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BlackRock, Inc.
April 17, 2019

Rick Rieder,
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NY Federal Reserve Bank, IACFM Meeting

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BlackRock.

What is your outlook for domestic economic growth and monetary policy and how has it evolved over recent months?

What are the principal risks to your growth outlook?

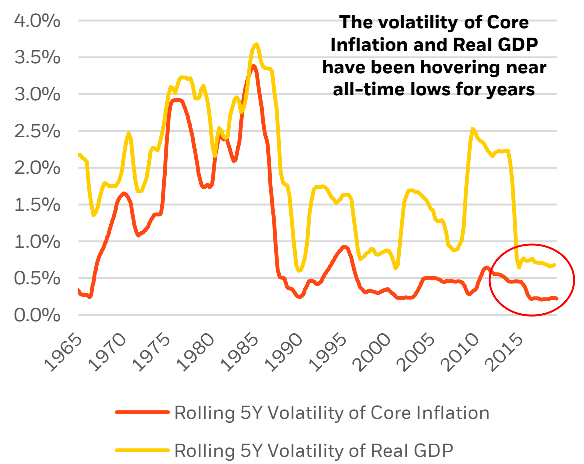
Are financial markets appropriately reflecting this outlook and any risks around it?

I. What is your outlook for domestic economic growth and monetary policy and how has it evolved over recent months?

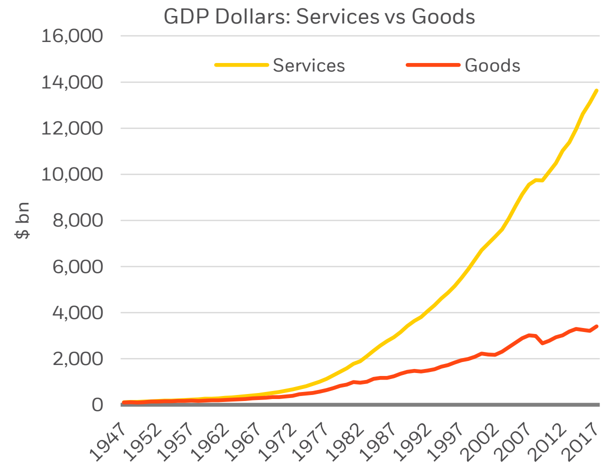
Structurally, we are at *the most stable point of US Economic growth in history*; cyclically, we are experiencing a *tangible moderation back towards potential*...

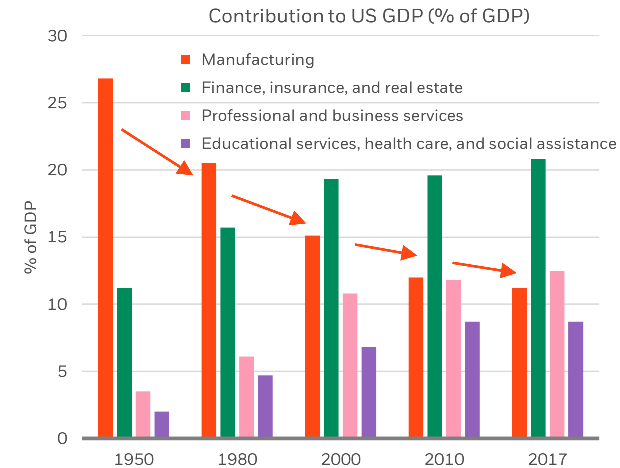
Structurally, we are seeing unprecedented stability in domestic inflation and growth today

Against a mandate of price stability, inflation and growth volatility are at all-time lows...

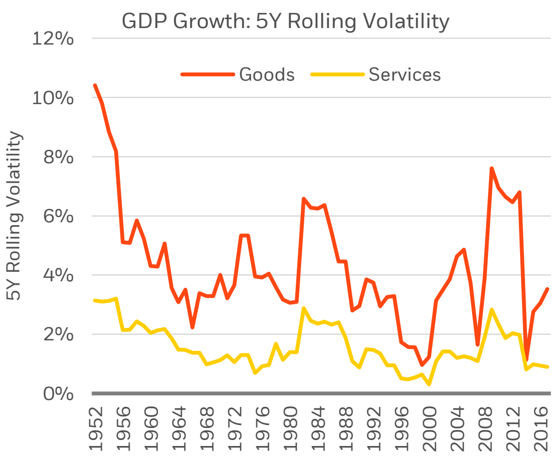


Why? The evolution of the US economy towards services and away from goods has significantly reduced the risk of the manufacturing-oriented boom-bust cycles – creating inherently more stable growth

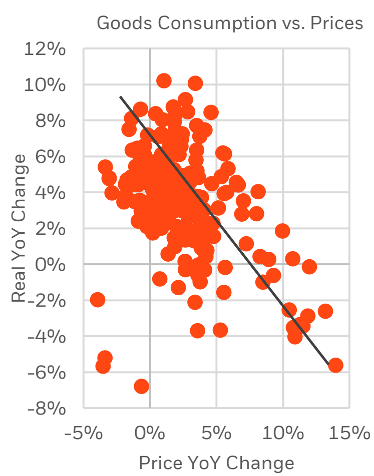


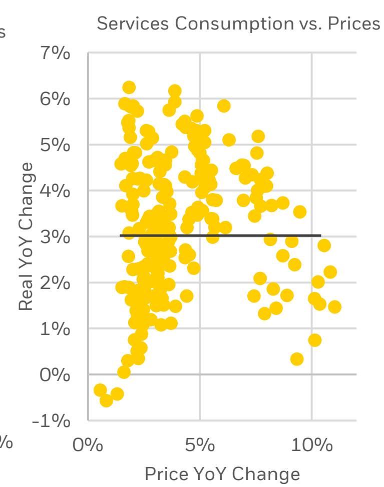


The volatility of services growth has persistently been lower than that of goods

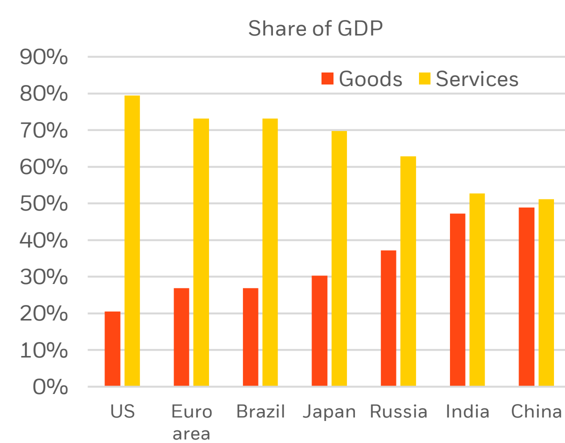


And it is the goods sector that is more elastic and cyclical





The US stands out in the services vs. goods composition – meaning, domestic monetary policy can be less aggressive



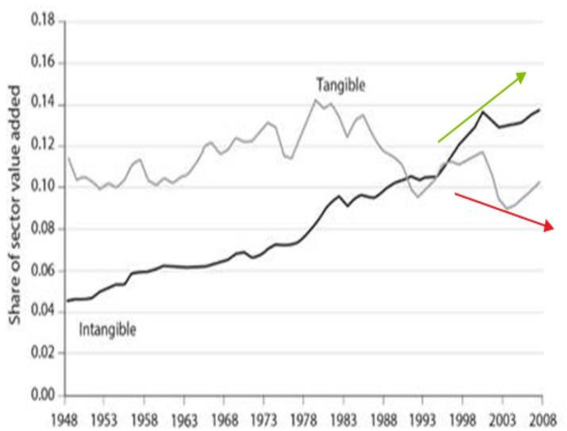
Sources: BEA, Bloomberg, OECD

The core of this evolution lies in two structural underpinnings: 1) the historic Technological evolution impacting growth and inflation in ways never before seen in history, and 2) the Demographic evolution that is resulting in less demand – especially for goods – and hence lower potential growth and inflation…

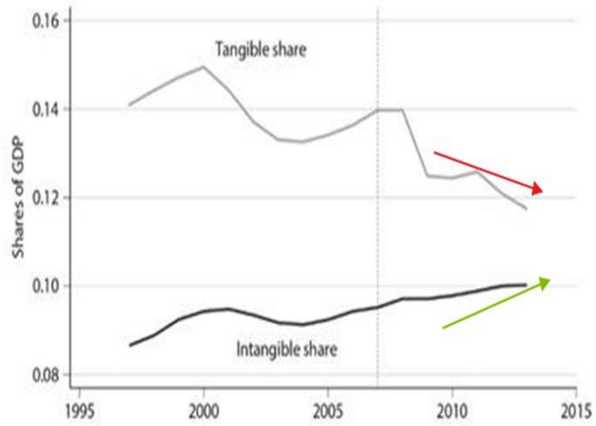
The historic influence of technology/ intangibles is a key structural driver of the stable growth in the US

Investment in R&D and technological capabilities is resulting in divergent growth trends in the developed world, as the US maintains a better growth outlook than its DM peers… but the disinflationary impact on labor and consumer prices, and the resulting impact on monetary policy is equally important…[1]

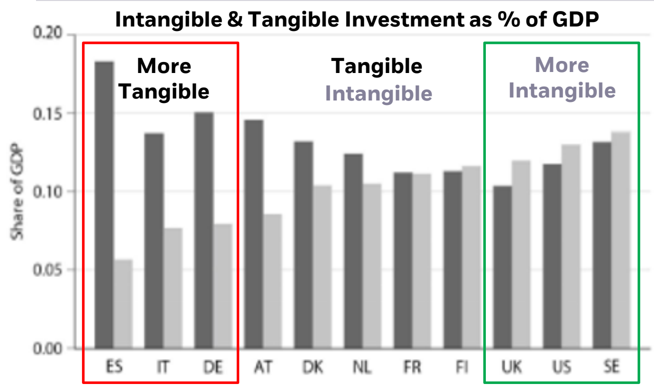
Intangible & Tangible Investment in the US



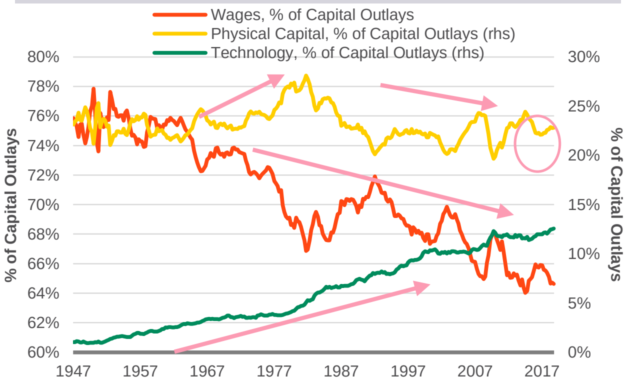
Intangible & Tangible Investment in Europe



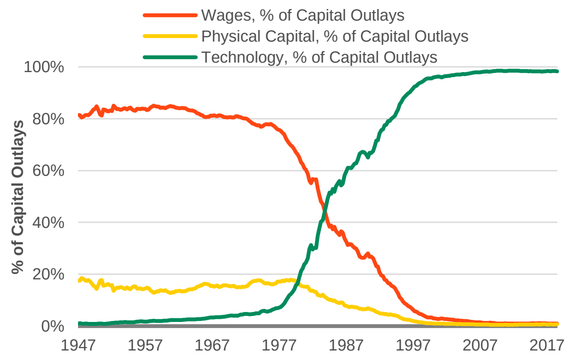
Is there a more descriptive answer for growth and growth/inflation potential, and consequently monetary policy, than this graph below? [1]



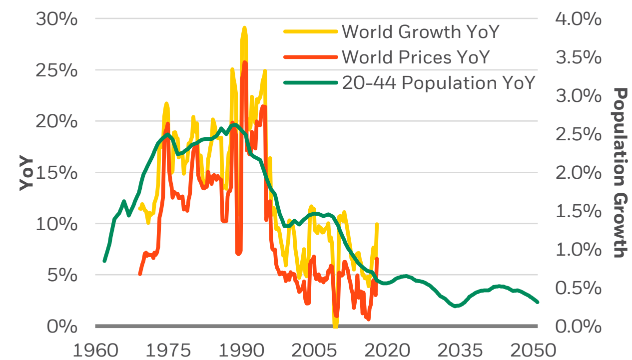
As a % of capital budgets, US corporate allocations to labor peaked in the 1940s, fixed asset investment peaked in the 80s, and tech spending continues to grow



Given the massive deflationary forces of most tech spending, capital investment in tech/ IP, on a real basis in 1970 dollars, has literally gone off the charts



Technology has radically changed investment and inflation, which were already being influenced by our second structural economic growth trend: demographic curves



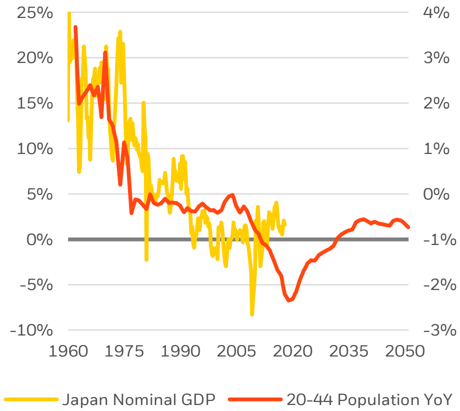
Hence, we believe traditional economic models will continue to be inefficient and poorly describe market conditions/monetary policy requirements unless married to an analysis of commerce today, which is in a quiet but distinct revolution at different speeds globally…

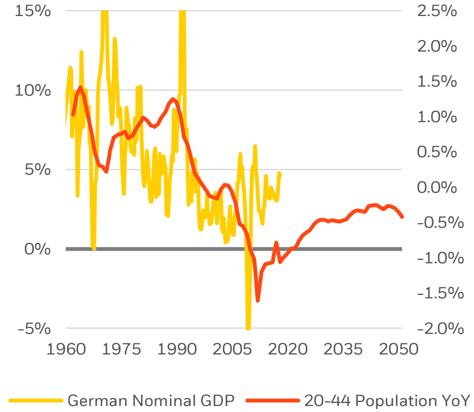
Sources: Capitalism Without Capital, Federal Reserve, Haver, IMF

