Uncommon truths

Tight but loose

Is the Fed too loose or too tight? Recent market behaviour suggests there is a belief that it is too tight. However, we continue to believe it is very accommodative and find support from the Taylor Rule (even when adapted to the reality of the Fed). We suspect Fed rates and bond yields will rise.

Those familiar with Led Zeppelin will recognise the title of this document. Tight but loose could also be used to describe the collective viewpoint about the state of Fed policy. The market implied future path of Fed rates was never as aggressive as that suggested by the Fed's own dot plot, thus suggesting a common belief that current policy rates were not too far from what constituted "normal". Indeed, those market implied rates now suggest a belief there will be a rate cut this year. However, our own feeling remains that, at current policy settings (Fed Funds upper target rate of 2.5%), the Fed remains extremely accommodative.

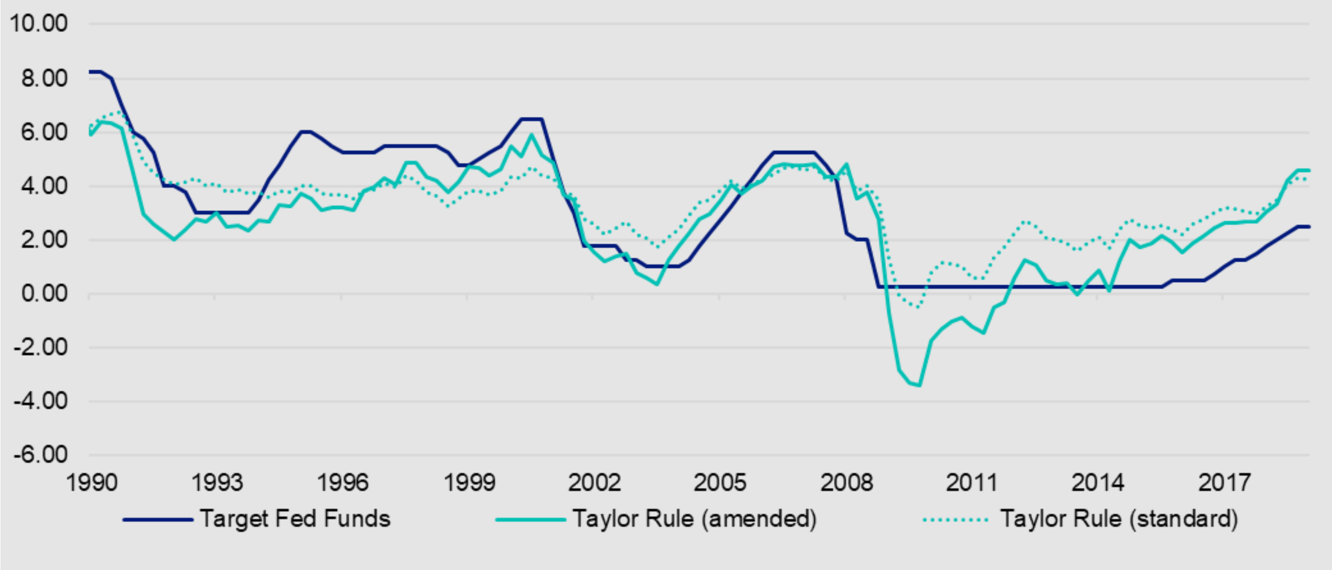
The analysis has been complicated by the recent softening of the Fed's stance, witnessed by recent post-meeting statements: notably the emphasis of patience in deciding the next change in policy rates, the lowering of the future path of rates (as described by a dot plot suggesting no change in rates this year) and the decision to end quantitative tightening by September. Such a change in tone seemed very unlikely just six months ago.

Any discussion about the appropriateness of the current level of interest rates depends upon some notion of a long-term norm. Many economists refer to the notion of R* (R-star), which is basically the real rate of interest that equilibrates the economy in the long run (sometimes called the natural rate). Simple, apart from the practical issue of deciding what it should be! For reasons that I have long forgotten, we were taught that the equilibrium real rate of interest is in line with real economic growth, which is of course a shifting target.

