

US dollar strength is interconnected with Federal Reserve policy

The US dollar is sensitive to changes in Fed rate expectations and interest rate differentials relative to the rest of the world

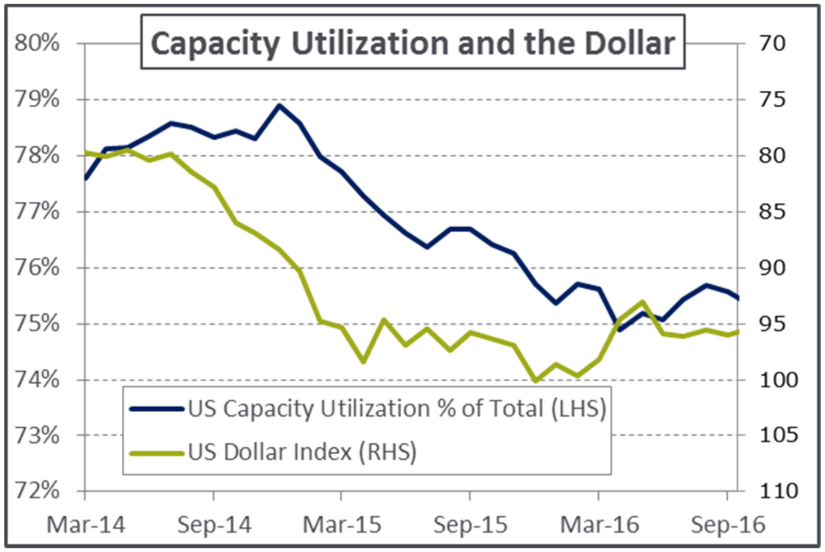
Fed must balance the path of future interest rate increases with the disruptive effects of a strong dollar on global markets

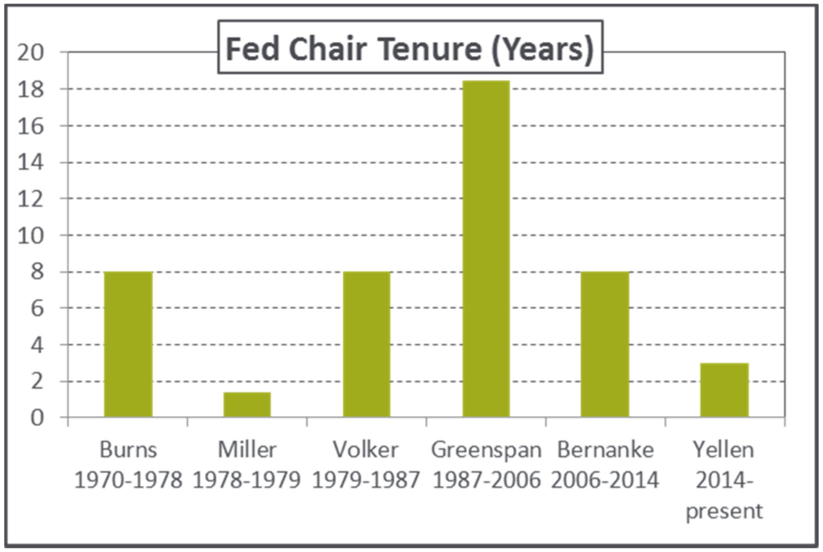
Dollar strength weakens the outlook for US corporate earnings and rapid dollar appreciation likely strains US profit margins

2017 is likely to be a year for greater uncertainty regarding Fed policy

Politics could intersect with Fed policy due to more vocal executive branch and conclusion of Janet Yellen's term in February 2018

The path of Fed rate hikes in 2017 and beyond is less clear due to the potential impact of fiscal stimulus





Source: (Top) Federal Reserve, Bloomberg
Source: (Bottom) Federal Reserve

China Transitions

China is the global growth engine but faces fundamental transitions

Economic evolution: Intrinsic need to evolve from focus on manufacturing – long the driver of growth – to services and innovation

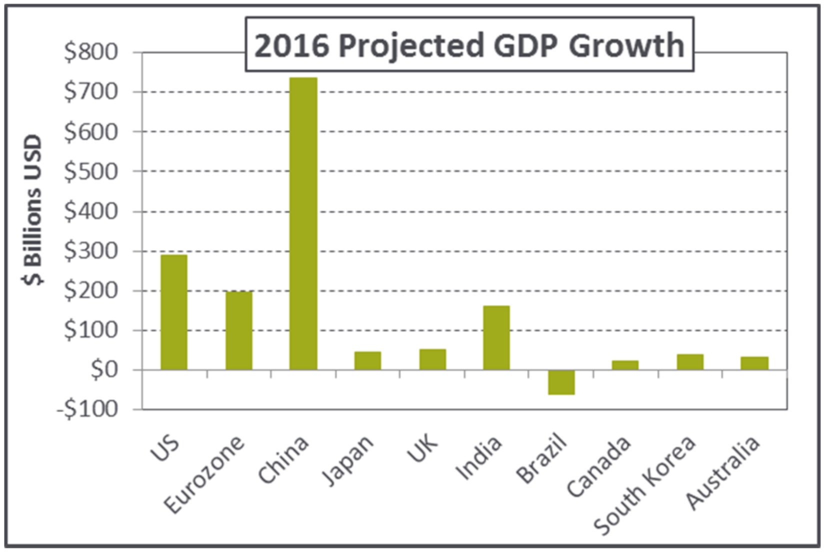
Monetary policy progression: Pressure on the People's Bank of China (PBOC) to balance the status quo and encourage free market reforms

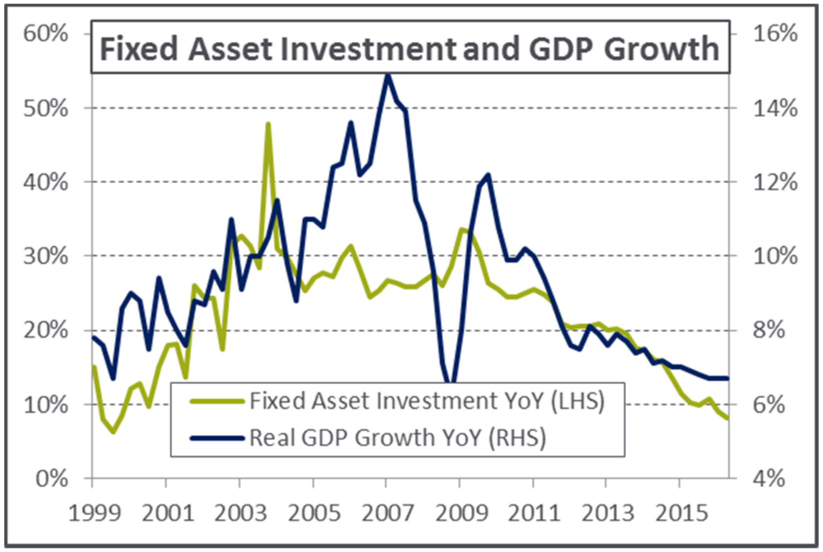
Any disruption to these transitions will have global repercussions due to China's size and role in the global economy

China must manage competing social goals in attempting to sustain growth

Production based economy requires fixed investment to support employment as the rural population moves to urban centers

Future growth in a services based economy requires advancement in productivity, technology, and a more skilled labor force





Source: (Top) IMF, Bloomberg
Source: (Bottom) National Bureau of Statistics of China, Bloomberg

China Transitions

The PBOC is tasked with straddling a delicate path as the economy evolves

China maintains control of its currency and monetary policy but would have to make concessions to open its capital account and allow the free movement of capital

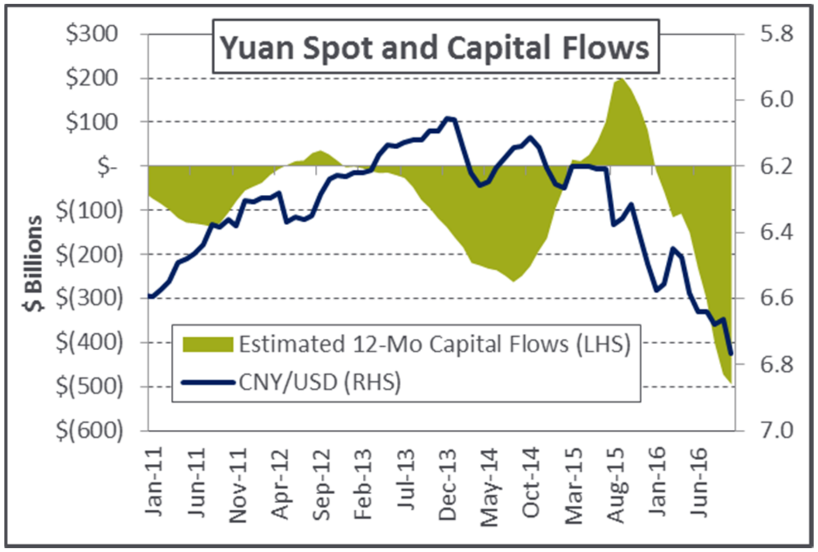
Restrictions on capital markets are slowly being eased, with an eye towards limiting social disruption