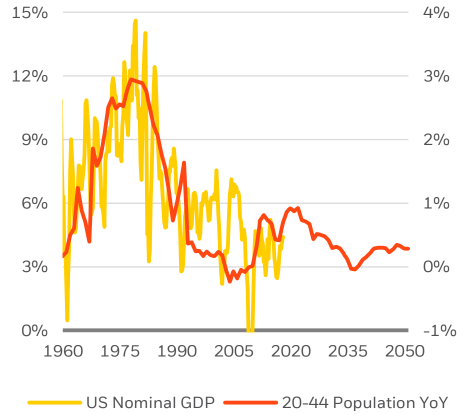
The demographic dynamic is another incredibly influential driver of growth and inflation globally – and there is some dispersion across regions, which helps us understand why the US can continue to see lower but solid economic growth while other regions face more onerous challenges…

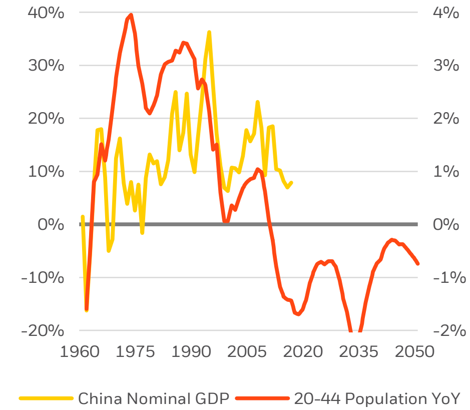
Demographics are a key structural driver of demand – the next 60 years look much different than the last 60 years

While the US faces its own aging issues, on a relative basis it has a much brighter medium-term potential outlook than the rest of the DM world from a demographic perspective, which can allow persistent hiring (and a lower NAIRU than seen in history)…

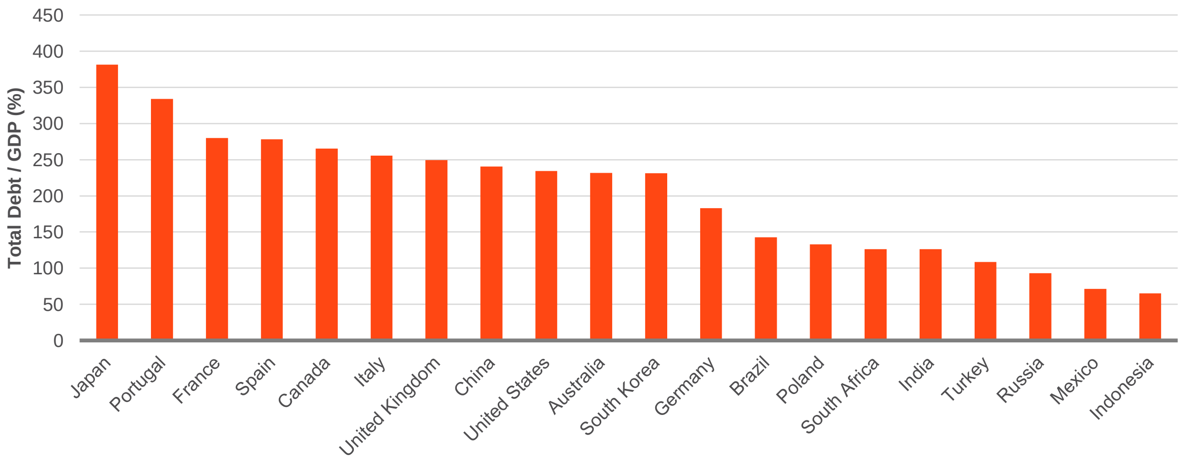








Demographics help us understand future cash flows, which involve problems that can be complicated when compared to liabilities…

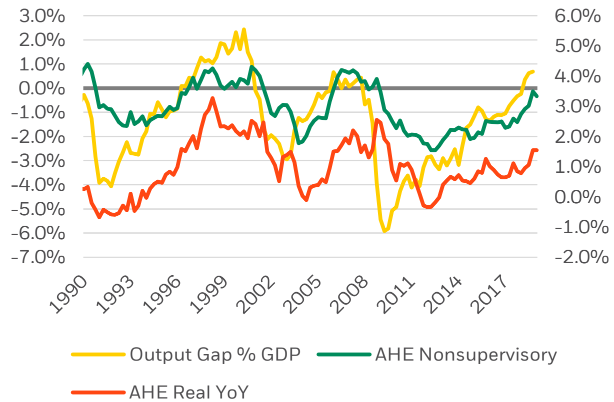


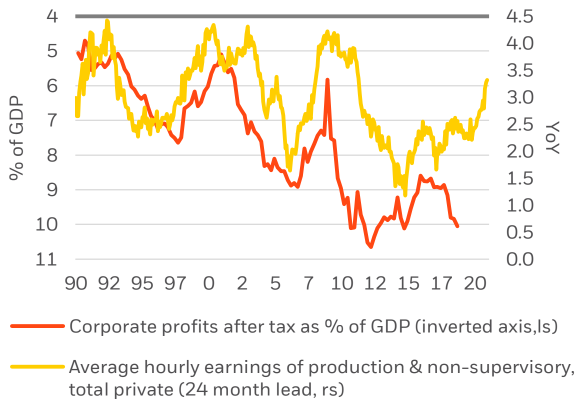
Sources: Census, Bloomberg, IMF

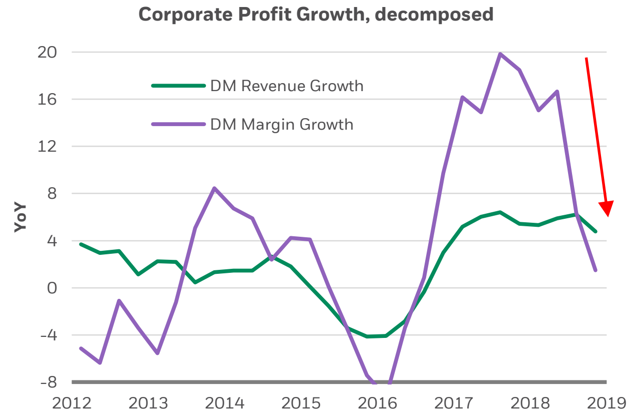
Today in the US, domestic growth looks to be at or above potential; taken in the context of the demographic and technological trends, we could see some continued wage (and real wage) growth but there is good reason to believe this is as good as it gets with inflation

Cyclically, we see the US economy experiencing late-cycle dynamics with respect to wages; though, we do not expect a hard-landing…

Wage (and Real Wage) growth will likely continue to follow the positive Output Gap and low Unemployment Rate, which puts pressure on corporate profits – acting as a self-regulating mechanism on growth

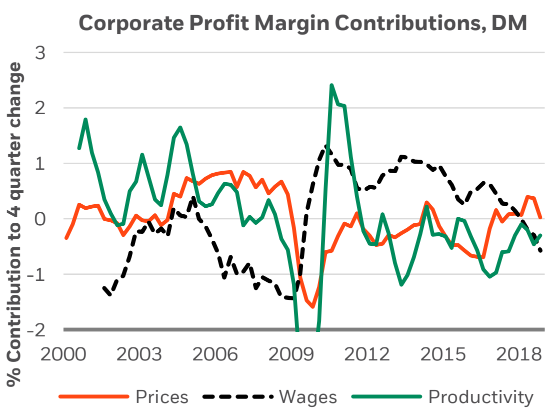






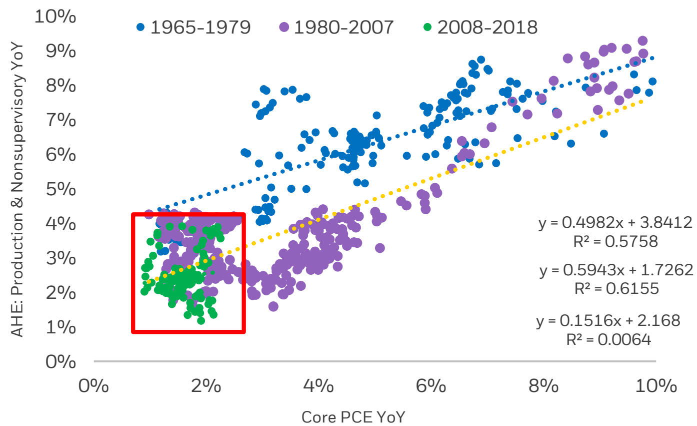
This is because the wage-price link has structurally broken down… this link historically injected volatility into the system: companies raised prices to protect eroding margins from wage inflation; today, technology and demographics weigh on prices, meaning companies struggle to maintain margins in a rising wage environment – thereby acting as a natural brake on the economy

Decomposing margins between productivity, price inflation, and wage growth shows wages as the swing factor the last few years

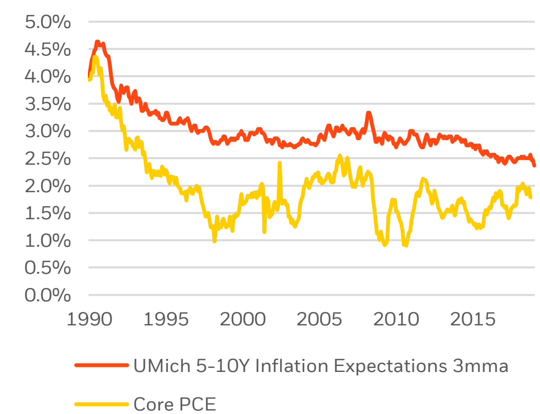


Sources: BLS, BEA, Bloomberg, JP Morgan

Today, companies can't raise prices to maintain margins… price-wage correlation has weakened substantially the past 10y, meaning wage growth can persist without being inflationary



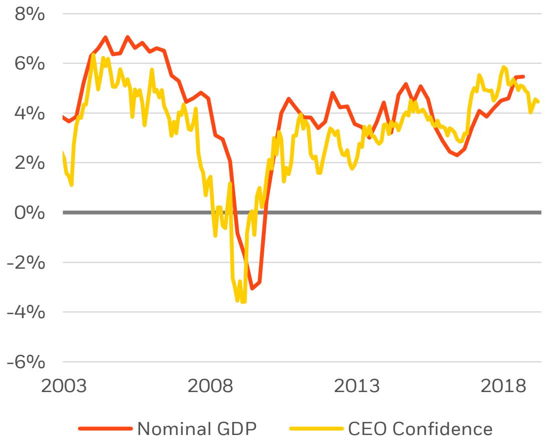
So, it's not surprising to us that inflation expectations touched all-time lows last week

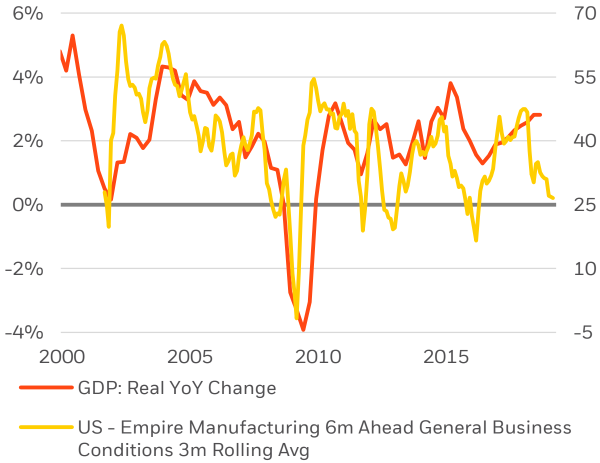


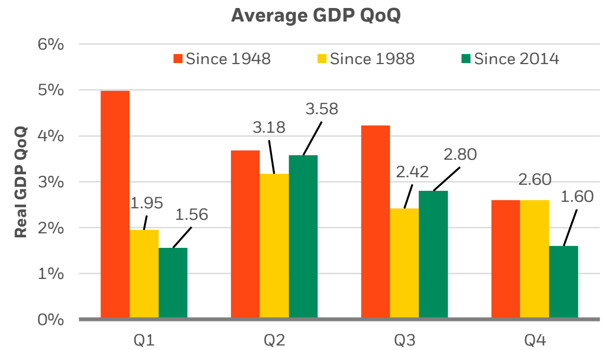
So now the US economy is slowing from a very generous fiscal tailwind to more normal growth – the risk of an overshoot looks low given the stability in core drivers we have outlined; in fact, some of the high frequency data show U.S. data stabilizing/turning up a bit…

Cyclically, US growth is moderating toward potential after a boost from fiscal policy and synchronized global growth

Many reliable leading indicators highlight the moderation we are expecting today – especially some pockets of weakness in manufacturing; though, growth in Q1 tends to be deceivingly weak – especially recently – so we wouldn't overreact to disappointing data at the start of 2019

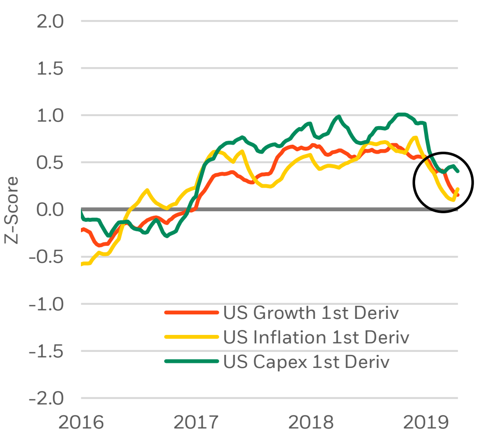


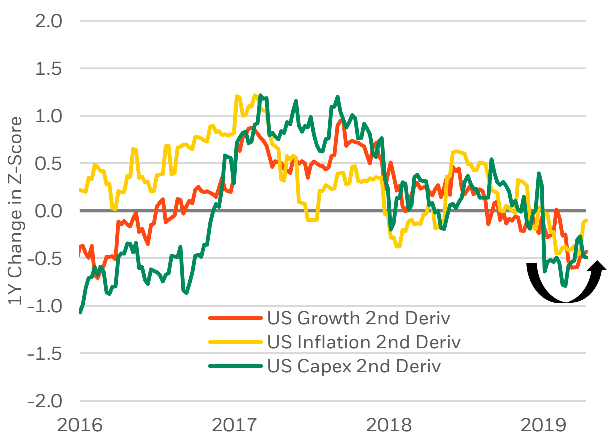


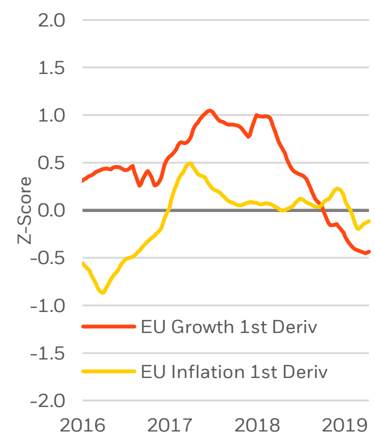


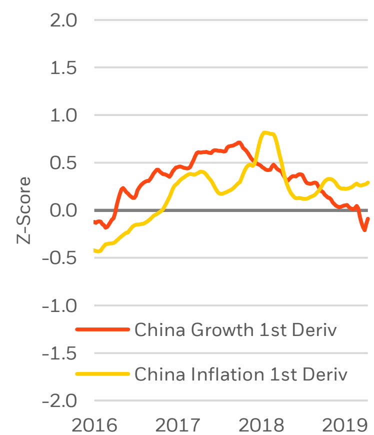
GDP			
Q1 14	-1.0	Q2 14	5.1
Q1 15	3.3	Q2 15	3.3
Q1 16	1.5	Q2 16	2.3
Q1 17	1.8	Q2 17	3.0
Q1 18	2.2	Q2 18	4.2