Prior to the global financial crisis, we may have been convinced that US real economic growth was normally in the 3.0%-4.0% range (measured up to 2007, annualised growth was 3.1% over 10 years, 3.1% over 20 years, 3.2% over 30 years, 3.4% over 60 years and 3.8% over 200 years). However, measuring backwards from 2018, those growth rates become 1.8%, 2.2%, 2.5%, 3.0% and 3.8%, respectively. Apart from the very long-term analysis, the judgement about what is a normal growth rate is very much impacted by start and end-dates.

Of course, the future may not look like the past and one important difference versus the post-WW2 era will be population growth. UN estimates suggest the annualised working age population growth in the US was 1.2% in the 1950-2015 period but that it will be only 0.2% in the 2015-2100 period (using 20-64 years as the definition of working age). That implies quite some slowdown in economic growth, which is of course critical in our attempt to define R*. Interestingly, the formulation of the Taylor Rule implicitly assumes that R* is 2%, which may be a good reflection of the diminished growth potential (see **Figure 1**).

Figure 1 – Fed Funds Rate: actual and according to Taylor Rule (%)



Note: quarterly data from 1990 Q1 to 2018 Q4. The Taylor Rule states that r = p + 0.5y + 0.5(p-2) + 2 (r is the federal funds rate, p is the rate of inflation and y is the GDP output gap). The amended version uses a coefficient of 1.0 on y (output gap), as suggested by Ben Bernanke in "The Taylor Rule: A benchmark for monetary policy?". Source: CBO, BEA, Datastream and Invesco.

The basic Taylor Rule (developed by John Taylor) suggests that when the economy is in equilibrium (output in line with potential and inflation in line with the Fed's policy target of 2%), the Fed's policy rate should be in line with nominal GDP growth (if real GDP growth averages 2%). The Taylor Rule policy rate then varies as output varies from its potential rate (the output gap is non-zero) and inflation differs from the Fed's 2% target. Put simply, the rule states that the Fed should raise rates by 50 basis points above the equilibrium (R*) level for each percentage point of positive output gap (GDP exceeding potential GDP) and also for each percentage point that inflation exceeds the Fed target of 2%. The same adjustments are to be made in reverse.

On the basis of this "standard" Taylor Rule formulation, **Figure 1** suggests the Fed was too "tight" (rates too high) during much of the 1990s but was too "loose" in the run-up to the financial crisis (in the early 2000s) and for most of the post-crisis period. It is currently suggesting that Fed rates should be around 4.25%, well above what the market and the Fed now believe (the Fed's current dot plot suggests the long-run neutral rate should be around 3.00%).

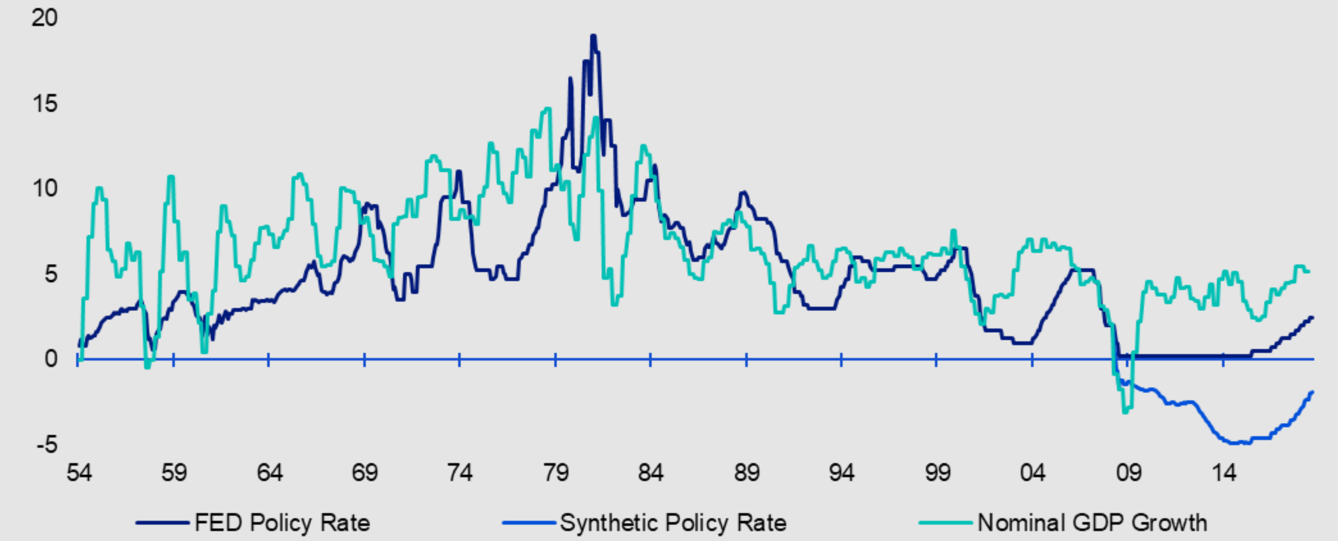
Is it possible that the Fed has been running so "loose" for so long after the financial crisis? In a 2015 paper, Ben Bernanke suggested that Fed policy makers have historically been more sensitive to swings in the output gap than suggested by the Taylor Rule. He suggested using a coefficient of 1.0 on the output gap, rather than the standard 0.5, and we show this amended version in **Figure 1** (he also suggested using the core PCE measure of inflation, rather than the GDP deflator, which we have done throughout).