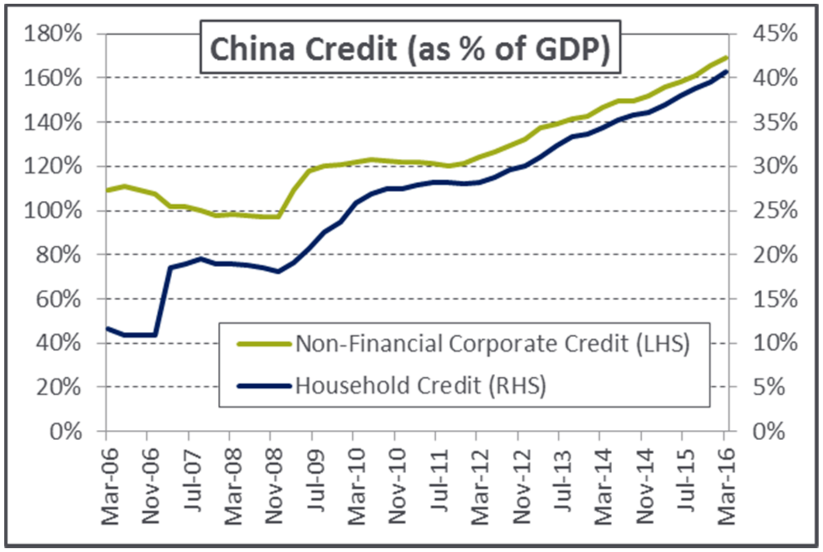
Concerns of a rapid currency devaluation have forced a more managed transition process that likely delays the opening of equity and bond markets to global investors

Managed policy transitions come with significant risks which require balance

Fiscal policy: Consequences of unsustainable credit growth if too accommodative or a hard economic landing if too austere

Monetary policy: Potential for asset price bubbles in real estate and capital markets if policy changes slowly or move rapidly and spur capital flight





Source: (Top) SAFE, Bloomberg
Source: (Bottom) Bank for International Settlements

Globalization Backlash

Weak economic growth and uneven wage gains over the last decade have fueled political discontent in the West

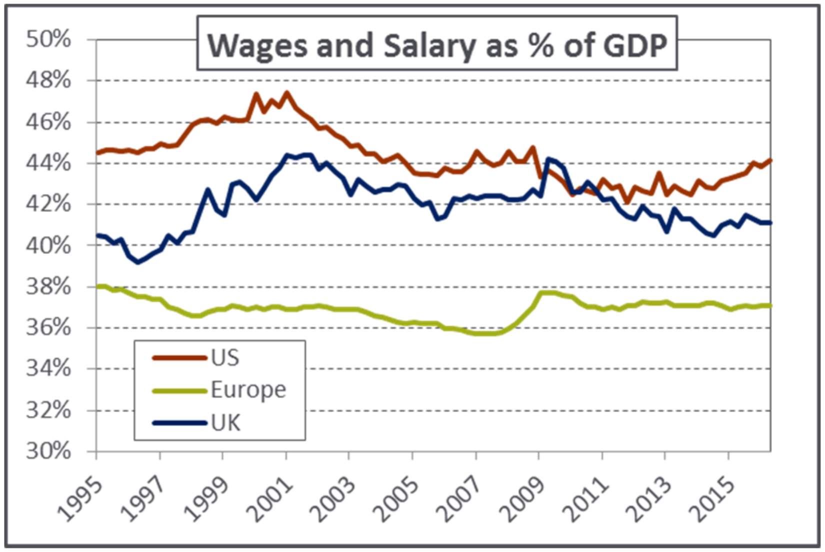
The backlash against globalization does not materially alter the fundamentals of the global capital markets, but does increase economic and market uncertainty

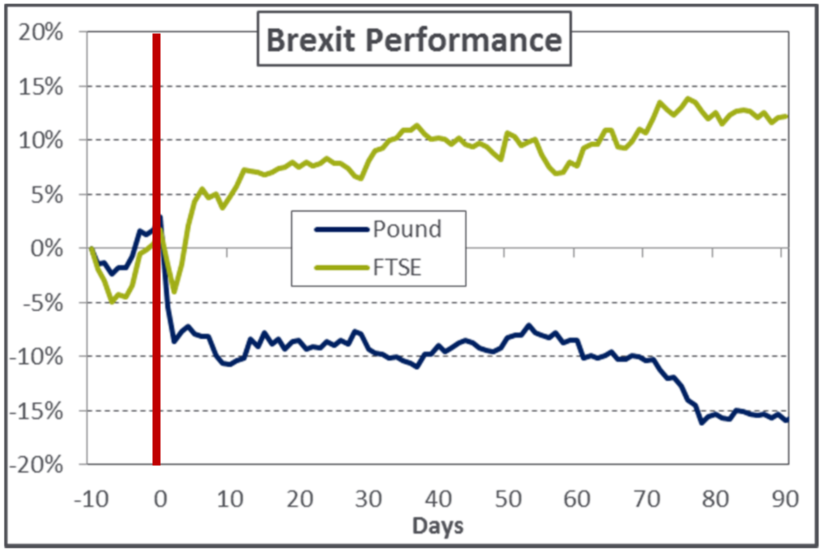
Populist movements destabilize the established political order but are not inevitably bearish for equity markets

Political uncertainty intensifies currency volatility and in cases of depreciation may stimulate local equity markets (e.g. UK)

May bring increased fiscal spending and higher inflation, a welcome benefit for developed market economies

However, a shift away from political orthodoxy heightens low probability political tail-risks such as a US-China trade war or a dissolution of the euro





Source: (Top) Bureau of Economic Analysis, Eurostat, Bloomberg
Source: (Bottom) Bloomberg

Globalization Backlash

Have we reached "Peak Trade"?

A secular transition is underway and a shift from free trade policies in the West may reduce long-term economic growth rates

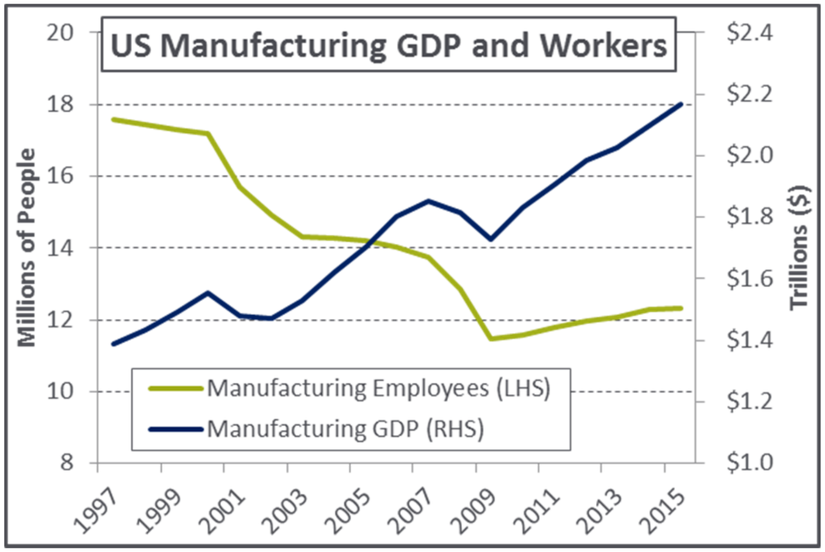
Free trade is blamed but automation is perhaps a greater source of social disruption and job losses

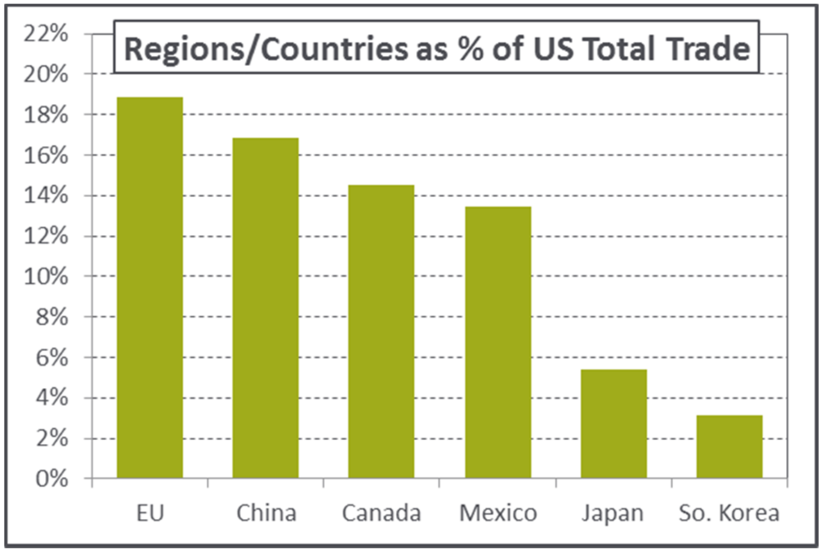
A strong US pivot away from global trade is a tail-risk for the global economy and would likely impact capital markets negatively in the emerging world

For many nations, a turn inward is associated with globalization fatigue

Greater expression of nationalism often translates to increased geopolitical risks as multilateral relationships are reassessed

Anti-establishment political parties reflect the economic unease of voters but are unlikely to initiate the structural economic reforms required in the developed world





Source: (Top) Bureau of Labor Statistics, Bloomberg
Source: (Bottom) IMF, Bloomberg

Investment Outlook

Evaluate Feasibility of Objectives

Asset returns offer less support for investors to achieve target objectives

Asset growth post-2008 is without historical precedent relative to economic growth

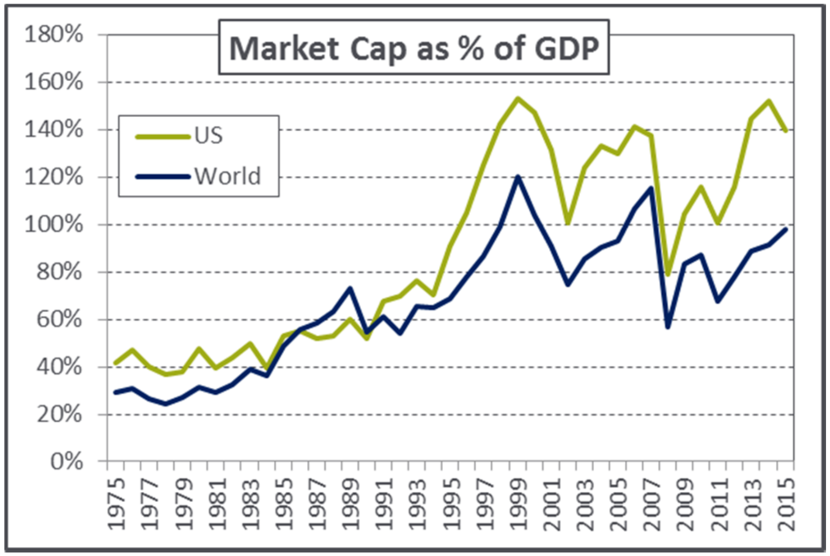
Investment program goals are influenced by capital inflows, spending obligations, and asset returns