Some of the high-frequency data we track is showing signs of stabilization in the US and even abroad, which reinforces our view that we are decelerating but not at risk of contracting in the near-term









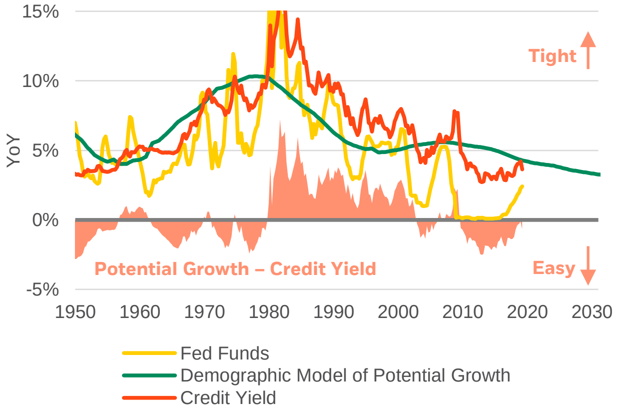
Sources: BEA, Bloomberg, BlackRock

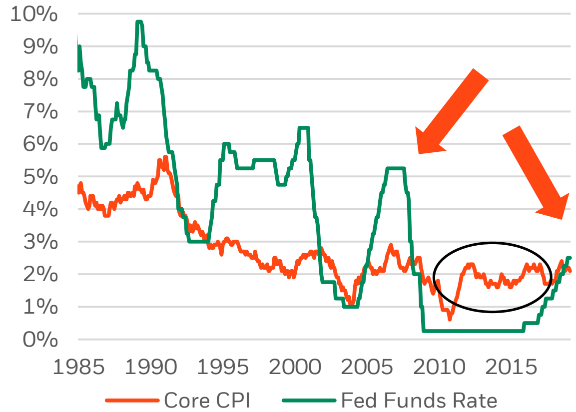
Monetary Policy reached neutral last Summer/Fall, which was a headwind to interest-sensitive areas of the economy; now the Fed doesn't need to do anything for 'some time' as policy is at or around neutral, and the U.S. economy will largely self-calibrate itself from here…

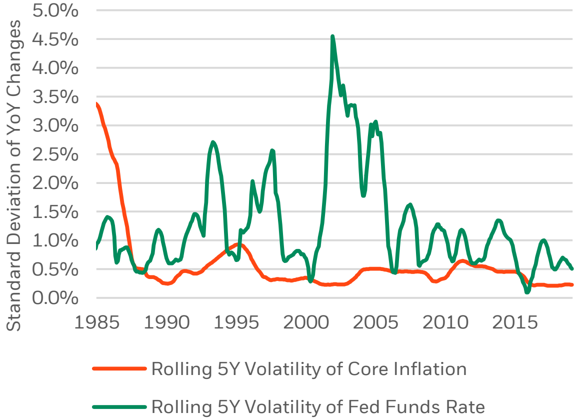
Monetary policy is another cyclical influence that pressured growth recently but we believe can be more passive/ supportive going forward

We measure the stance of policy by looking at the cost of capital relative to potential growth (return on capital); this tells us that policy was appropriately very easy in '09 – '11, potentially stayed too easy for a bit long, and is now close to neutral after tightening the past few years

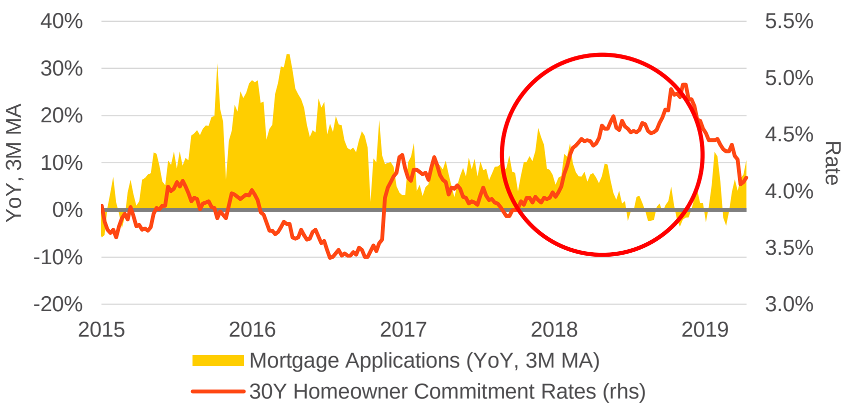
As we shift further to a services economy, <u>the Fed should feel more content conducting policy in a slow and steady fashion</u>… there is less of a need to react to the diminishing importance of the more volatile goods sector, especially with the Funds Rate off of 0% and in the realm of "neutral"… [3]



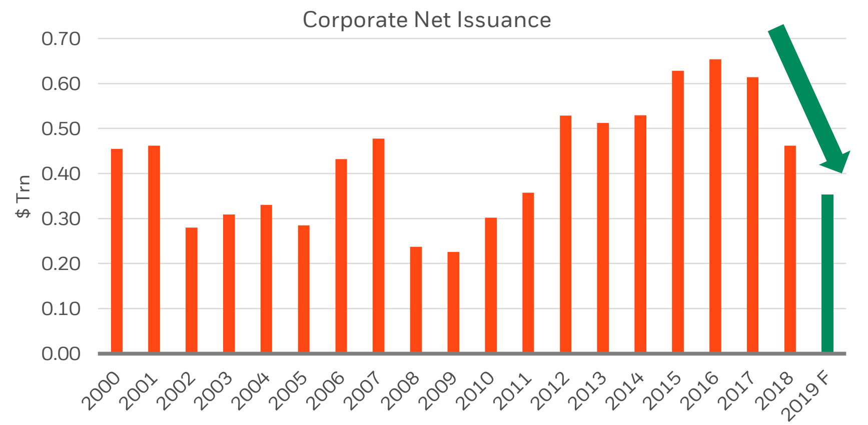




Raising the policy rate to neutral led to a tangible slowing of the interest sensitive parts of the economy, especially housing…



… and the leverage built up during that easy-for-longer period is now very clearly coming down making financial stability more reliable…

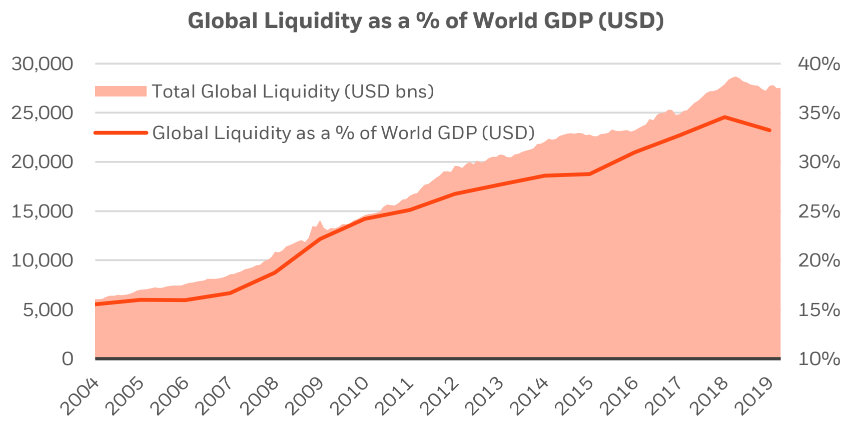


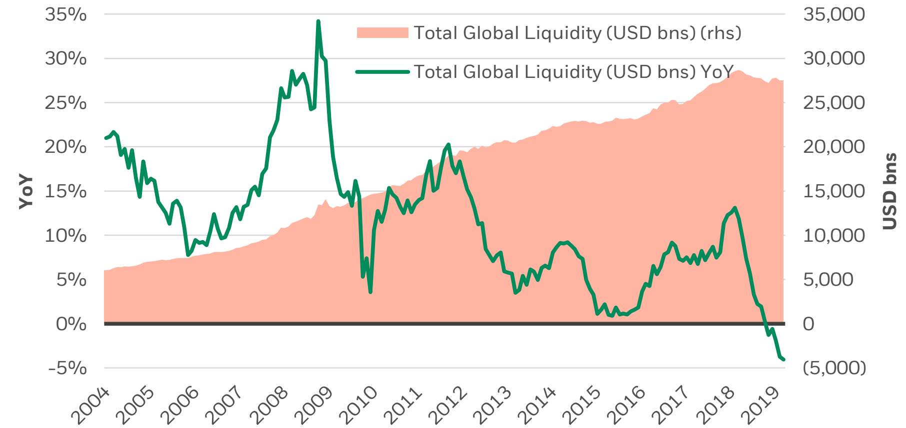
Sources: Bloomberg, Moody's, BlackRock

II. What are the principal risks to your growth outlook?

Notwithstanding the Fed's dovish pivot and nascent policy easing in China, Global Liquidity continues to contract, which remains an underappreciated tail risk for global markets

Global Liquidity is as important as ever to Global Growth; despite plans to end tightening, it continues to contract today

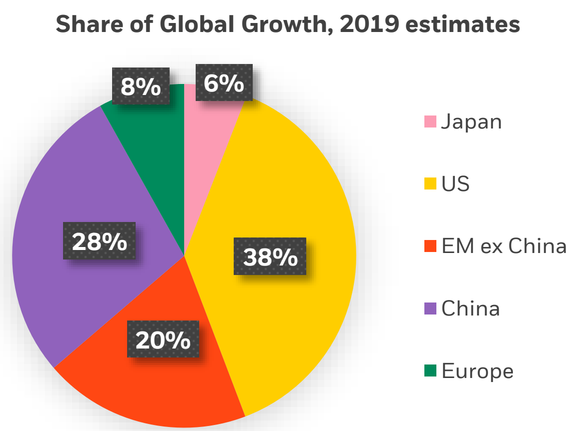


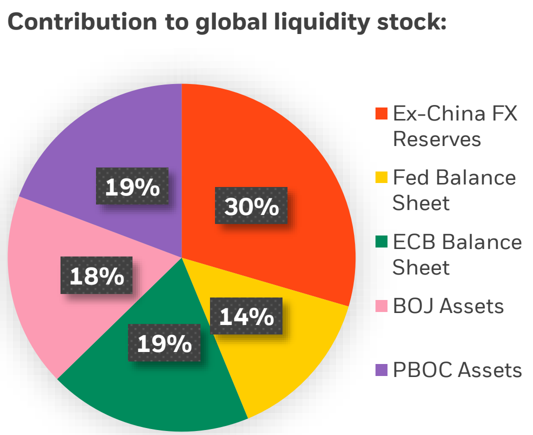


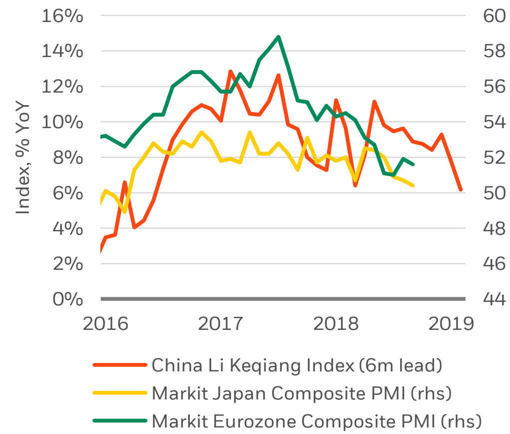
Today, the US, China, and EM ex China all have ample capacity to ease policy, but the make-up of the global liquidity dynamic is critical to understand in this context…

The ECB and BoJ will maintain easy policy for a long time but incremental liquidity would need to come elsewhere (EM/ China or the US, which is currently draining liquidity)

…if China is unable/ unwilling to add further liquidity, not only is a continued contraction of liquidity a risk but the other large economies could also continue to slow