Fed policy seems to have been closer to this "amended" version over recent decades. This version didn't suggest conclusively that the Fed should start raising rates above the 0.25% post-crisis level until the second-half of 2014 (the Fed waited until December 2015). That the amended rate was well below zero during the financial crisis was the justification for the use of non-conventional tools to support the economy. Unfortunately, this amended version now suggests Fed rates should be around 4.8% (the amended rate is now higher than the standard rate because the output gap is positive). This again suggests that Fed policy is extremely easy at the moment, judged by the level of interest rates.

However, many investors would argue that the Fed has tightened by more than the 2.25% rise in policy rates since December 2015 because it has shrunk its balance sheet. We agree but would argue that we should also consider the loosening done during the quantitative easing (QE) phase. **Figure 2** shows our regular attempt to do this by constructing a synthetic policy rate that adjusts the actual policy rate for changes in the size of the Fed's balance sheet (using a rule provided by the Fed itself). Our synthetic policy rate touched a low of -4.9% during 2015 and is now around -1.9%, suggesting a total tightening equivalent of a 3% rise in policy rates since 2015.

So, Fed policy rates do underestimate the extent of Fed tightening in recent years but whether we look at the actual or synthetic policy rates, they are well below nominal GDP growth, which is where they should be when the economy is in equilibrium. Whether we state this fact using the Taylor Rule or express it more simply, we believe Fed policy rates are too low.

Figure 2 – Fed policy rates and US nominal GDP growth (%)



From July 1954 to March 2018. Synthetic policy rate is the actual policy rate adjusted for Fed asset purchases using the rule that each $150bn-$200bn of asset purchases is equivalent to a 25bp rate cut. Source: Datastream and Invesco.

However, there is one nagging doubt: if the Fed has been too loose over a period of at least five years, where is the evidence in terms of economic or financial market behaviour? From an economic perspective, M2 money supply growth of around 4% is hardly indicative of a credit boom (though that could be due to supply factors, rather than demand). Further, it seems to us that both the housing and auto cycle have, at best, flattened and may have turned lower. Again, hardly suggestive of an economy being inflated by an overly accommodative central bank.

There are nevertheless signs of excess in the corporate sector, especially when it is considered that corporate sector debt is at a record high relative to GDP (in the midst of an economic expansion) and that most of the new debt in the last 10 years seems to have gone toward share buybacks (see our earlier piece Should we be worried about US corporate debt).

This has its counterpart in financial markets with a US equity market that seems very expensive to us, not in relation to today's profits but in relation to what we might consider a normal level of profits (for instance, a Shiller PE above 30 is worrying).

Finally, the Fed has had a direct effect on fixed income markets: by changing the balance of supply and demand over the last 10 years, we think it has distorted treasury yields lower (a real 10-year yield of 0.6% seems well below the economic growth that most commentators would expect over the next decade).

Hence, though the Fed's accommodative policies seem to have had little impact on consumer (and investment) spending, they do seem to have had an effect on financial markets, either directly via debt purchases or indirectly via corporate sector financial engineering.