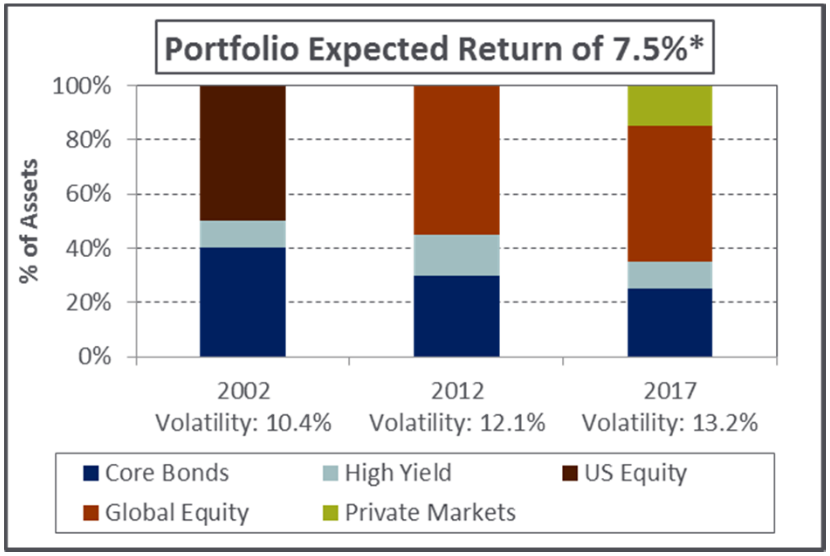
Future growth is likely to be more dependent on increasing capital inflows and reducing spending commitments

Expected returns greater than 7.5% (5% real) will be a high hurdle for diversified investors to realize

Optimization of public market asset classes will not be sufficient to meet elevated return expectations for risk aware investors

Improving the return outlook may involve increasing portfolio risk, expanding alpha opportunities, and/or expanding the use of portfolio leverage





Source: (Top) World Bank
**Based on NEPC's 30 Year Capital Market Assumptions; Source: (Bottom) NEPC*

Asset Class Assumptions

We use market data for all asset class assumptions as of November 30th

Assumptions combine historical data and forward looking analysis

- Expected returns based on current market pricing and forward looking estimates
- Volatility informed by history but adjusted to reflect non-normality
- Correlations based on long-term data but recognize ongoing shifts in asset relationships

Forward-looking asset class models to determine expected return are based on current market pricing and a building blocks approach

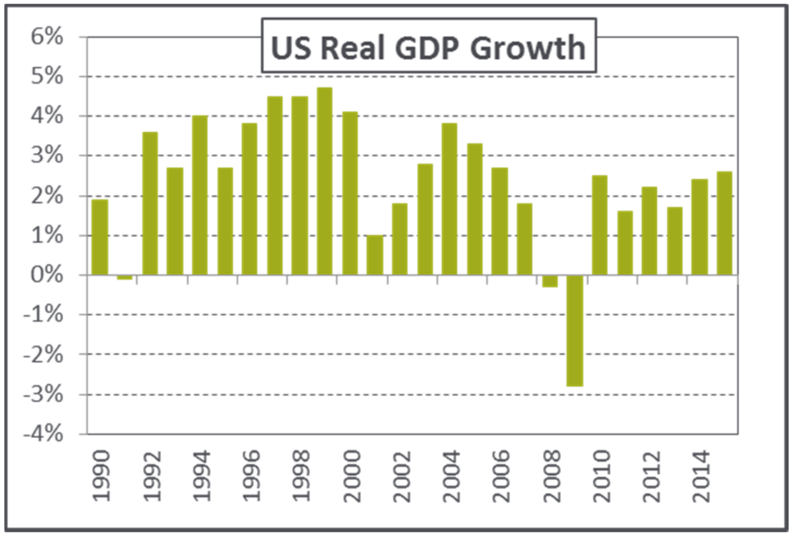
- Expected return equals yield plus change in price (valuation, roll down, defaults, etc.)
- Country/regional inflation and real growth estimates are key economic observations
- Qualitative inputs and investor sentiment (capital flows, etc.) inform the return outlook

Asset class assumptions are prepared by the Asset Allocation Committee

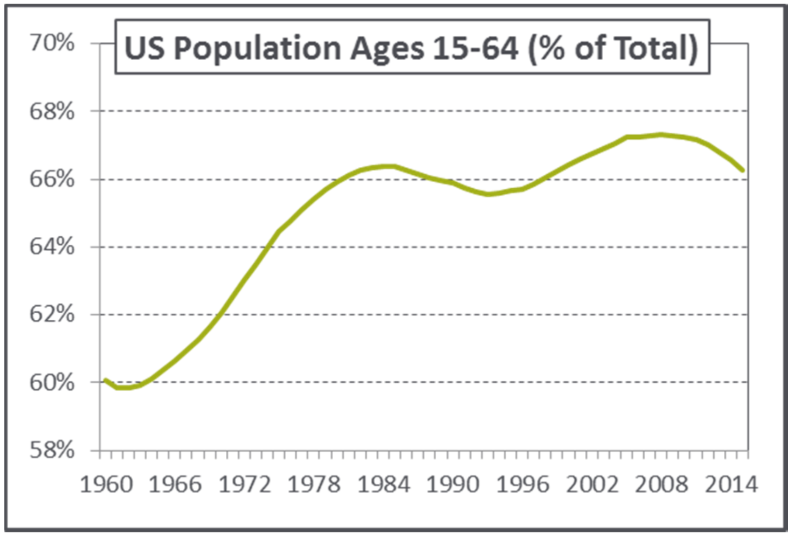
- Asset Allocation team plus members from consulting practice groups meet to develop ideas for Key Market Themes, Strategic Policy Actions, and Current Opportunities

Partners Research Committee approves asset class assumptions

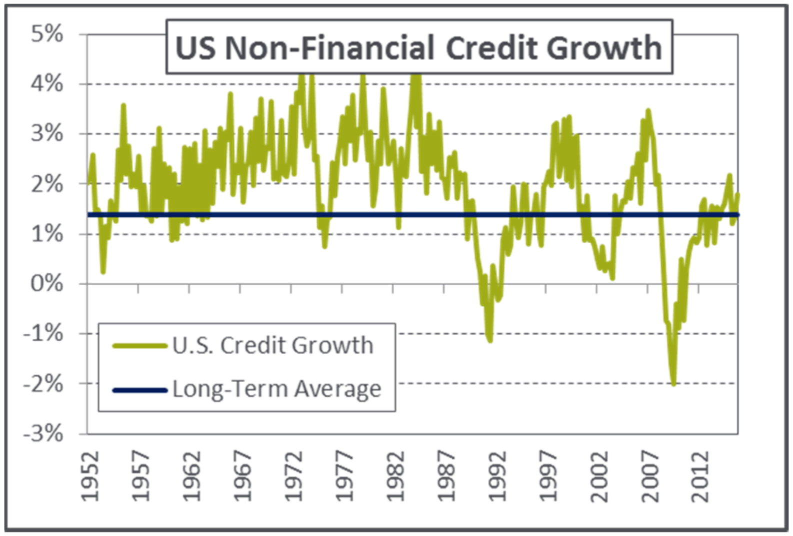
US Growth Remains Subdued Relative to Prior Economic Expansions