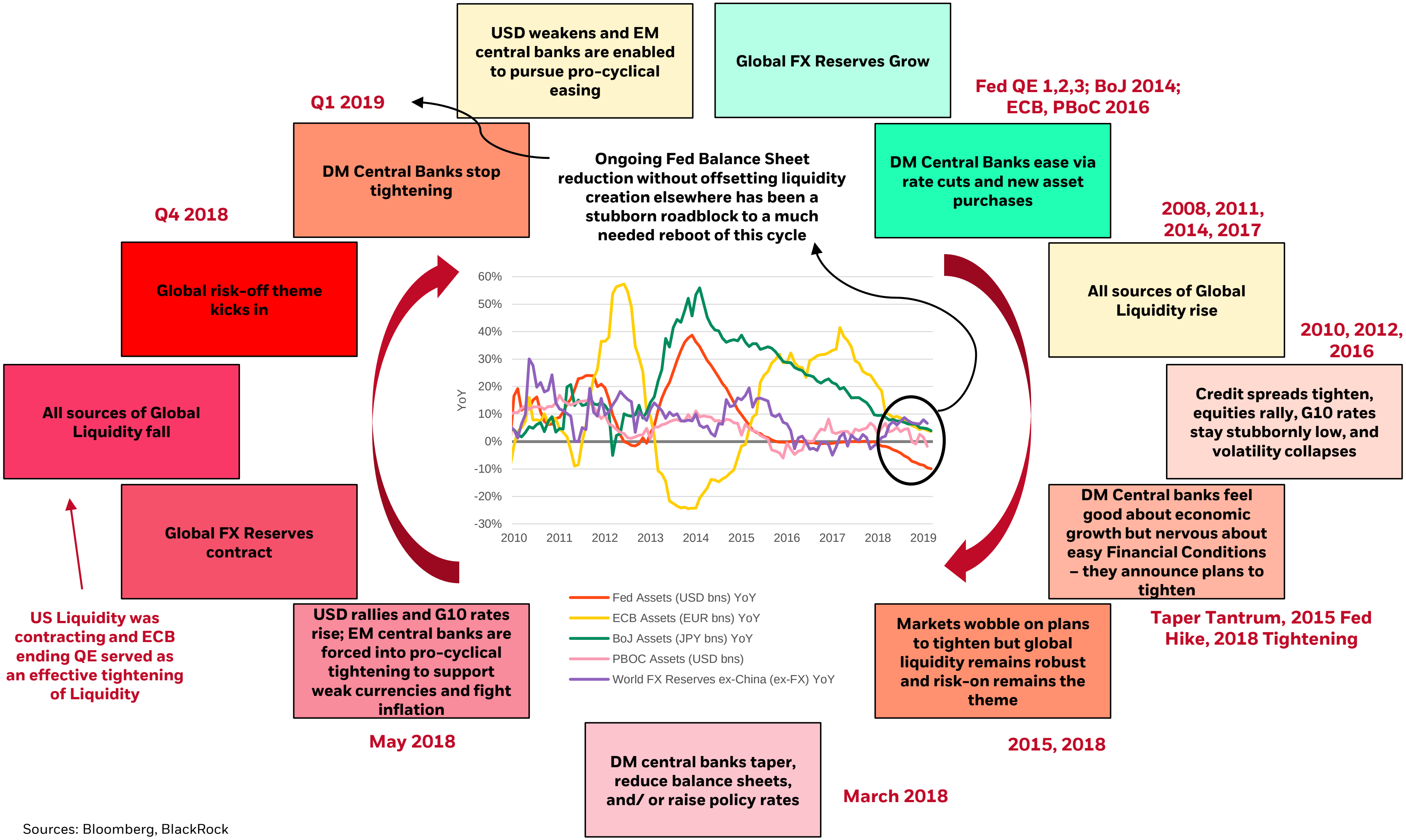




In addition to liquidity, which we view as a principal risk, other risks remain. Those include the often-talked about trade tensions and risk of auto tariffs, the risks of Brexit and Eurozone weakness worsening, and the always present geopolitical and domestic political risks.

Sources: Bloomberg

The liquidity cycle that we have depicted for years is remarkably persistent; if the recent Fed pivot can relieve the stubborn USD strength, China and EM central banks would have greater scope to ease without the gravitational pull on global capital toward attractive US risk-free rates – <u>cessation of Fed balance sheet reduction will go a long way toward facilitating this cyclical evolution</u>

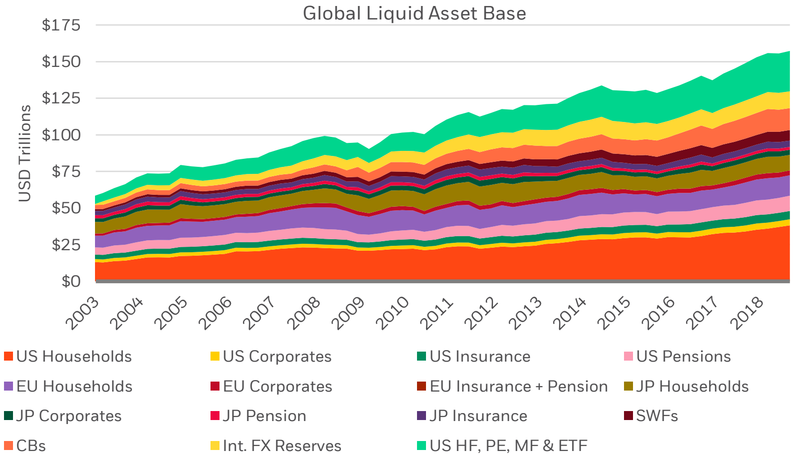


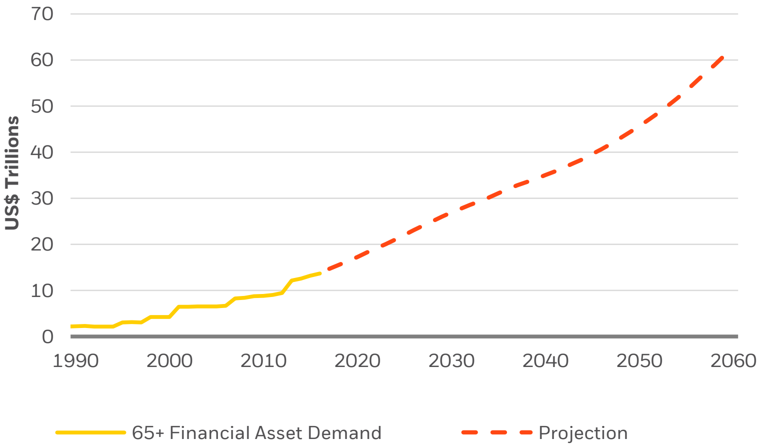
Sources: Bloomberg, BlackRock

III. Are financial markets appropriately reflecting this outlook and any risks around it?

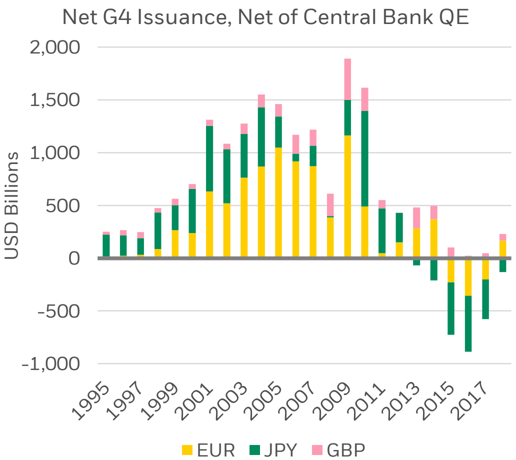
The requirement for easy policy/low rates alongside of an aging population, low potential growth, and the absence of an inflationary impulse are creating unusual dynamics including an immense need for financial assets and an inability for financial intermediaries to hit their liability requirements…

Because of the massive growth of pension and insurance assets and the demographic revolution, roughly 3x as much value needs to be invested today relative to 2000

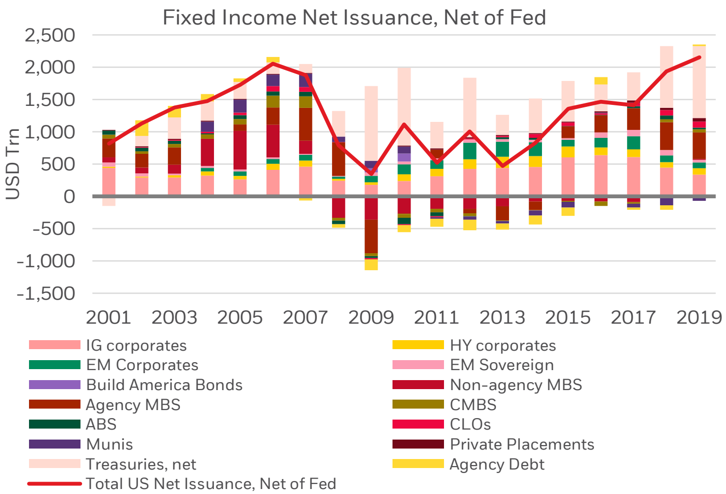




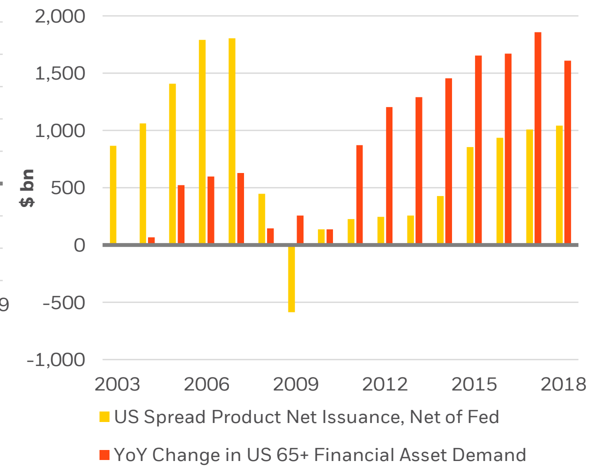
Outside of the US, DM Fixed Income issuance is still nearly non-existent



In the US, record treasury issuance is boosting supply, but spread-sector issuance is expected to be lower in 2019 and well below pre-crisis levels



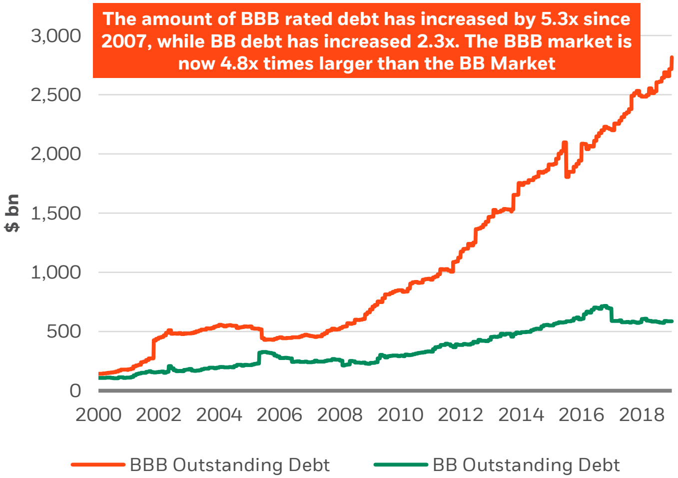
Spread product issuance is not even enough to match the demographic need



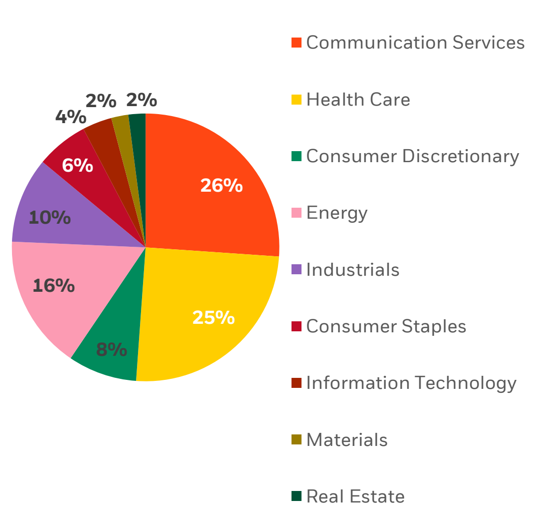
Sources: Fed, BoJ, ECB, JP Morgan, BLS, BlackRock

IG Credit had been the asset available to hit liability targets, particularly pre-Tech/Pharmaceutical repatriation and major telecommunications/media M&A, but now this supply is contracting, which is resulting in a dearth of supply in the face of immense demand – ultimately, incentivizing stretching for yield

So much has been made of the large growth of the BBB market, especially relative to BBs, with lots of discussion of an imminent downgrade disaster…[1]



Distribution of Large-Cap BBBs by Sector (%)

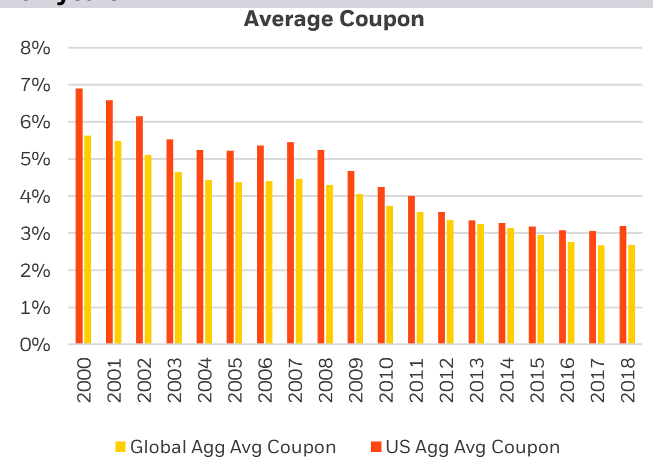


Against this growth of debt from 2012-2018, there is a notable shift in company intentions for greater deleveraging, both proactive and in reaction to weak performance

This trend of deleveraging in IG (some for good reasons and some for bad) is generally a positive but reminds us dispersion is likely down the cap stack

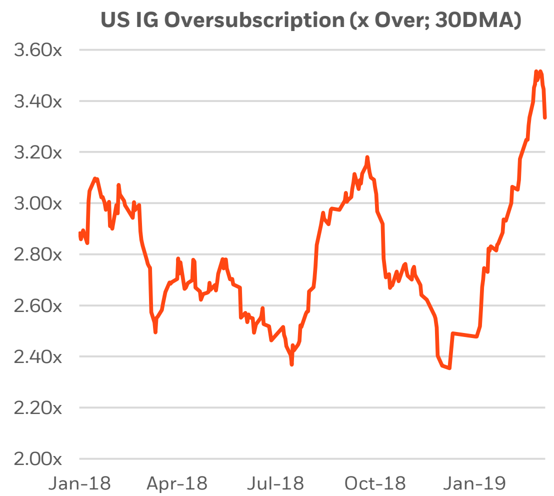
Issuer *	Driver of Deleverage	How company is deleveraging
GE	Avoid Downgrade to HY	<2.5x target
Anheuser	Avoid Downgrade to HY	~4.6x to 4.0x in 2020
Kraft Heinz	Avoid Downgrade to HY	~4.4x, 3x target
AT&T	Post-M&A	3.3x to 2.5x in 2 yrs
Verizon	Post-M&A	2.7x to low 2x in 2 yrs
Comcast	Post-M&A	3.5x to 2.5x in 2 yrs
Dell	Post-M&A	~5.5x to 4x in 2 yrs
Apple	Repatriation	1.4x gross, declining 0.2x/yr
Microsoft	Repatriation	5% annual debt reduction
Cisco	Repatriation	40% debt reduction to date
Sherwin	Post-M&A	4x to current 3.5x, ~0.75x to go
WestRock	Post-M&A	4x to current 3.5, 2.5x target