Both the Fed and financial markets have adopted a more cautious attitude in recent months (as have we – see Dialling down the risk) and there has been a noticeable softening in US economic data, both survey and real. No matter what we or the Taylor Rule say about Fed rates, we expect the US central bank to cut rates if there is a hint of recession (and perhaps buy assets again if the recession is deep).

We do not expect recession this year, believing that the US economy is taking a mid-cycle break. Rather, we expect recession sometime in 2020/21, which we believe gives the Fed scope to raise rates closer towards what the Taylor Rule and our intuition tells us would be more reasonable at this stage of the cycle. We suspect the psychological damage caused during the financial crisis (to the Fed and the rest of us) will prevent policy rates rising to the Taylor Rule level during this cycle but nonetheless believe there is upside. On that basis, we expect a reversal of the recent decline in bond yields later this year as economic surprises again turn positive.

Unless stated otherwise, all data as of 29 March 2019.

Figure 3 – Asset class total returns

Data as at 29/03/2019	Index	Current Level/RY	Total Return (USD, %) 1w	1m	QTD	YTD	12m	Total Return (Local Currency, %) 1w	1m	QTD	YTD	12m
Equities												
World	MSCI	509	0.7	1.3	12.3	12.3	3.2	0.9	1.6	12.4	12.4	6.3
Emerging Markets	MSCI	1058	-0.1	0.9	10.0	10.0	-6.9	0.2	1.4	9.9	9.9	-1.4
US	MSCI	2702	1.2	1.8	13.9	13.9	9.5	1.2	1.8	13.9	13.9	9.5
Europe	MSCI	1635	0.4	0.7	11.0	11.0	-3.1	1.1	2.1	11.7	11.7	5.0
Europe ex-UK	MSCI	1921	0.7	0.6	10.7	10.7	-4.3	1.1	1.7	12.6	12.6	3.9
UK	MSCI	1139	-0.4	1.1	11.9	11.9	0.0	1.0	3.2	9.4	9.4	7.6
Japan	MSCI	3102	-1.4	0.7	6.8	6.8	-6.8	-0.6	0.2	7.8	7.8	-3.1
Government Bonds												
World	BofA-ML	1.11	-0.3	1.3	1.6	1.6	-1.2	0.2	1.7	2.2	2.2	3.1
Emerging Markets	JPM	6.44	-0.6	-1.3	3.0	3.0	-7.5	0.0	0.7	2.8	2.8	4.2
US (10y)	Datastream	2.42	0.2	2.6	3.0	3.0	5.5	0.2	2.6	3.0	3.0	5.5
Europe	Bofa-ML	0.64	-0.7	0.6	1.7	1.7	-6.1	-0.2	2.0	3.5	3.5	2.8