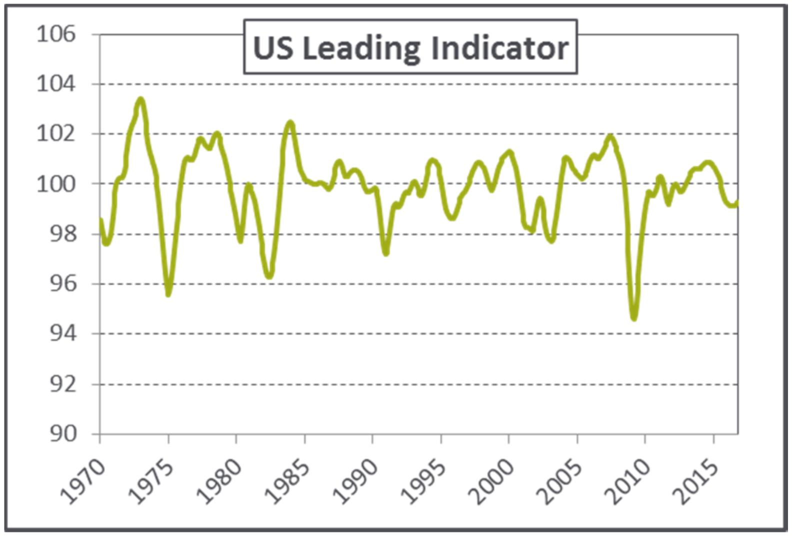
Source: Bloomberg



Source: The World Bank

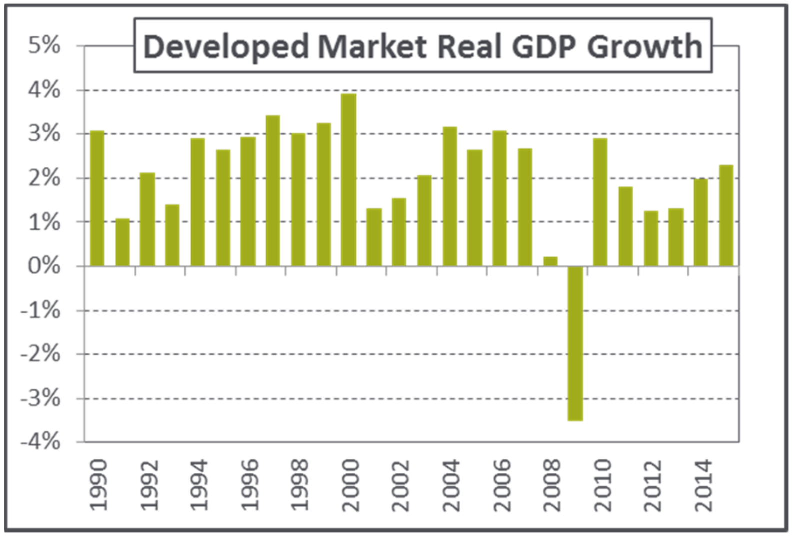


Source: Bank of International Settlements

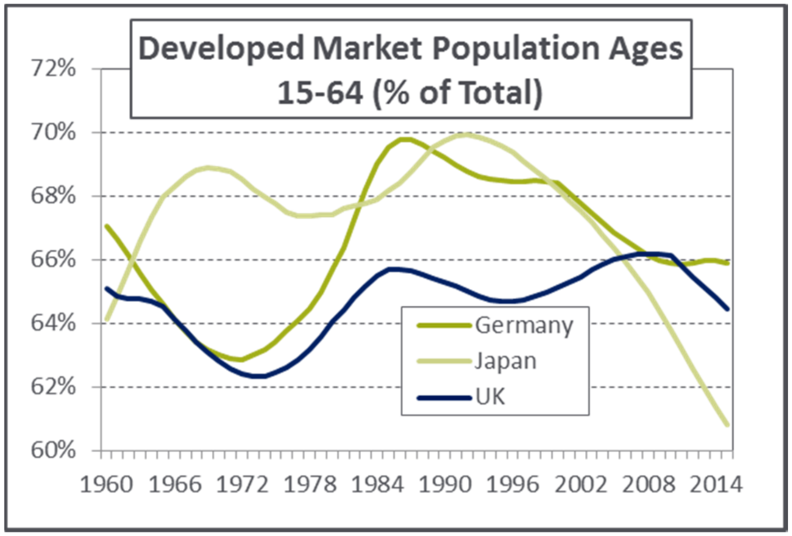


Source: OECD, Bloomberg

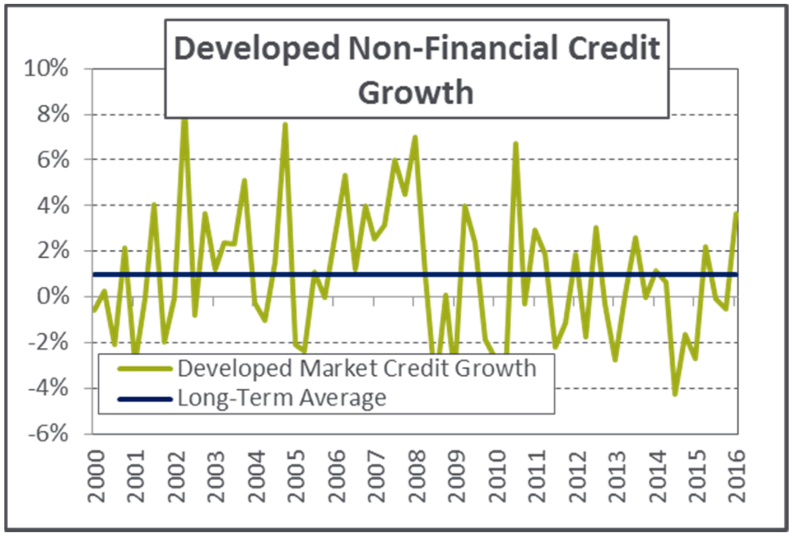
Developed Market Growth Rates are Improving



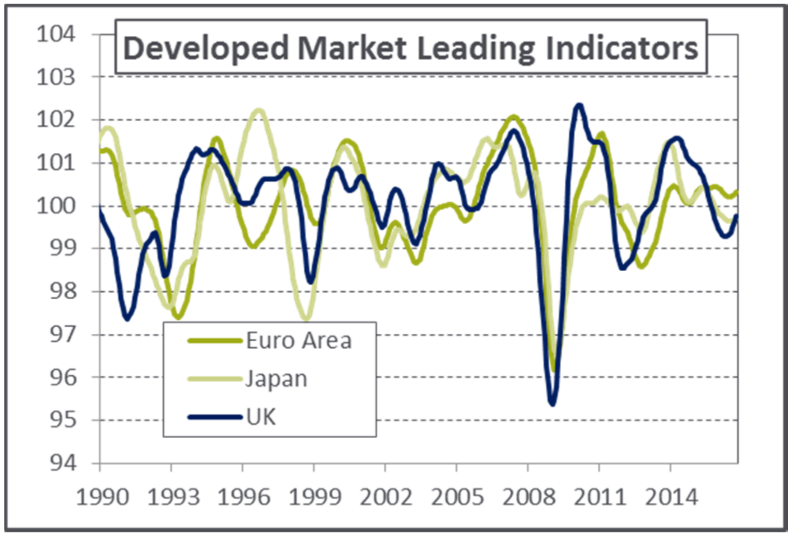
Source: OECD, Bloomberg



Source: The World Bank

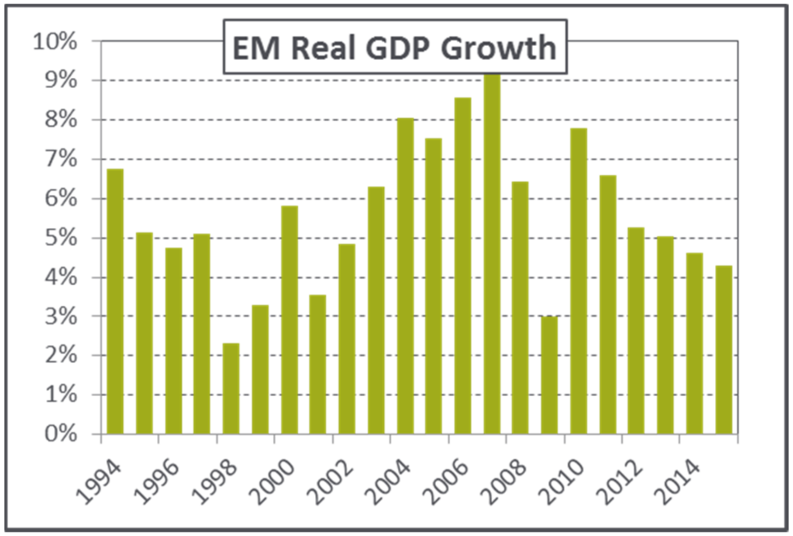


Source: Bank of International Settlements

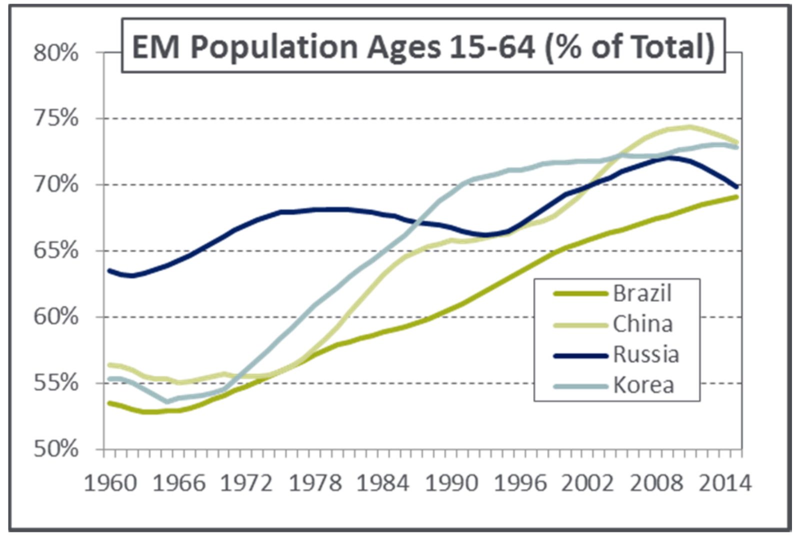


Source: OECD, Bloomberg

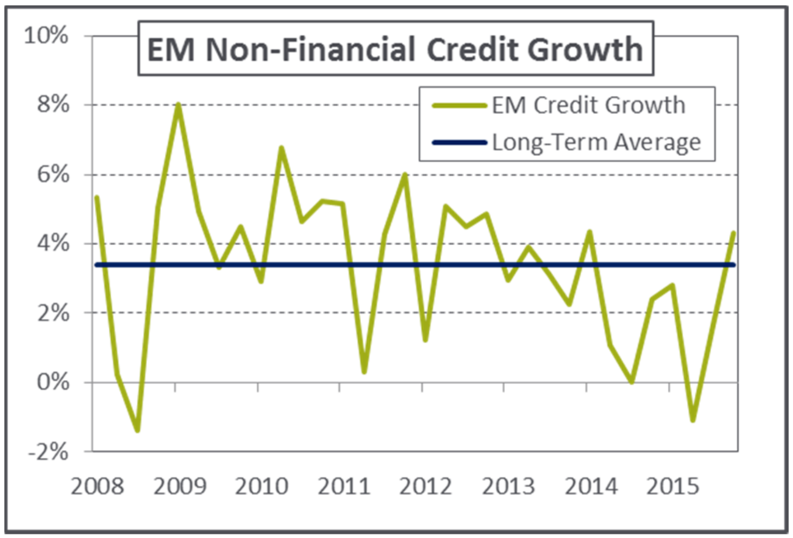
Emerging Market Growth Relative to Developed Markets is Expanding