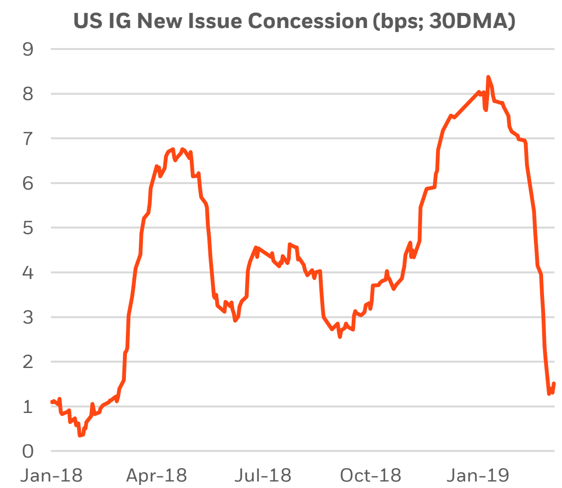
And there is much less yield available today, even with U.S. rates having moved up somewhat over the past few years…[2]



Sources: Bloomberg, BlackRock

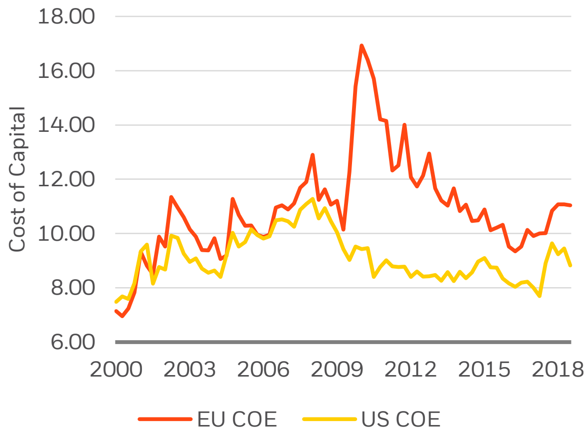
… creating massive demand for new issues as a risk-addition to portfolios…[2]

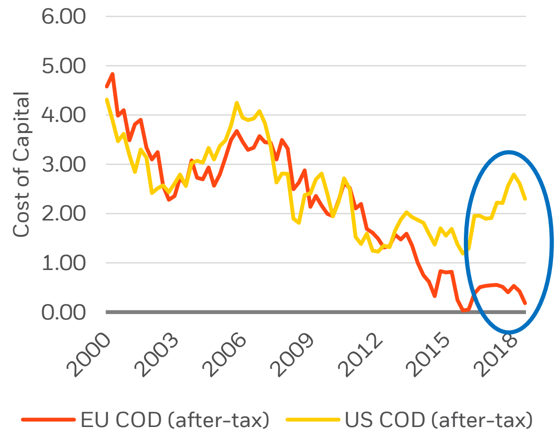


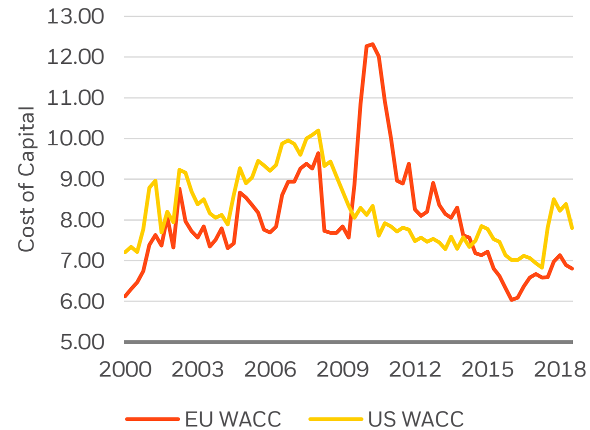


…and with the lack of assets and some restrictive regulation (such as Solvency II for insurance companies), it is creating potential debt mis-valuations vs. equity and/or a need to own more equity where possible to hit return targets (for those that can)…

The most significant difference in cost of capital between Europe and the US is the cost of debt, as this has brought the European cost of capital below where it is in the US.[1]

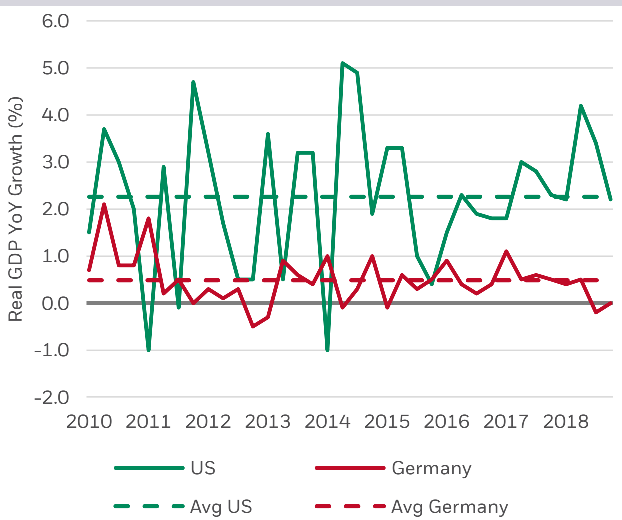


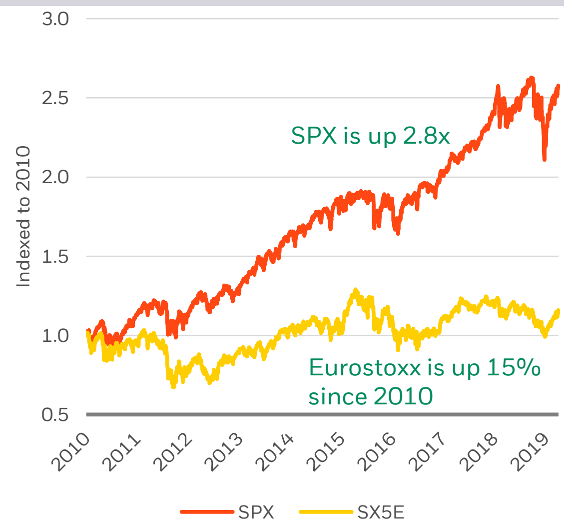




Based on the 6 largest industrial companies with a 20 year trading history. Companies used for the US: Exxon Mobil, Verizon, Walmart, Procter & Gamble, Intel, Pfizer; Companies used for the EU: Total, Siemens, BASF, Daimler, Telefonica, Adidas. The companies stated above are shown for illustrative purposes only and are not meant to be a recommendation to buy or sell any security.

But cost of capital is only half the equation… Price is a function of both the cost of capital and the growth rate…[1,2]





Sources: Bloomberg, BlackRock

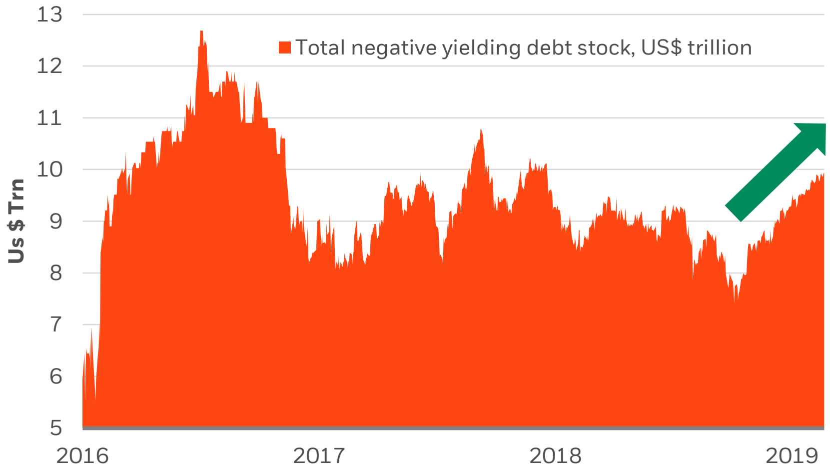
$$P = \frac{D_1}{r - g}$$

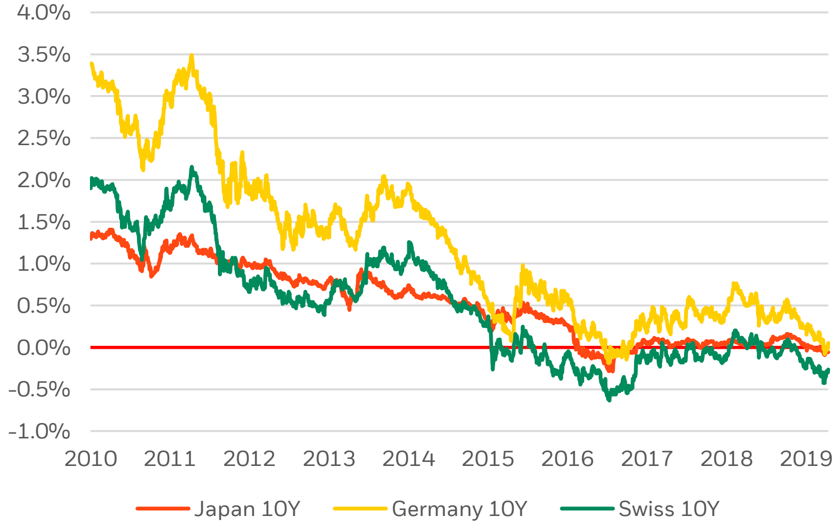
- Germany's post-crisis average growth rate is running at ~180bps below the US
- Europe's WACC is ~100bps below the US (driven by COD which is at 0%)
- ***Thus the ECB should lower the COD by at least a further 80 bps to keep the denominator consistent with the US****
- ***OR, the ECB can buy equities to lower the cost of equity****

**We are not advocating either of these actions, simply illustrating the challenge faced by the ECB in replicating the conditions that exist in the US*

More policy stimulus (monetary) is creating anomalies and a dearth of global financial assets as places like Europe and Japan can't stimulate enough growth/inflation (to de-lever)…

… and there is still a massive and growing amount of existing bonds that are negative yielding today

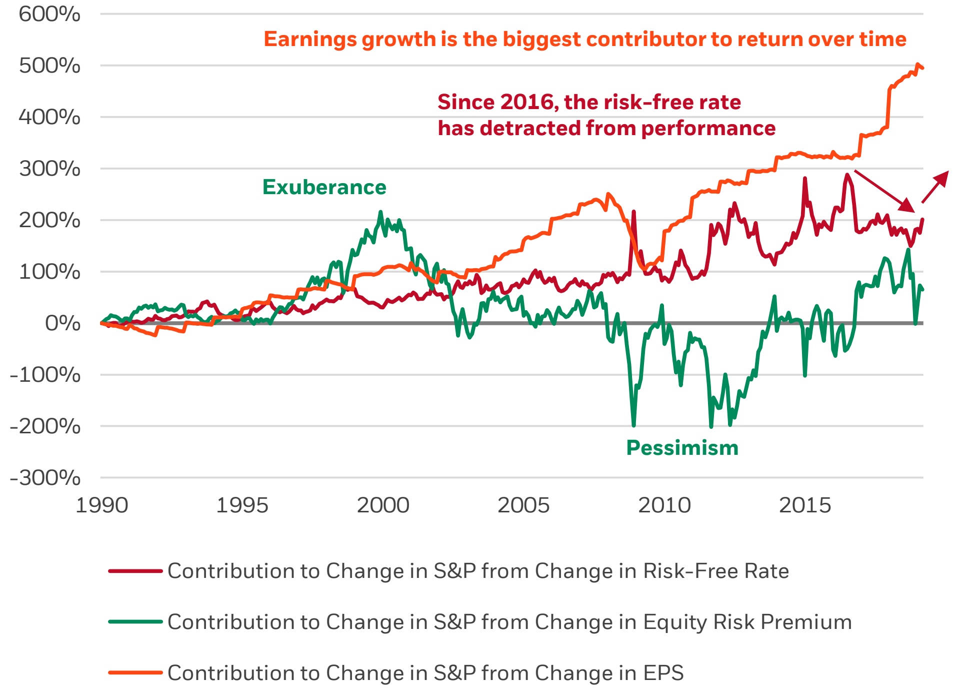




Sources: JP Morgan, Bloomberg, BlackRock

Hence, with other DM central banks with a very limited toolkit, it may require the Fed to be easy(ier) which can push equity prices and other financial asset valuations higher…

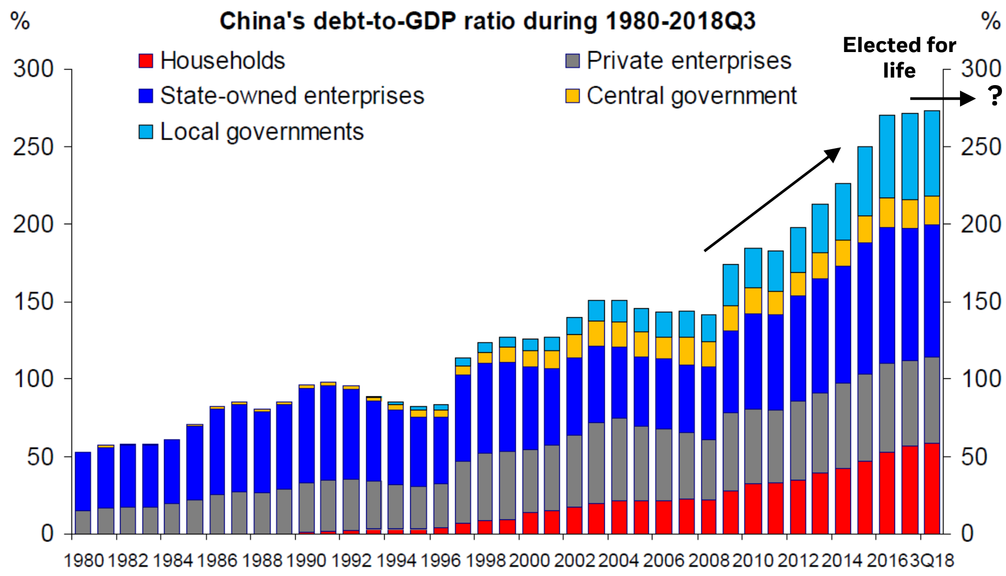
Lower rates can influence spread and risk-assets to compress – directly through the risk-free rate and through premiums as well…



Contribution from:	Since 1990	Since 3/2009
Change in Earnings	495%	170%
Change in Risk-Free Rate	201%	72%
Change in Equity Risk Premium	65%	44%
Total Change in S&P	**761%**	**286%**

Questions

Is China willing to use all its tools, including credit expansion to support Chinese (and consequently Global) Growth/Trade? If not, what are the implications for US/Global Growth?