Europe ex-UK (EMU, 10y)	Datastream	-0.07	-0.1	1.1	1.8	1.8	-2.2	0.4	2.5	3.7	3.7	7.1
UK (10y)	Datastream	1.00	-1.4	0.7	5.1	5.1	-1.6	0.1	2.8	2.7	2.7	5.9
Japan (10y)	Datastream	-0.09	-0.6	1.2	0.1	0.1	-2.4	0.2	0.7	1.0	1.0	1.6
IG Corporate Bonds												
Global	BofA-ML	2.90	0.2	1.7	4.1	4.1	1.3	0.4	2.1	4.4	4.4	4.2
US	BofA-ML	3.68	0.5	2.5	5.0	5.0	5.0	0.5	2.5	5.0	5.0	5.0
Europe	BofA-ML	0.90	-0.2	0.0	1.3	1.3	-6.6	0.2	1.4	3.1	3.1	2.3
UK	BofA-ML	2.62	-1.5	0.5	7.1	7.1	-3.4	0.0	2.6	4.7	4.7	4.0
Japan	BofA-ML	0.35	-0.8	0.9	-0.5	-0.5	-3.3	0.1	0.3	0.4	0.4	0.7
HY Corporate Bonds												
Global	BofA-ML	6.34	0.1	0.7	6.5	6.5	3.2	0.3	1.0	6.7	6.7	4.9
US	BofA-ML	6.68	0.4	1.0	7.4	7.4	5.9	0.4	1.0	7.4	7.4	5.9
Europe	BofA-ML	3.93	-0.1	-0.3	3.4	3.4	-6.9	0.4	1.1	5.3	5.3	2.0
Cash (Overnight LIBOR)												
US		2.39	0.0	0.2	0.6	0.6	2.1	0.0	0.2	0.6	0.6	2.1
Euro Area		-0.47	-0.9	-1.4	-2.3	-2.3	-9.2	0.0	0.0	-0.1	-0.1	-0.5
UK		0.68	-1.3	-1.7	2.3	2.3	-6.5	0.0	0.1	0.2	0.2	0.6
Japan		-0.10	-0.8	0.5	-1.2	-1.2	-4.1	0.0	0.0	0.0	0.0	-0.1
Real Estate (REITs)												
Global	FTSE	1953	1.0	4.1	15.0	15.0	12.4	1.5	5.6	17.1	17.1	23.2
Emerging Markets	FTSE	2351	2.1	7.7	16.0	16.0	-1.5	2.6	9.2	18.1	18.1	7.9
US	FTSE	3106	1.3	3.3	15.9	15.9	20.8	1.3	3.3	15.9	15.9	20.8
Europe ex-UK	FTSE	3499	0.0	4.8	11.0	11.0	1.1	0.5	6.3	13.0	13.0	10.7
UK	FTSE	1376	-0.8	-1.9	13.9	13.9	-6.5	0.7	0.2	11.3	11.3	0.6
Japan	FTSE	2767	-0.8	5.2	10.1	10.1	10.3	0.1	4.6	11.1	11.1	14.7
Commodities												
All	GSCI	2533	0.0	1.6	15.0	15.0	-3.0	-	-	-	-	-
Energy	GSCI	480	1.1	2.5	25.1	25.1	-1.4	-	-	-	-	-
Industrial Metals	GSCI	1290	1.7	0.0	8.6	8.6	-4.1	-	-	-	-	-
Precious Metals	GSCI	1529	-1.5	-1.8	0.6	0.6	-3.3	-	-	-	-	-
Agricultural Goods	GSCI	334	-2.4	-1.6	-4.5	-4.5	-14.9	-	-	-	-	-
Currencies (vs USD)*												
EUR		1.12	-0.8	-1.3	-2.2	-2.2	-8.8	-	-	-	-	-
JPY		110.86	-0.8	0.5	-1.2	-1.2	-4.0	-	-	-	-	-
GBP		1.30	-1.4	-2.0	2.3	2.3	-7.1	-	-	-	-	-
CHF		1.00	-0.2	0.3	-1.4	-1.4	-3.9	-	-	-	-	-
CNY		6.71	0.1	-0.3	2.5	2.5	-6.3	-	-	-	-	-