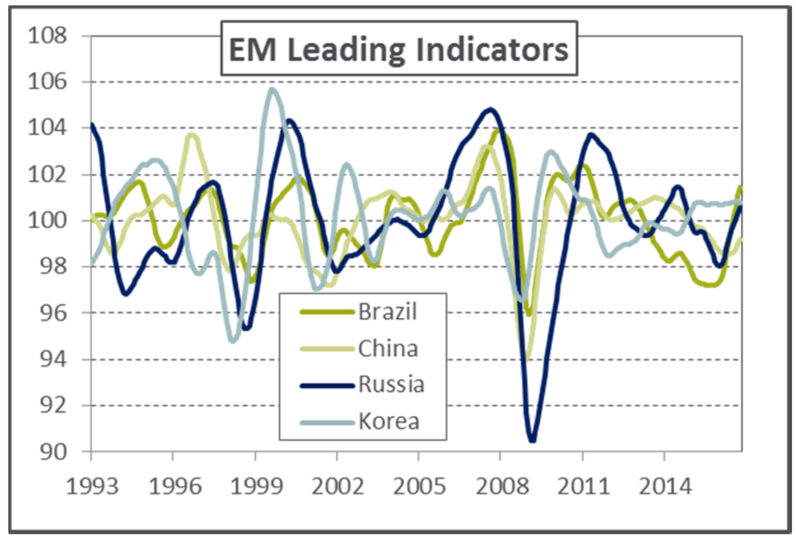
Source: Bloomberg



Source: The World Bank



Source: Bank of International Settlements



Source: OECD, Bloomberg

2017 5-to-7 Year Return Forecasts

Geometric Expected Return			
Asset Class	**2016**	**2017**	**2017-2016**
Cash	1.50%	1.75%	0.25%
Treasuries	1.75%	2.00%	0.25%
IG Corp Credit	3.75%	3.75%	-
MBS	2.00%	2.25%	0.25%
Core Bonds*	2.46%	2.65%	0.19%
Municipal Bonds	2.25%	2.25%	-
TIPS	2.50%	3.00%	0.50%
High-Yield Bonds	5.25%	4.75%	-0.50%
Bank Loans	5.50%	5.25%	-0.25%
Global Bonds (Unhedged)	1.00%	1.00%	-
Global Bonds (Hedged)	1.09%	1.09%	-
EMD External	4.75%	4.75%	-
EMD Local Currency	6.50%	6.75%	0.25%
Large Cap Equities	6.00%	5.75%	-0.25%
Small/Mid Cap Equities	6.25%	6.00%	-0.25%
Int'l Equities (Unhedged)	7.25%	7.25%	-
Int'l Equities (Hedged)	7.57%	7.57%	-
Emerging Int'l Equities	9.75%	9.50%	-0.25%
Private Equity	8.50%	8.25%	-0.25%
Private Debt	7.50%	7.25%	-0.25%
Real Estate	6.50%	6.00%	-0.50%
Commodities	4.50%	4.75%	0.25%
Hedge Funds**	5.75%	5.95%	0.20%

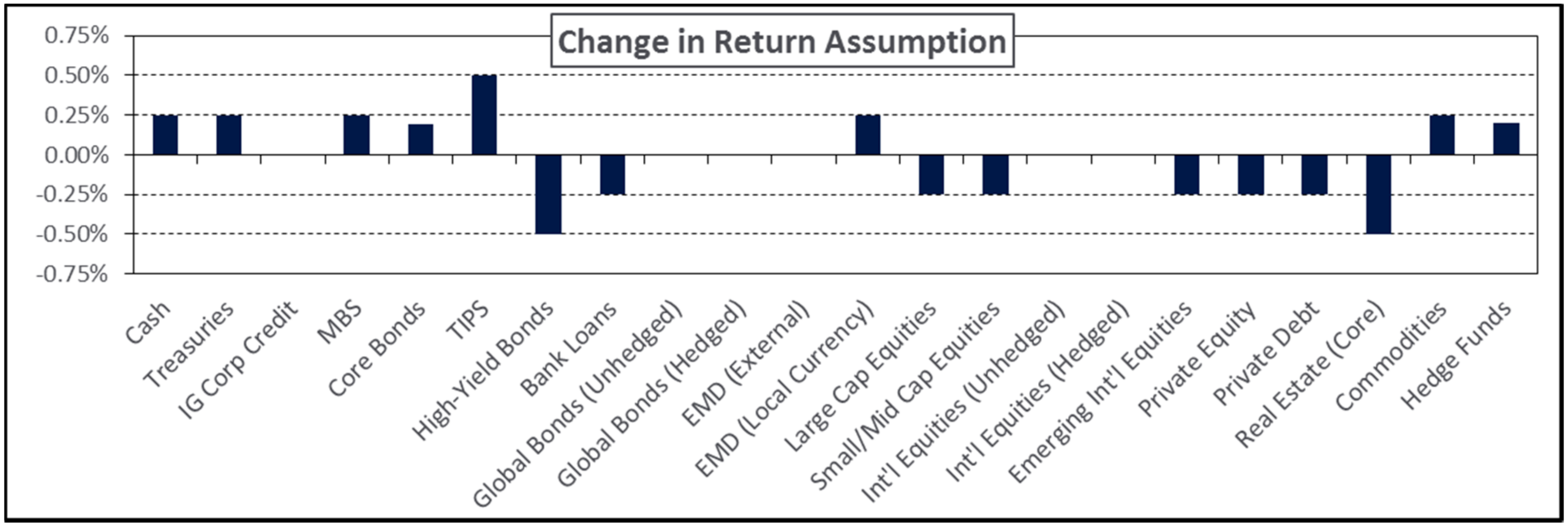
* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).
** Hedge Funds is a calculated blend of 40% Equity, 40% Credit, 20% Macro-related strategies.

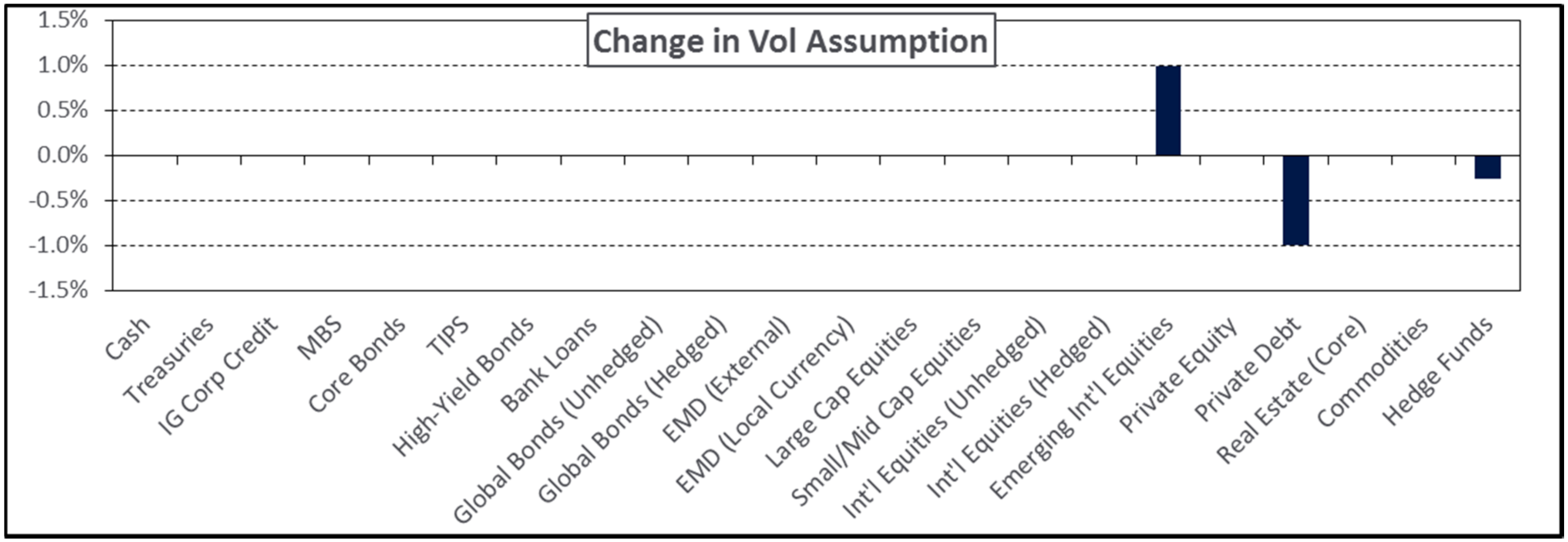
2017 30-Year Return Forecasts

Geometric Expected Return			
Asset Class	**2016**	**2017**	**2017-2016**
Cash	3.00%	3.00%	-
Treasuries	3.25%	3.50%	0.25%
IG Corp Credit	5.00%	5.00%	-
MBS	3.50%	3.50%	-
Core Bonds*	3.89%	4.00%	0.11%
Municipal Bonds	3.75%	3.75%	-
TIPS	4.00%	3.75%	-0.25%
High-Yield Bonds	5.75%	5.75%	-
Bank Loans	6.00%	6.00%	-
Global Bonds (Unhedged)	2.75%	2.75%	-
Global Bonds (Hedged)	2.87%	2.87%	-
EMD External	6.00%	5.75%	-0.25%
EMD Local Currency	6.50%	6.50%	-
Large Cap Equities	7.50%	7.50%	-
Small/Mid Cap Equities	7.75%	7.75%	-
Int'l Equities (Unhedged)	8.00%	7.75%	-0.25%
Int'l Equities (Hedged)	8.39%	8.14%	-0.25%
Emerging Int'l Equities	9.50%	9.50%	-
Private Equity	9.50%	9.50%	-
Private Debt	8.00%	8.00%	-
Real Estate	6.50%	6.50%	-
Commodities	5.50%	5.50%	-
Hedge Funds**	6.50%	6.47%	-0.03%

* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).
** Hedge Funds is a calculated blend of 40% Equity, 40% Credit, 20% Macro-related strategies.