Any other views on why inflation continues to moderate within today's positive growth dynamics?

Are there areas of the U.S. economy that are more at risk of slowdown from here?

Sources: DB, as of 12/31/2018

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Rebecca Patterson
Bessemer Trust
April 17, 2019

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Euro area: Growth and Monetary Policy

April 17, 2019

Rebecca Patterson
Chief Investment Officer

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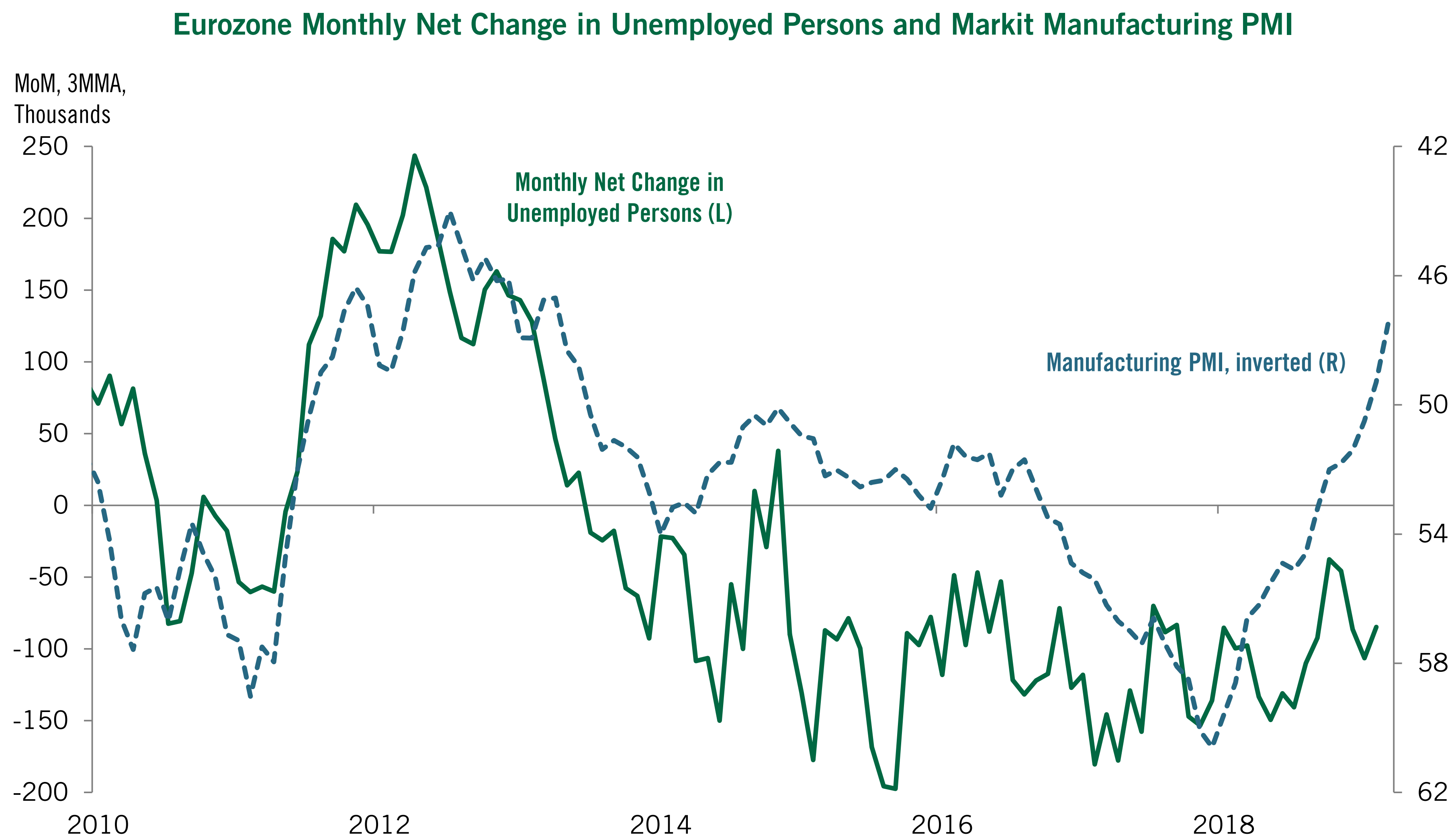
Recent Bifurcation between Domestic and External Growth Drivers

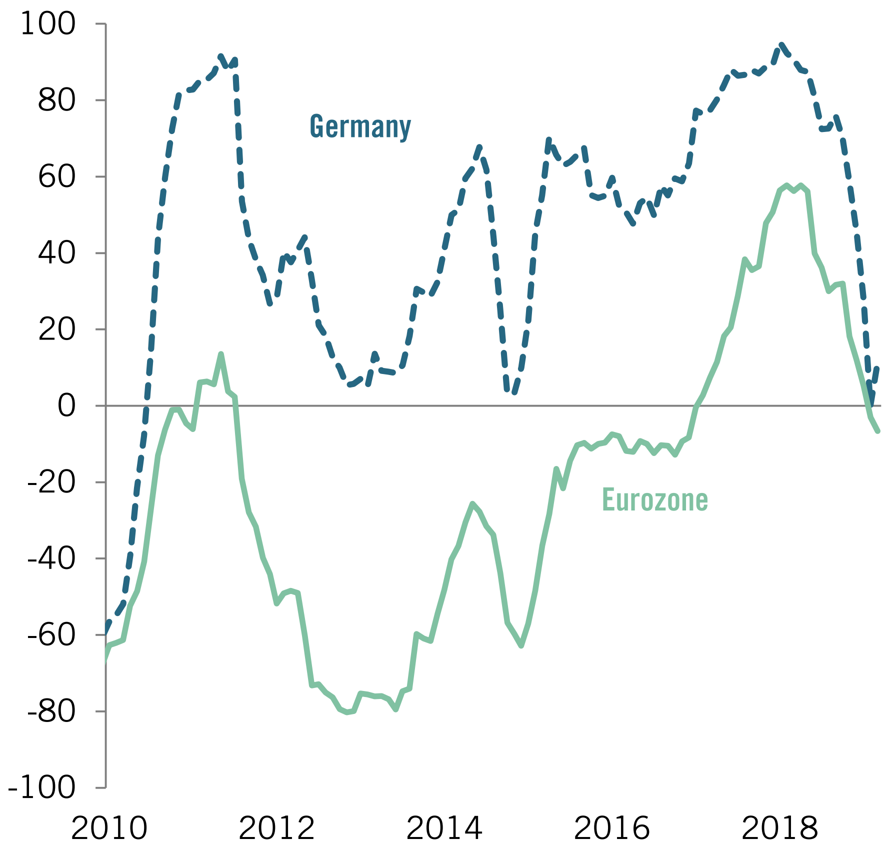


As of February 28, 2019 for unemployment and March 31, 2019 for PMI. MoM, 3MMA stands for month-over-month, three month moving average.
Source: Bloomberg, Eurostat, Markit

Europe Vulnerabilities: A lot of Known Unknowns

Declining Economic Sentiment in EU's Largest Economy and Region

ZEW Survey of Current Situation



Italy's Populist Government Resulting in Greater Bond Risk Premium

Spread Between Italy and Germany 10-Year Government Bond Yields

As of March 31, 2019. Bps stands for basis points.
Source: Bloomberg, ZEW

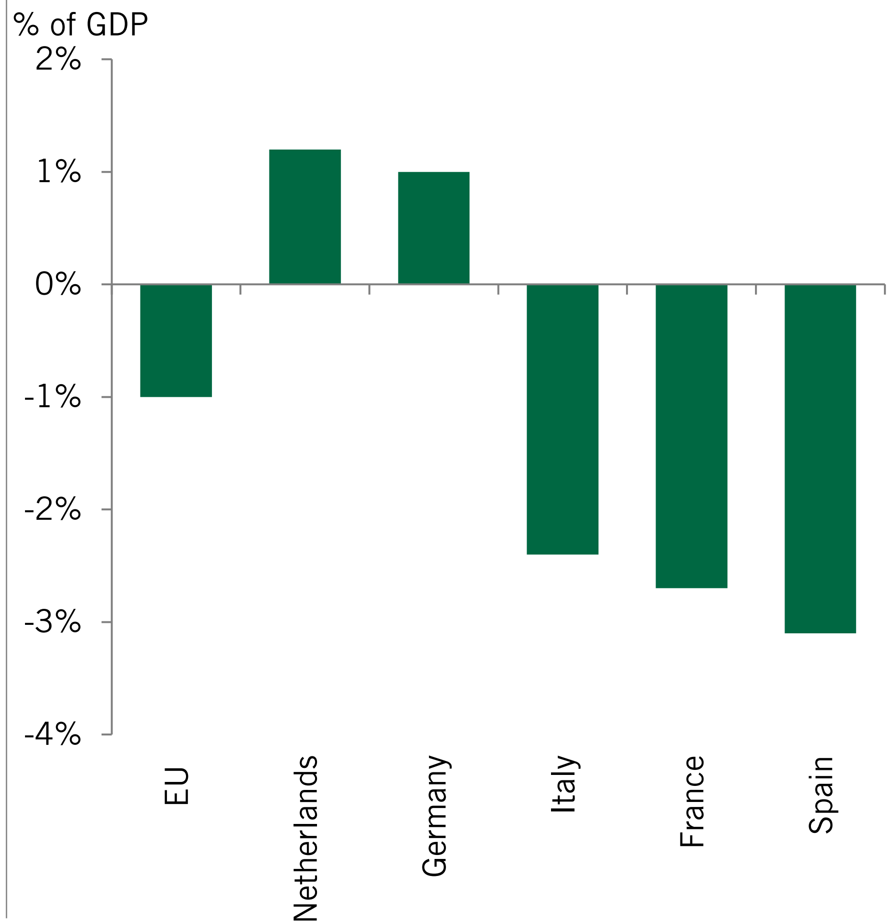
Inflation Keeps ECB in Easing Mode; Fiscal Help Seems Unlikely for Now

Inflation Measures Still Lagging Target

Euro Inflation Swap Rate 5Y5Y

Little Room/Desire for Fiscal Stimulus

Budget Balance



Left as of April 8, 2019 and right as of 2017. EU reflects the EU-28 countries.
Source: Bloomberg, Eurostat

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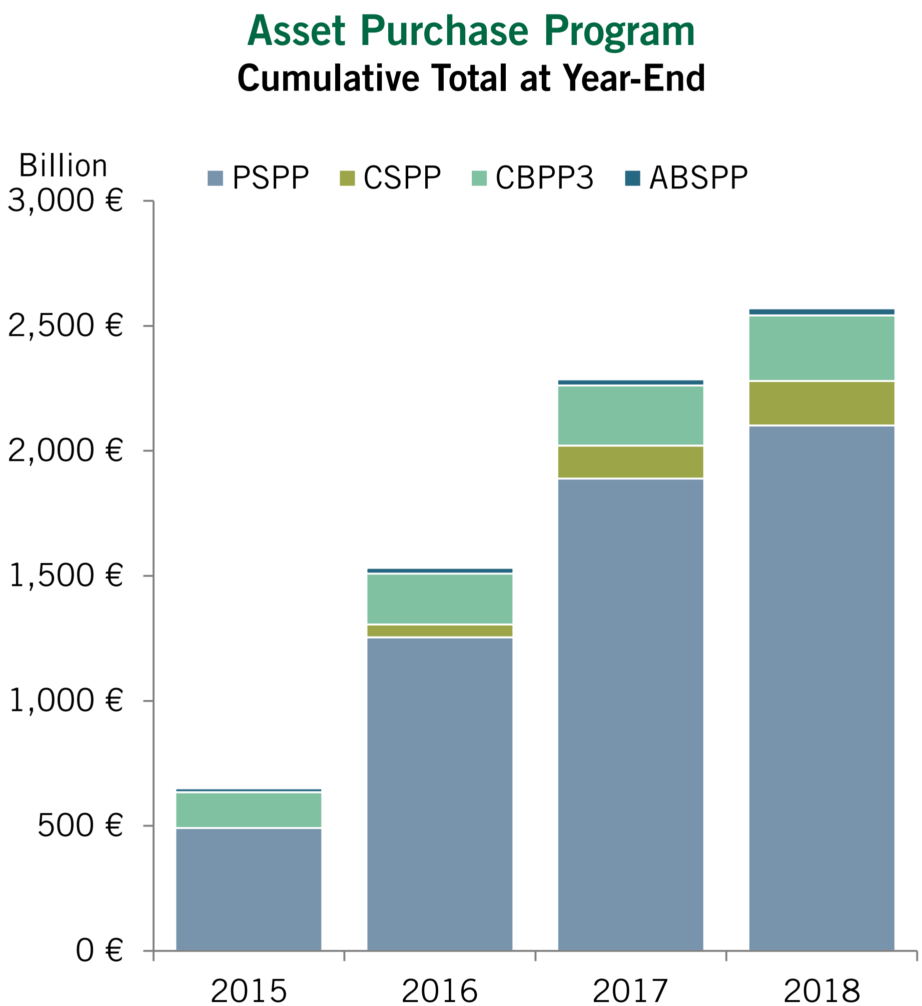
What Will ECB Do in the Next Major Downturn?