Notes: *The currency section is organised so that in all cases the numbers show the movement in the mentioned currency versus USD (+ve indicates appreciation, -ve indicates depreciation). Past performance is no guarantee of future results. Please see appendix for definitions, methodology and disclaimers.
Source: Datastream and Invesco

Figure 4 – Equity sector total returns relative to local market (%)

Data as at 29/03/2019	US					Europe				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Oil & Gas	**-0.3**	**0.2**	**2.4**	**2.4**	**-7.5**	**-0.7**	**0.0**	**0.0**	**0.0**	**10.5**
Materials	**0.9**	**-0.7**	**-2.9**	**-2.9**	**-9.1**	**0.9**	**0.1**	**2.4**	**2.4**	**0.1**
Basic Resources	2.9	-1.2	-0.2	-0.2	-20.1	1.5	1.8	7.0	7.0	3.7
Chemicals	0.4	-1.3	-4.9	-4.9	-7.2	0.4	-1.1	-0.5	-0.5	-2.0
Industrials	**1.6**	**-3.0**	**3.1**	**3.1**	**-5.7**	**0.5**	**-1.1**	**1.1**	**1.1**	**-3.0**
Construction & Materials	2.1	2.3	8.8	8.8	-8.4	0.6	-0.2	3.0	3.0	-3.3
Industrial Goods & Services	1.6	-2.9	3.6	3.6	-5.2	0.5	-1.3	0.6	0.6	-3.0
Consumer Discretionary	**0.6**	**2.1**	**1.8**	**1.8**	**3.4**	**0.4**	**-2.4**	**0.3**	**0.3**	**-6.6**
Automobiles & Parts	1.4	-5.2	1.0	1.0	-15.3	0.4	-4.9	-2.6	-2.6	-24.2
Media	-1.8	0.5	1.7	1.7	1.8	-1.1	-4.2	-5.4	-5.4	4.5
Retail	0.4	2.9	0.6	0.6	7.8	0.6	1.2	6.5	6.5	10.0
Travel & Leisure	0.2	-0.9	-1.9	-1.9	-0.3	-0.8	-3.4	-5.9	-5.9	-7.4
Consumer Staples	**0.4**	**2.1**	**-1.4**	**-1.4**	**0.9**	**0.8**	**4.3**	**4.5**	**4.5**	**6.1**
Food & Beverages	0.9	2.8	-4.1	-4.1	-3.4	0.7	3.9	4.5	4.5	11.9
Personal & Household Goods	0.9	1.8	3.8	3.8	-0.2	0.9	4.6	4.5	4.5	2.2
Healthcare	**0.0**	**-1.4**	**-6.2**	**-6.2**	**4.9**	**0.5**	**1.8**	**0.1**	**0.1**	**12.3**
Financials	**0.3**	**-4.5**	**-4.5**	**-4.5**	**-12.9**	**-0.7**	**-3.4**	**-3.4**	**-3.4**	**-11.9**
Banks	0.5	-6.3	-4.0	-4.0	-17.0	-1.0	-5.7	-6.4	-6.4	-20.9
Financial Services	0.0	-3.4	-2.5	-2.5	-13.6	1.0	0.3	-0.3	-0.3	-5.3
Insurance	0.2	-2.2	-0.7	-0.7	-6.3	-0.5	-2.3	-0.6	-0.6	1.6
Real Estate	-0.1	2.9	3.4	3.4	10.5	-0.9	2.5	0.7	0.7	0.2
Technology	**-0.3**	**2.8**	**5.5**	**5.5**	**5.4**	**0.4**	**1.4**	**3.4**	**3.4**	**2.4**
Telecommunications	**-1.7**	**0.5**	**0.3**	**0.3**	**-1.6**	**-2.0**	**2.6**	**-9.6**	**-9.6**	**-3.1**
Utilities	**-1.7**	**0.9**	**-2.5**	**-2.5**	**9.0**	**-1.9**	**0.8**	**-1.2**	**-1.2**	**11.1**

Notes: showing annualised returns. We use a sector classification created by merging the two main systems used by Standard & Poor's (S&P) for the US and STOXX for Europe. We have decided to classify our 10 top level industries using categories that most closely resemble the Global Industry Classification Standard (GICS) and at the level below that (super sectors) we are using the Industry Classification Benchmark (ICB). The former is used for the S&P 500 index and the latter for the STOXX 600, our benchmark indices. The two systems overlap in most cases and the only material difference seems to be in the consumer sectors. Therefore, we define consumer staples as the aggregate of personal & household goods and food & beverage, while consumer discretionary includes automobiles & parts, media, retail and travel & leisure. For the rest, we assume 100% overlap for the corresponding top-level sectors. Past performance is no guarantee of future results.
Source: Datastream and Invesco

Figure 5a – US factor index total returns (%, annualised)

Data as at 29/03/2019	Absolute					Relative to Market				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Growth	2.2	-1.5	14.8	14.8	11.3	1.0	-3.4	1.0	1.0	1.7
Low volatility	1.1	2.0	11.5	11.5	16.4	-0.2	0.1	-1.9	-1.9	6.3
Price momentum	1.5	2.5	13.8	13.8	4.8	0.3	0.6	0.1	0.1	-4.2
Quality	2.1	0.0	13.4	13.4	7.4	0.9	-1.9	-0.2	-0.2	-1.9
Size	2.5	-0.8	15.1	15.1	7.2	1.3	-2.7	1.3	1.3	-2.1
Value	1.5	-0.6	15.0	15.0	-0.2	0.3	-2.5	1.2	1.2	-8.9
Market	1.2	1.9	13.6	13.6	9.5					
Market - Equal-Weighted	1.7	0.9	14.9	14.9	7.2					