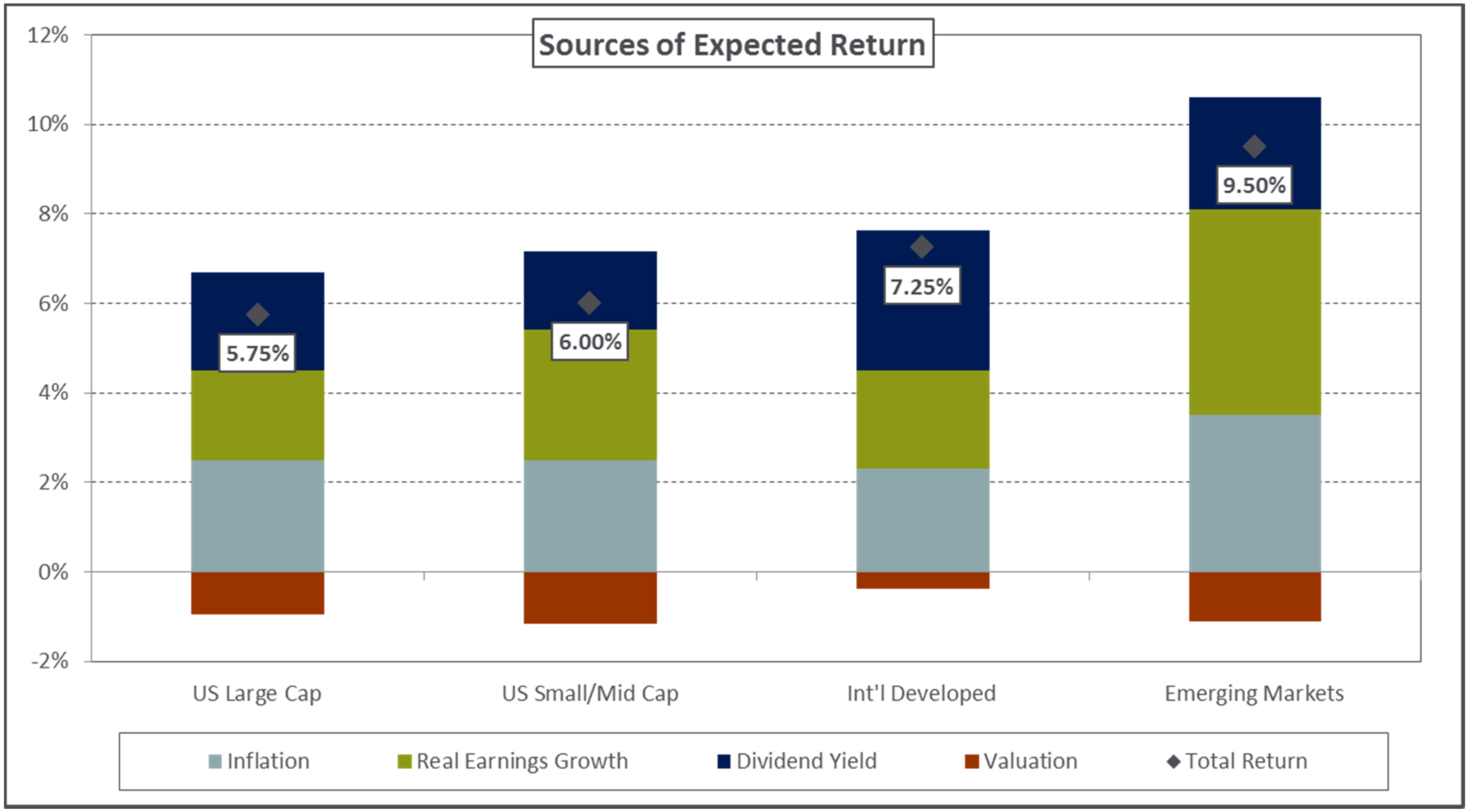
Summary of Changes to 2017 Return and Volatility Expectations



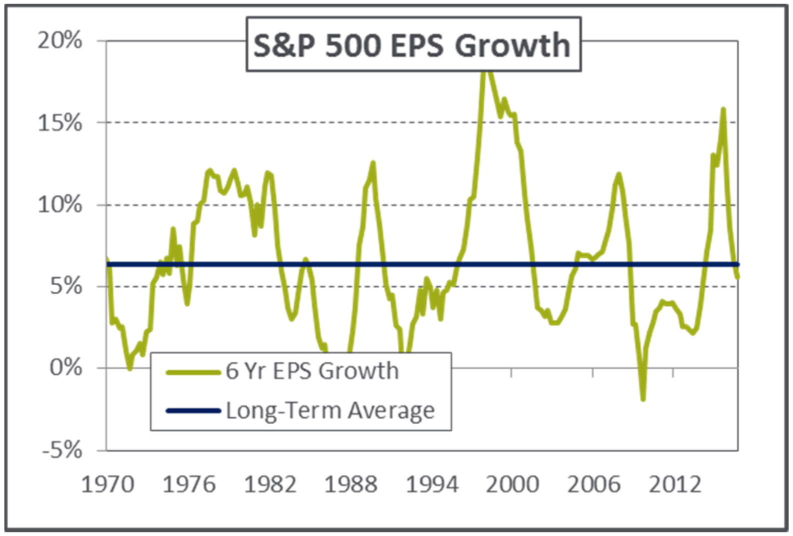


Assumption Development

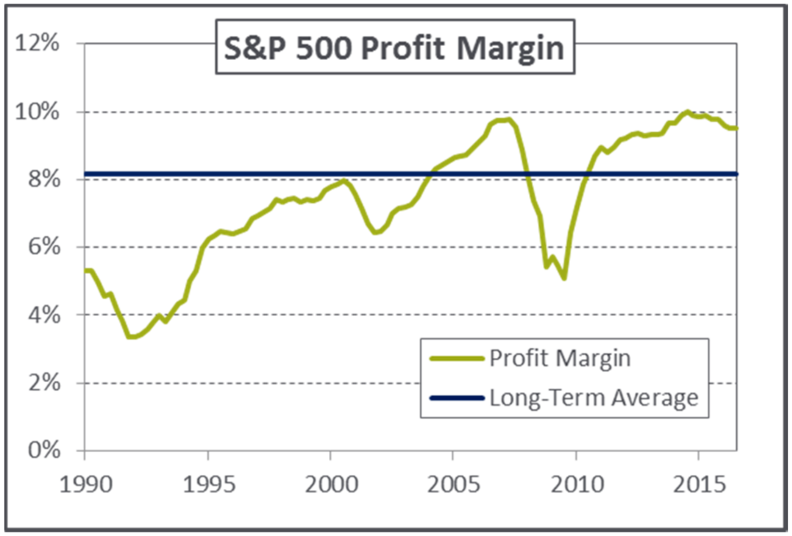
Assumption Development – Global Equities



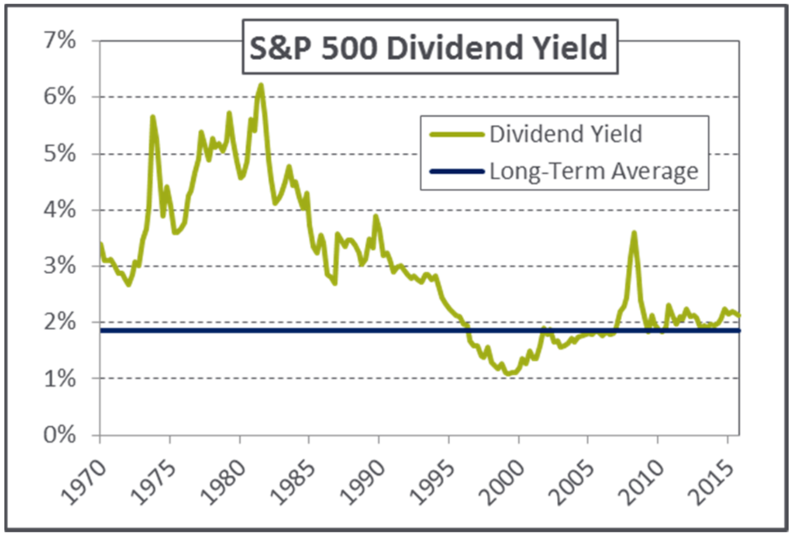
Index Current	US Large Cap	US Small/Mid Cap	Int'l Developed	Emerging Markets
Trailing P/E	20.6	31.6	16.9	14.3
Profit Margin	9.5%	4.2%	6.2%	8.0%
Dividend Yield	2.1%	1.7%	3.3%	2.5%