Possible ECB Next Steps

- Restart asset purchases
- Broaden types of asset purchases
- Extend forward guidance towards more rate cuts/ tiered interest rates
- “Helicopter money”

As of April 12, 2019. The ECB asset purchase programs include: Asset-Backed Securities Purchase Program (ABSPP), Covered Bond Purchase Program 3 (CBPP3), Public Sector Purchase Program (PSPP), and Corporate Sector Purchase Program (CSPP).
Source: Bloomberg, European Central Bank

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Dovish ECB Policy: Short-term Transmission Channels

Lower European Interest Rates

More Foreign Demand for U.S. Bonds, Credit

Potentially Weaker European Bank Shares

Weaker EUR

Stronger USD

Stronger Euro Export Shares

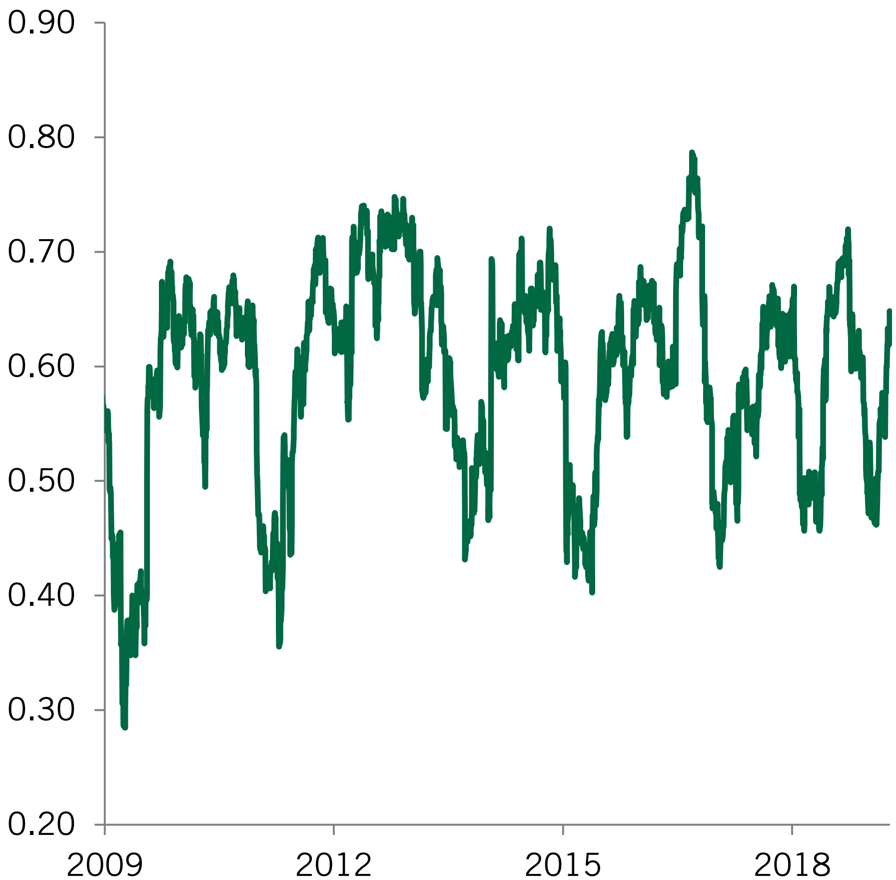
Weaker U.S. Multinational Shares

Pressure on CNH

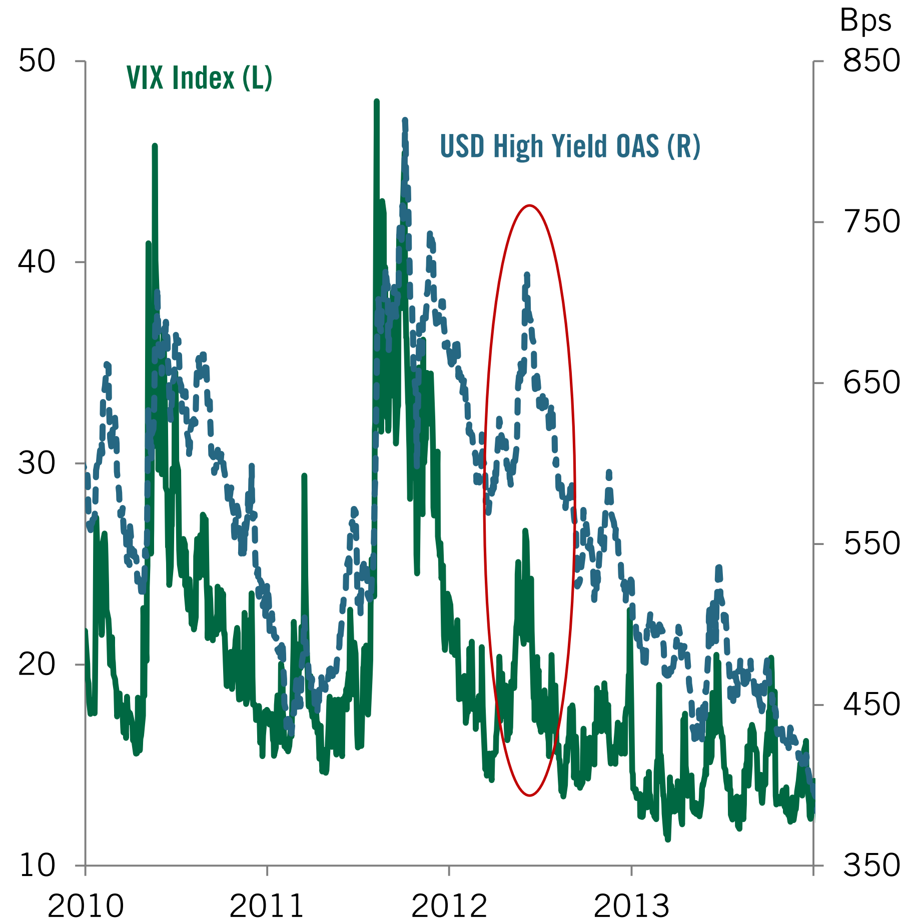
Transmission channels noted assume other growth, policy variables stable

Meaningful Economic and Financial Linkages Between Euro area and U.S.

Rolling-90 Trading Day Correlation Between U.S. and German 10-Year Government Bond Yields



VIX Index and High Yield Corporate Bond Spread



As of April 12, 2019. Bps stands for basis points. Rolling correlation is based on the daily change in the 10-year yield. High Yield OAS is measured using the Deutsche Bank Credit Strategy Dm USD HY OAS.
Source: Bloomberg, CBOE, Deutsche Bank

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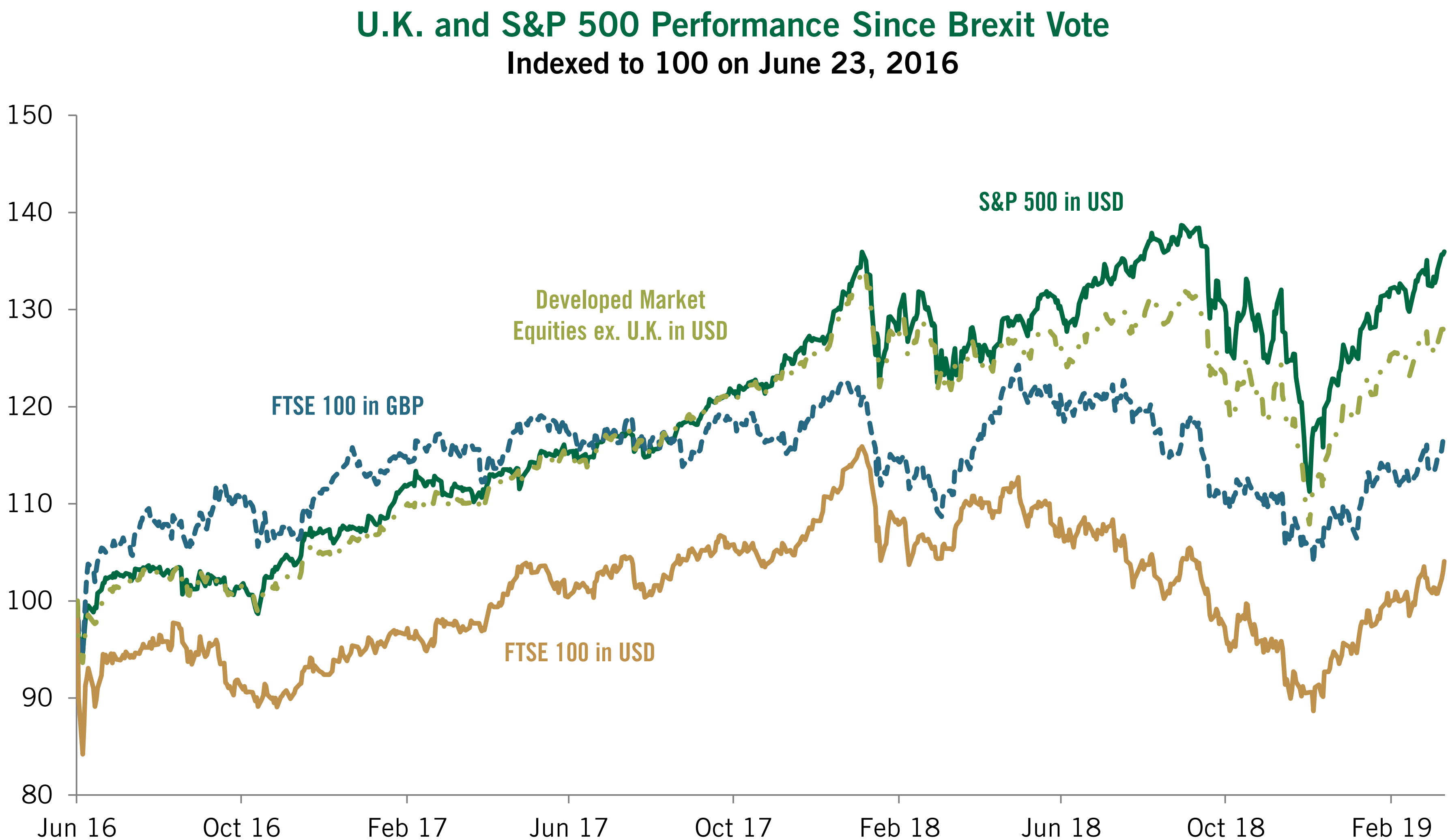
Brexit has Already Taken a Toll on U.K. Assets



As of April 3, 2019.
Source: Bloomberg

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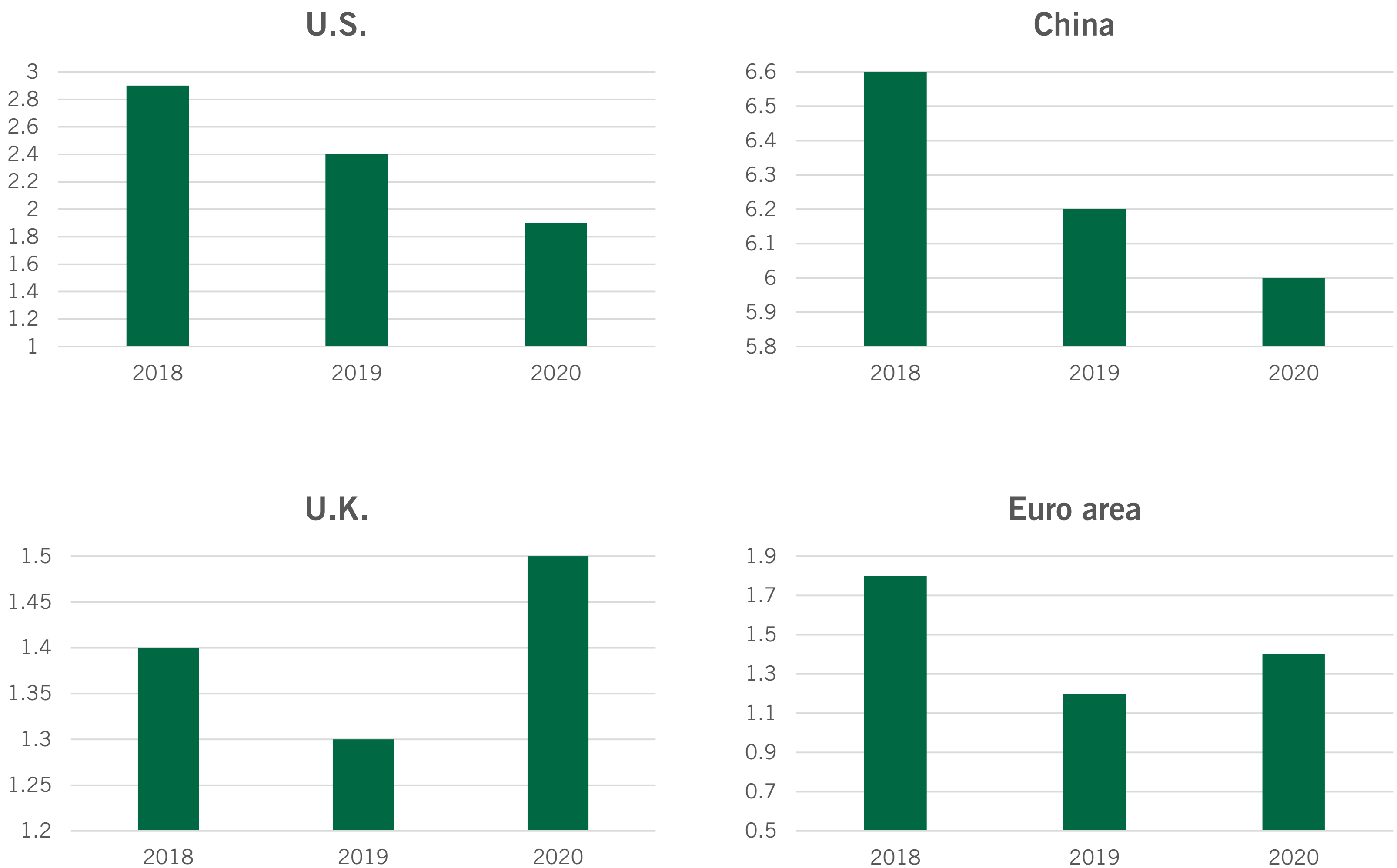
Consensus Real GDP Growth Forecasts