Notes: All indices are subsets of the S&P 500 index, they are rebalanced monthly, use data in US dollars and are equal-weighted. Growth includes stocks in the top third based on both their 5-year sales per share trend and their internal growth rate (the product of the 5-year average return on equity and the retention ratio); Low volatility includes stocks in the bottom quintile based on the standard deviation of their daily returns in the previous three months; Price momentum includes stocks in the top quintile based on their performance in the previous 12 months; Quality includes stocks in the top third based on both their return on invested capital and their EBIT to EV ratio (earnings before interest and taxes to enterprise value); Size includes stocks in the bottom quintile based on their market value in US dollars. Value includes stocks in the bottom quintile based on their price to book value ratios. The market represents the S&P 500 index. Past performance is no guarantee of future results.
Source: Datastream and Invesco

Figure 5b – European factor index total returns relative to market (%, annualised)

Data as at 29/03/2019	Absolute					Relative to Market				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Growth	1.1	0.8	14.9	14.9	5.0	0.1	-1.3	1.6	1.6	-0.8
Low volatility	0.7	3.5	11.7	11.7	10.1	-0.2	1.3	-1.3	-1.3	4.0
Price momentum	1.2	3.8	14.5	14.5	4.9	0.3	1.6	1.2	1.2	-0.9
Quality	0.7	1.3	15.9	15.9	0.5	-0.3	-0.9	2.4	2.4	-5.1
Size	0.5	0.4	16.0	16.0	3.1	-0.5	-1.8	2.5	2.5	-2.6
Value	0.5	-1.5	11.5	11.5	-3.0	-0.4	-3.6	-1.5	-1.5	-8.4
Market	1.0	2.2	13.2	13.2	5.9					
Market - Equal-Weighted	0.6	0.9	13.0	13.0	2.8					

Notes: All indices are subsets of the STOXX 600 index, they are rebalanced monthly, use data in euros and are equal-weighted. Growth includes stocks in the top third based on both their 5-year sales per share trend and their internal growth rate (the product of the 5-year average return on equity and the retention ratio); Low volatility includes stocks in the bottom quintile based on the standard deviation of their daily returns in the previous three months; Price momentum includes stocks in the top quintile based on their performance in the previous 12 months; Quality includes stocks in the top third based on both their return on invested capital and their EBIT to EV ratio (earnings before interest and taxes to enterprise value); Size includes stocks in the bottom quintile based on their market value in euros; Value includes stocks in the bottom quintile based on their price to book value ratios. The market represents the STOXX 600 index. Past performance is no guarantee of future results.
Source: Datastream and Invesco

Figure 6 – Model asset allocation

	Neutral	Policy Range		Allocation	Hedged	Currency
Cash	**5%**	**0-10%**		**10%**		
Cash	2.5%			10%		
Gold	2.5%			0%		
Bonds	**45%**	**10-80%**		**44%**		
Government	30%	10-50%	↑	24%		
US	10%			14%		
Europe ex-UK (Eurozone)	8%			0%		
UK	2%		↑	3%		
Japan	8%		↑	3%		
Emerging Markets	2%			4%		
Corporate IG	10%	0-20%	↓	14%		
US Dollar	5%		↓	8%		
Euro	3%			2%		
Sterling	1%			2%		
Japanese Yen	1%			2%		
Corporate HY	5%	0-10%	↓	6%		
US Dollar	4%		↓	6%		
Euro	1%			0%		
Equities	**45%**	**20-70%**		**40%**		
US	25%		↑	12%		
Europe ex-UK	7%		↓	10%		
UK	4%		↑	6%		
Japan	4%			8%		
Emerging Markets	5%		↓	4%		
Real Estate	**3%**	**0-6%**		**6%**		
US	1%			2%		
Europe ex-UK	1%		↓	0%		
UK	0.5%			1%		
Japan	0.5%		↑	1%		
Emerging Markets	0%			2%		
Commodities	**2%**	**0-4%**		**0%**		
Energy	1%			0%		
Industrial Metals	0.3%			0%		
Precious Metals	0.3%			0%		
Agriculture	0.3%			0%		
Total	**100%**			**100%**		