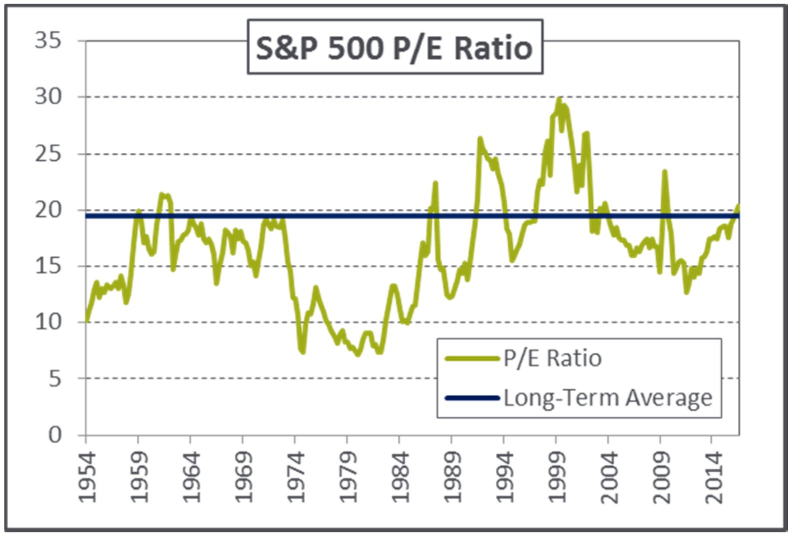
Source: Standard & Poors, NEPC, Bloomberg



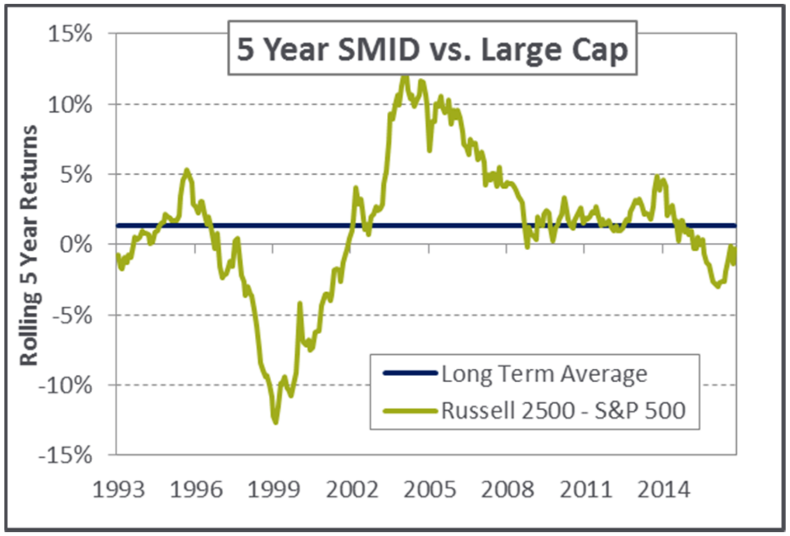
Source: Standard & Poors, NEPC, Bloomberg



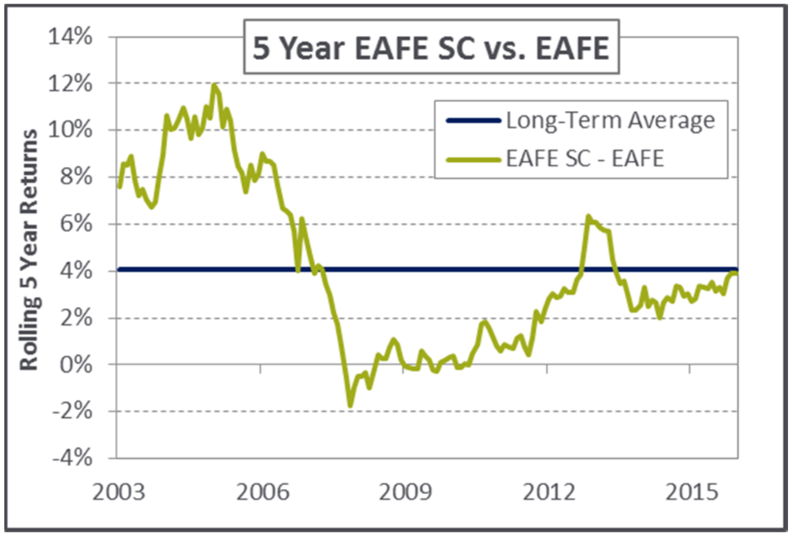
Source: Standard & Poors, NEPC, Bloomberg



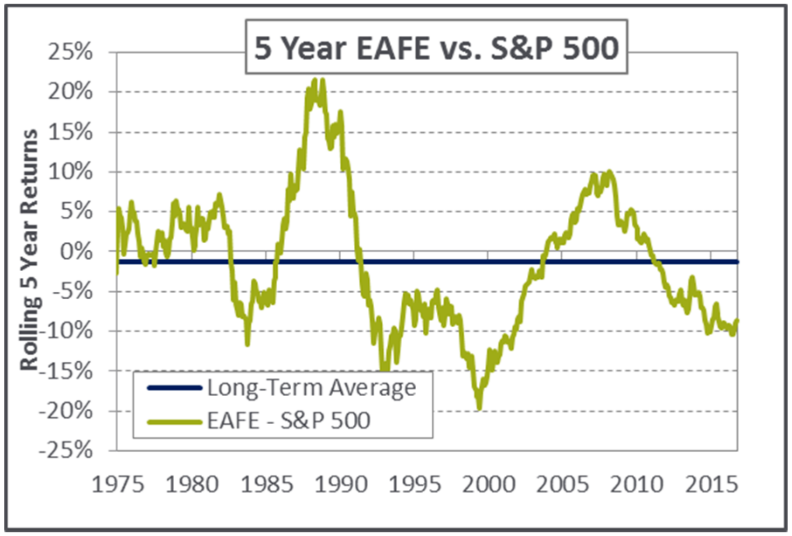
Source: Standard & Poors, NEPC, Bloomberg



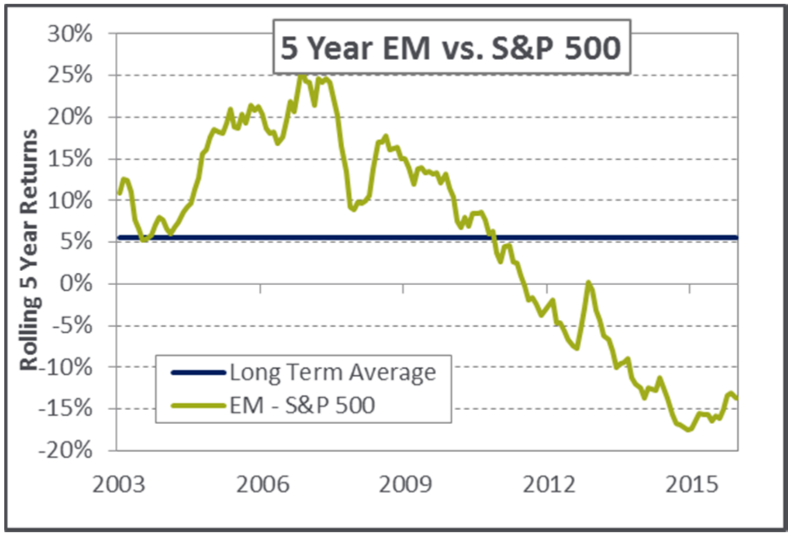
Source: Standard & Poors, Russell, Bloomberg



Source: Standard & Poors, MSCI, Bloomberg

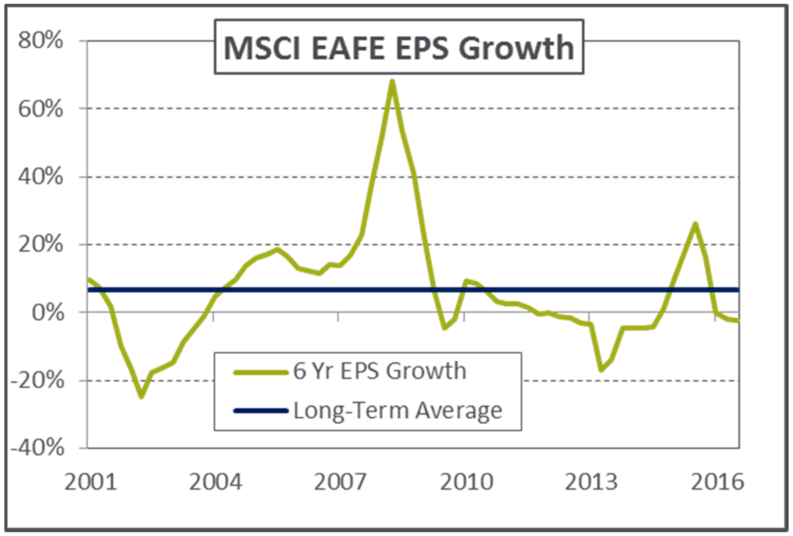


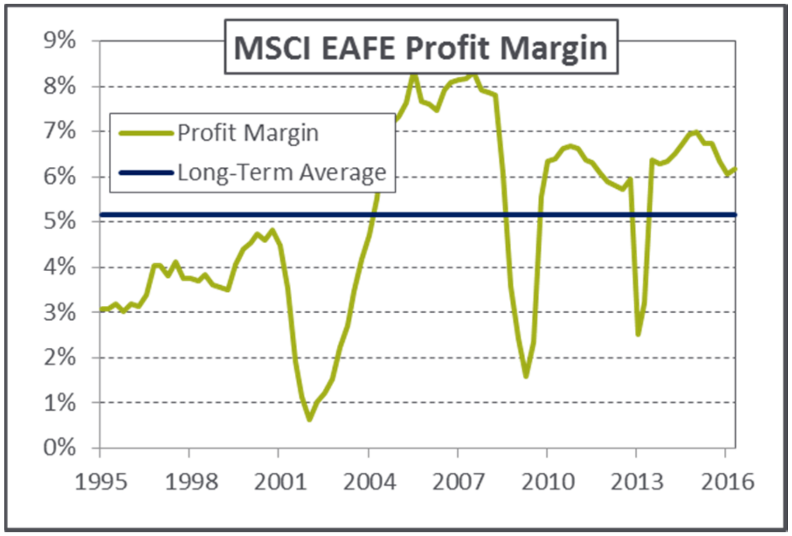
Source: Standard & Poors, MSCI, Bloomberg