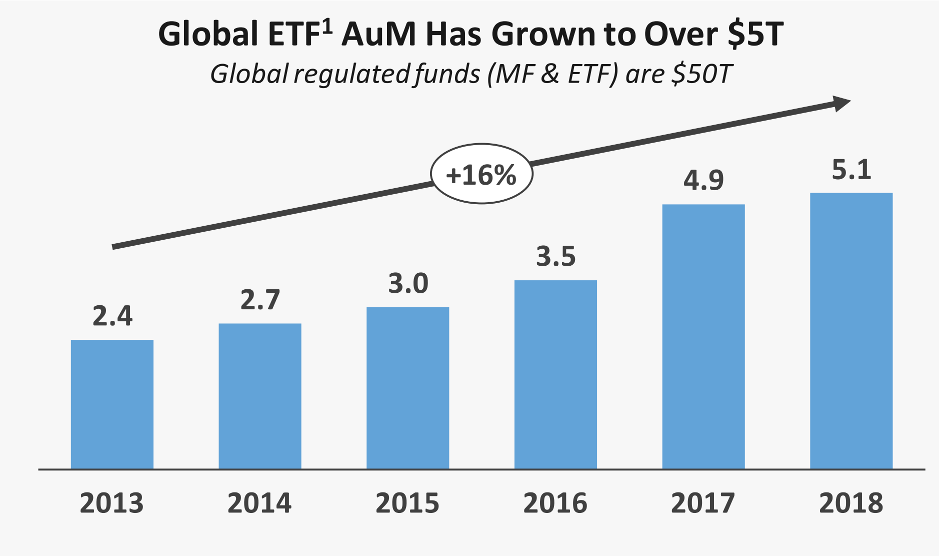
As of April 10, 2019.
Source: Bloomberg

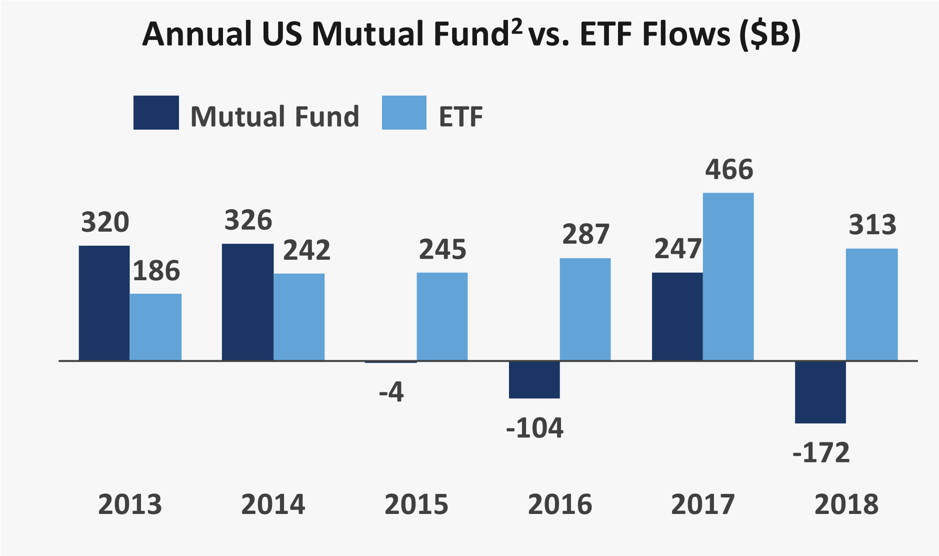
Bob Jain
Millennium Management
April 17, 2019

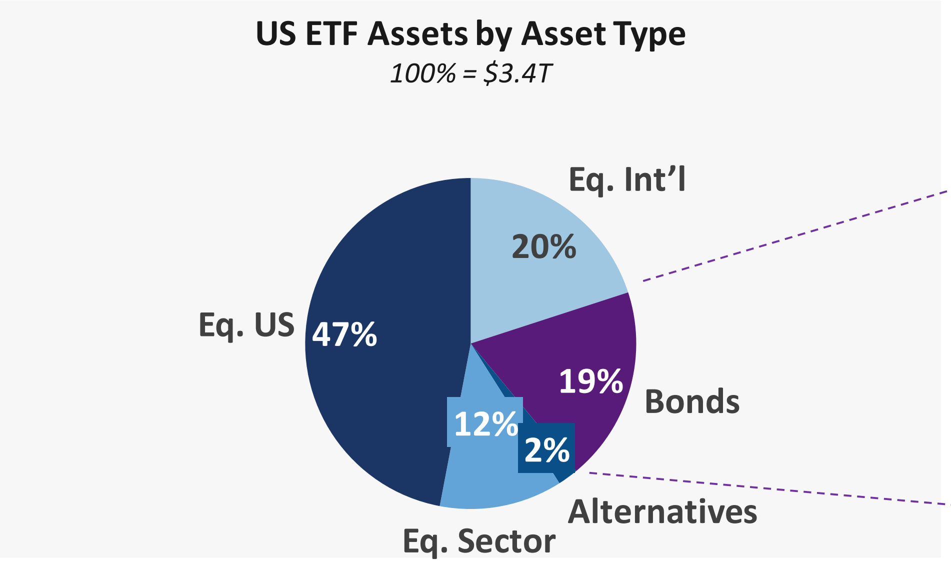
Investor Advisory Committee on Financial Markets

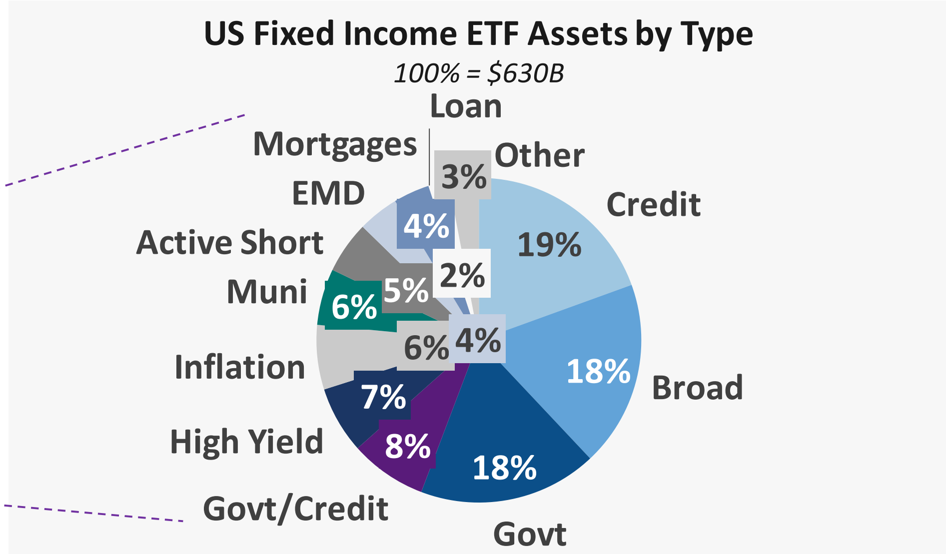
April 2019

Market Overview









1. Includes ETNs 2.Excludes Money Market Fund Flows
Source: Credit Suisse, Morgan Stanley, Bloomberg, BlackRock

Risks – Liquidity Mismatch in Mutual Funds and ETFs

Mutual Funds		ETFs
✓	Cash buffers	✓
✓	Revolvers	✓
✓	Hold more liquid securities	✓
✓	Sales loads	
✓	Redemption gates	
	In-kind redemptions	✓
	Secondary market / trade at a discount	✓

Risks – Specific Cases in Mutual Fund and ETF Market

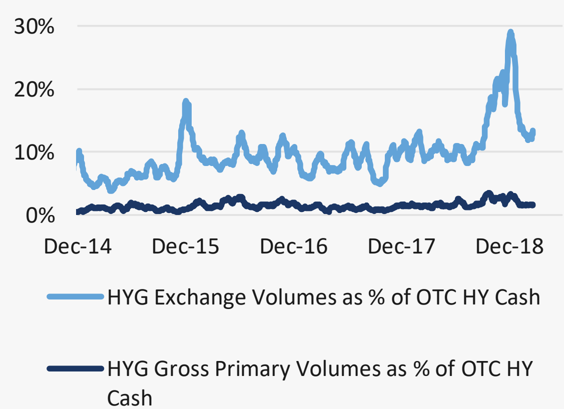
Loans

- $1,200B overall market,
  $200B Mutual Funds,
  $10B ETFs
- Largest ETF is BKLN at $5.1B managed by Invesco
- MF and ETF settle T+2, average loan settled T+16 in 2018

High Yield

- $2,500B overall market,
  $400B Mutual Funds,
  $40B ETFs
- Largest ETF is HYG at $17.3B managed by BlackRock

HYG Volumes as % of HY OTC Cash Volumes



Levered ETFs

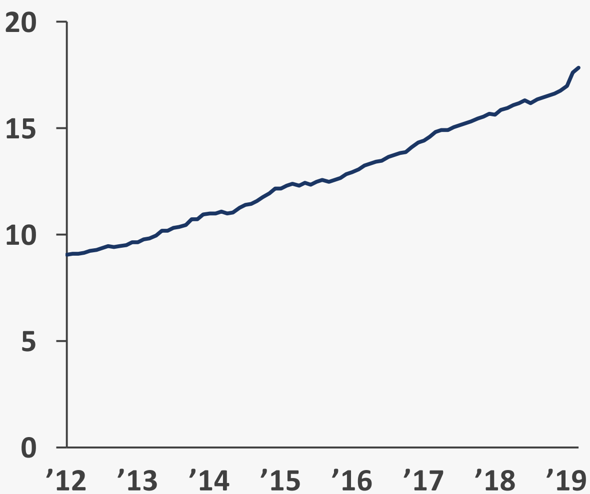
- $37B in ETFs:
  $34B Equities,
  $2.5B Fixed Income
- Largest ETF is TQQQ at $4.3B managed by ProShares (NASDAQ 100)
- Products offered in 1.5-3x leverage and inverse

Source: Morgan Stanley, BlackRock

Other Risks

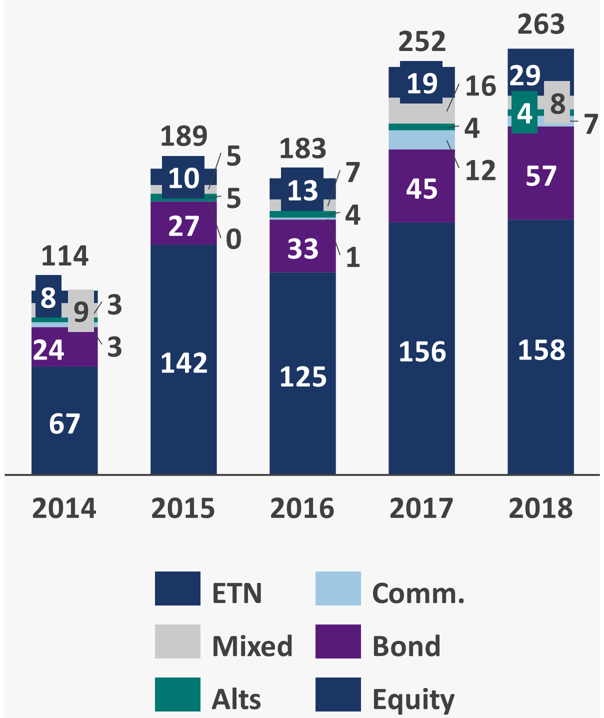
Passive Concentration

Passive AuM[1] / S&P Market Cap (%)



Product Proliferation

US ETF Launches



Centralized Players

- Index providers
- Large fund complexes
- Exchanges

1. Mutual Fund and ETFs

Source: Bloomberg, Morningstar, Morgan Stanley

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April 17, 2019

Analysis of Fed Reinvestment Options

- The Fed's portfolio of Treasury securities has a much longer weighted average maturity (WAM) (~8.1 years) than the overall Treasury market (~5.8 years), a legacy of the Fed's QE programs as well as Operation Twist (Chart 1).
- The WAM of the Fed's Treasury portfolio has been increasing recently due to the fact that most of their reinvestment purchases have been focused on newly issued 3y, 10y and 30y securities.
    - This is because the Fed's $30 billion cap for Treasury reinvestment tends to bind mainly during quarterly refunding months (Feb, May, Aug, Nov), when 3y, 10y and 30y tenors are issued at the mid-month auctions that coincide with the date that the Fed's reinvested holdings mature.
- Per the FOMC minutes and subsequent speeches, Fed officials are considering actively shortening the WAM of the Fed's Treasury portfolio by reinvesting Treasury and/or MBS paydowns into shorter-dated Treasuries once runoff ends, likely later this year.
- In Chart 2 we present analysis performed by BAML which illustrates various re-investment scenarios the Fed could take going forward.
- The estimated timeline over which the Fed's Treasury portfolio will converge to the WAM of the outstanding Treasury stock under each scenario is indicated in parenthesis.
    - **Scenario 1 (Well into 2030s)**: maintain current strategy for coupons and mortgages
    - **Scenario 2 (2029)**: maintain current strategy for coupons, reinvest mortgages in bills
    - **Scenario 3 (2022)**: coupons reinvested in 2s and 3s, reinvest mortgages in bills
    - **Scenario 4 (2021)**: all reinvested in bills

Chart 1: Estimated WAM of Treasury Portfolios (Years)

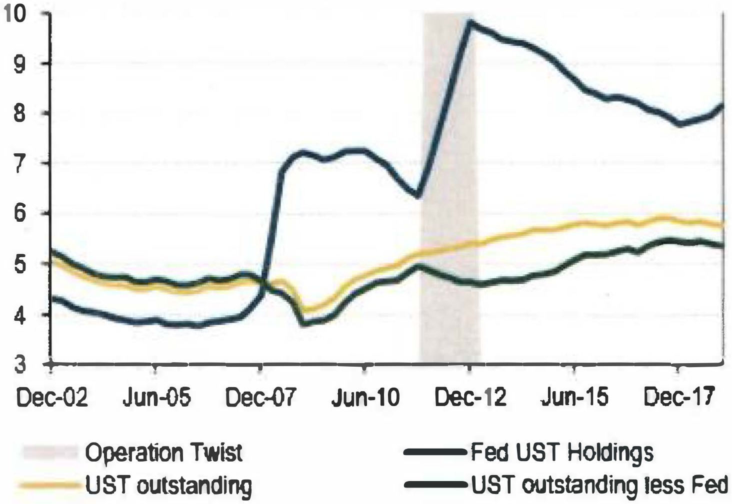

Chart 2: Fed's Treasury Portfolio WAM Under Reinvestment Scenarios
In years, through end-2021

Source: Guggenheim Investments, BAML, Federal Reserve. Data as of 01/23/2019.
Note: Chart 2 assumes unwind stops at end-2019.

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