Currency Exposure (including effect of hedging)			
USD	49%	↓	47%
EUR	21%	↓	13%
GBP	8%	↑	13%
JPY	14%	↑	16%
EM	7%	↓	11%
Total	**100%**		**100%**

Notes: This is a theoretical portfolio and is for illustrative purposes only. See the latest The Big Picture document for more details. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy.
Source: Invesco

Figure 7 – Model sector allocations

	US		Europe		Preferred
	Neutral	**Invesco**	**Neutral**	**Invesco**	**Region**
Oil & Gas	**5.1%**	**Overweight**	**6.8%**	**Neutral**	**US**
Materials	**2.3%**	**Neutral**	**6.7%**	**Underweight**	**US**
Basic Resources	0.3%	Underweight	3.0%	Neutral	Europe
Chemicals	2.0%	Neutral	3.7%	Underweight	US
Industrials	**11.8%**	**Underweight**	**13.3%**	**Underweight**	**US**
Construction & Materials	0.4%	Neutral	2.7%	Underweight	US
Industrial Goods & Services	11.4%	Underweight	10.7%	Underweight	US
Consumer Discretionary	**15.6%**	**Underweight**	**9.9%**	**Overweight**	**Europe**
Automobiles & Parts	0.6%	Underweight	3.0%	Overweight	Europe
Media	2.5%	Overweight	2.0%	Underweight	US
Retail	9.7%	Underweight	3.3%	Overweight	Europe
Travel & Leisure	2.8%	Overweight	1.7%	Overweight	US
Consumer Staples	**7.5%**	**Overweight**	**16.6%**	**Overweight**	**Europe**
Food & Beverage	3.4%	Neutral	7.3%	Overweight	Europe
Personal & Household Goods	4.2%	Overweight	9.4%	Overweight	Europe
Healthcare	**14.1%**	**Neutral**	**13.2%**	**Underweight**	**US**
Financials	**17.8%**	**Neutral**	**20.0%**	**Overweight**	**Europe**
Banks	5.6%	Neutral	10.6%	Overweight	Europe
Financial Services	5.8%	Underweight	2.0%	Overweight	Europe
Insurance	3.5%	Neutral	5.6%	Overweight	Europe
Real Estate	2.9%	Overweight	1.8%	Underweight	US
Technology	**20.5%**	**Underweight**	**4.6%**	**Underweight**	**US**
Telecommunications	**2.1%**	**Overweight**	**3.9%**	**Overweight**	**Europe**
Utilities	**3.2%**	**Underweight**	**5.0%**	**Underweight**	**Europe**

Notes: These are theoretical allocations which are for illustrative purposes only. They do not represent an actual portfolio and are not a recommendation of any investment or trading strategy. See the latest Strategic Sector Selector for more details.
Source: Datastream and Invesco

Definitions of data and benchmarks (for Figure 3)

Sources: we source data from Datastream unless otherwise indicated.

Cash: returns are based on a proprietary index calculated using the Intercontinental Exchange Benchmark Administration overnight LIBOR (London Interbank Offer Rate). The global rate is the average of the euro, British pound, US dollar and Japanese yen rates. The series started on 1st January 2001 with a value of 100.

Gold: London bullion market spot price in USD/troy ounce.

Government bonds: Current levels, yields and total returns use Datastream benchmark 10-year yields for the US, Eurozone, Japan and the UK, and the Bank of America Merrill Lynch government bond total return index for the World and Europe. The emerging markets yields and returns are based on the JP Morgan emerging markets global composite government bond index.

Corporate investment grade (IG) bonds: Bank of America Merrill Lynch investment grade corporate bond total return indices.

Corporate high yield (HY) bonds: Bank of America Merrill Lynch high yield total return indices

Equities: We use MSCI benchmark gross total return indices for all regions.

Commodities: Goldman Sachs Commodity total return indices

Real estate: FTSE EPRA/NAREIT total return indices

Currencies: Global Trade Information Services spot rates

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