Source: MSCI, Bloomberg

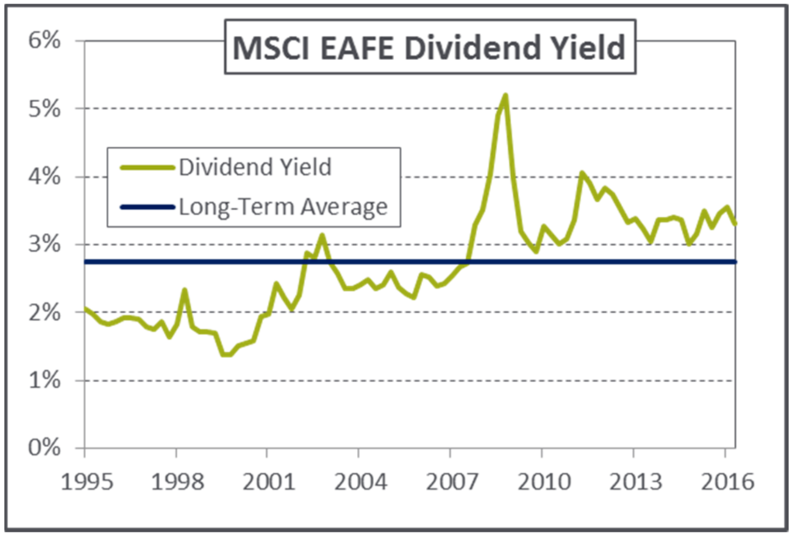
International Developed Equity Building Blocks

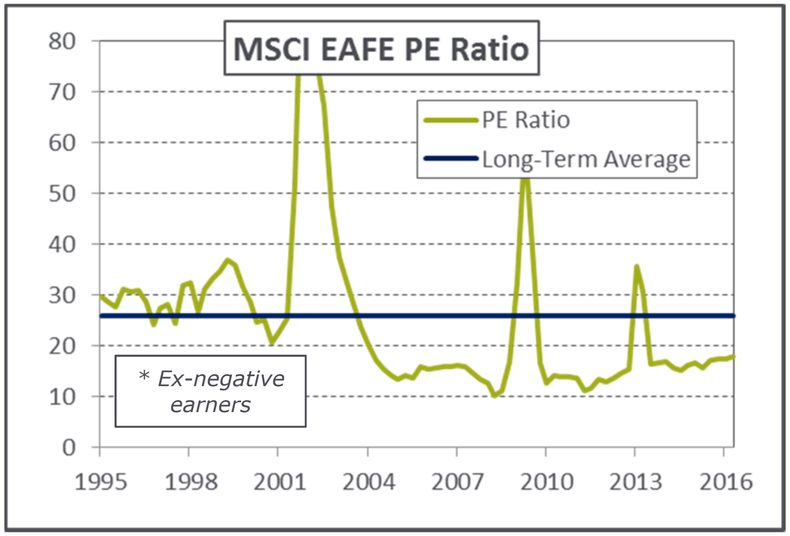




Source: MSCI, NEPC, Bloomberg

Source: MSCI, NEPC, Bloomberg



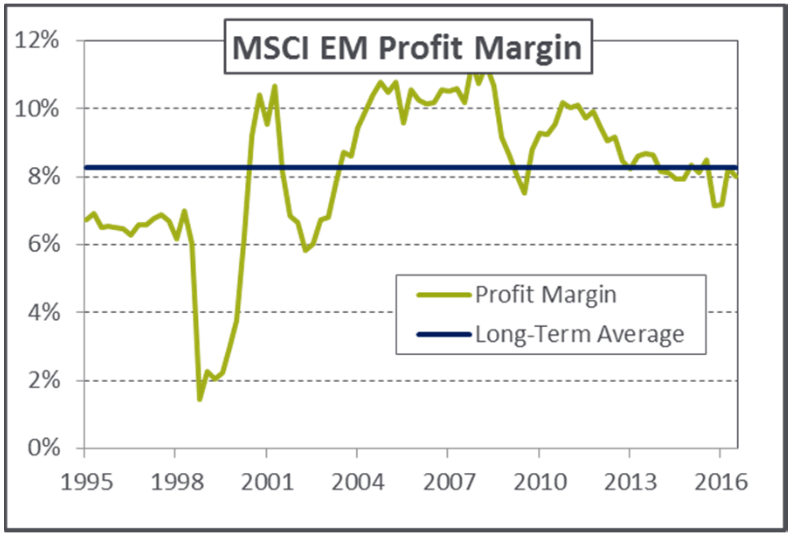


Source: MSCI, NEPC, Bloomberg

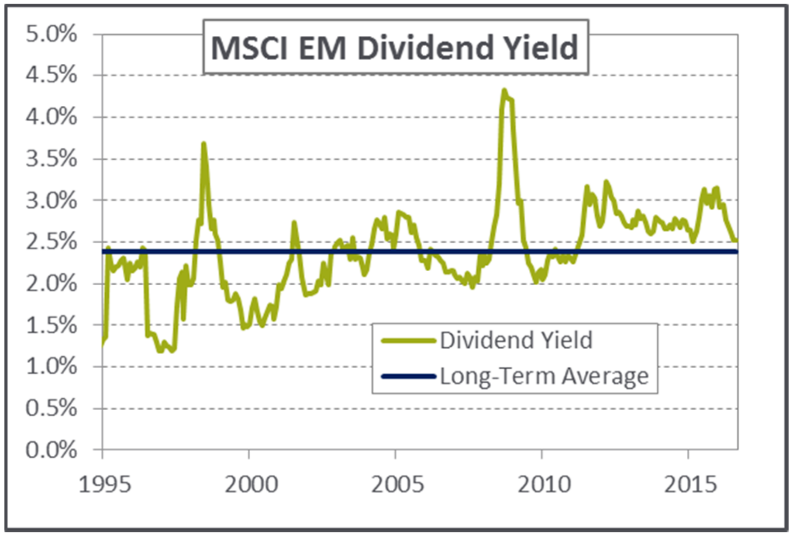
Source: MSCI, NEPC, Bloomberg

Emerging Equity Building Blocks

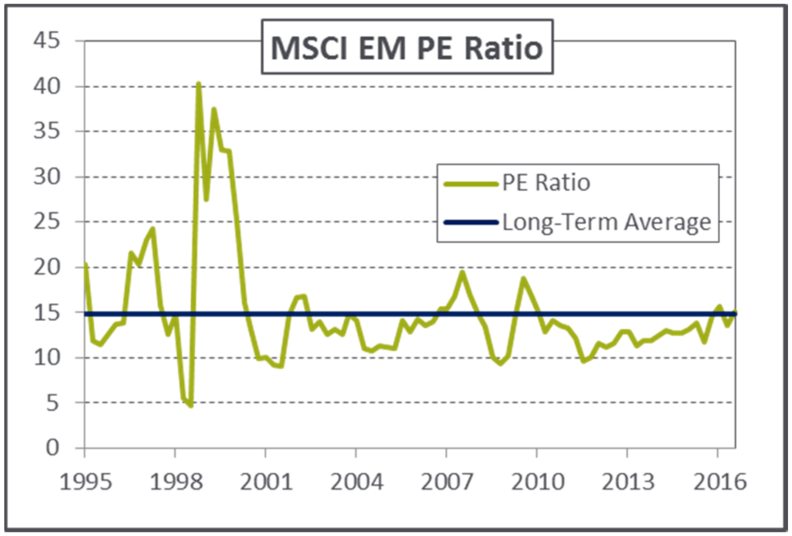
Source: Bloomberg



Source: MSCI, NEPC, Bloomberg



Source: MSCI, NEPC, Bloomberg
** Long-term average uses 10 years of data*



Source: MSCI, NEPC, Bloomberg

Asset Class Building Blocks Summary

- **Global Equity Building Blocks**
  - **Inflation:** Represents global inflation expectation over forecast period
  - **Real Earnings Growth:** Represents assumption for real growth for each market
  - **Profit Margin Adjustment:** Return due to shift of profit margins to forecast value
  - **Dividend Yield:** Represents dividend yield expectation over forecast period
  - **Valuation:** Return due to shift of current price/earnings ratio to forecast value
- **Commodities Building Blocks**
  - **Valuation:** Return from commodity spot price reverting to long term real average
  - **Roll yield:** Average annual yield to roll futures contract over forecast period
  - **Cash:** Expected US cash rate over forecast period
- **Fixed Income Building Blocks**
  - **Sovereign Yield:** Average expected government bond yield over forecast period
  - **Sovereign Price Change:** Expected price change due to changes in interest rates
  - **Roll Down:** Expected price change due to ageing of a bond along the yield curve
  - **Credit Spread:** Average expected credit spread over forecast period
  - **Spread Price Change:** Return due to shift of current credit spread to forecast value
  - **Credit Deterioration:** Return from credit downgrade and default over forecast period
  - **Real Yield:** Average expected government real yield over forecast period (TIPS)
  - **Real Yield Price Change:** Expected price change due to changes in real rates
  - **Inflation Expectation:** Expected inflation accrual over the forecast period (TIPS)
- **Private Markets Building Blocks**
  - **Illiquidity Premium:** Return associated with illiquidity factor specific to asset class
  - **Relative Valuation Adjustment:** Qualitative adjustment reflecting asset class views
  - **Public Market Return:** Return associated with equivalent public market beta

Information Disclaimer

- **Past performance is no guarantee of future results.**

- **The goal of this report is to provide a basis for substantiating asset allocation recommendations. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.**

- **Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.**

- **All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.**

- **This report is provided as a management aid for the client's internal use only. This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.**