



The Big Picture

Less equity, more US treasuries

Quarterly update

For professional/qualified/accredited investors only

15 June 2018

Data as of 31/05/18 unless stated otherwise



The Big Picture

Less equity, more US treasuries

Yields have increased on most assets, especially fixed income. We don't fear immediate recession but economic and profit momentum is fading in some areas. We are slightly reducing the exposure to equities, while adding to government debt (in the US). We remove the precautionary hedges into JPY.

Model asset allocation

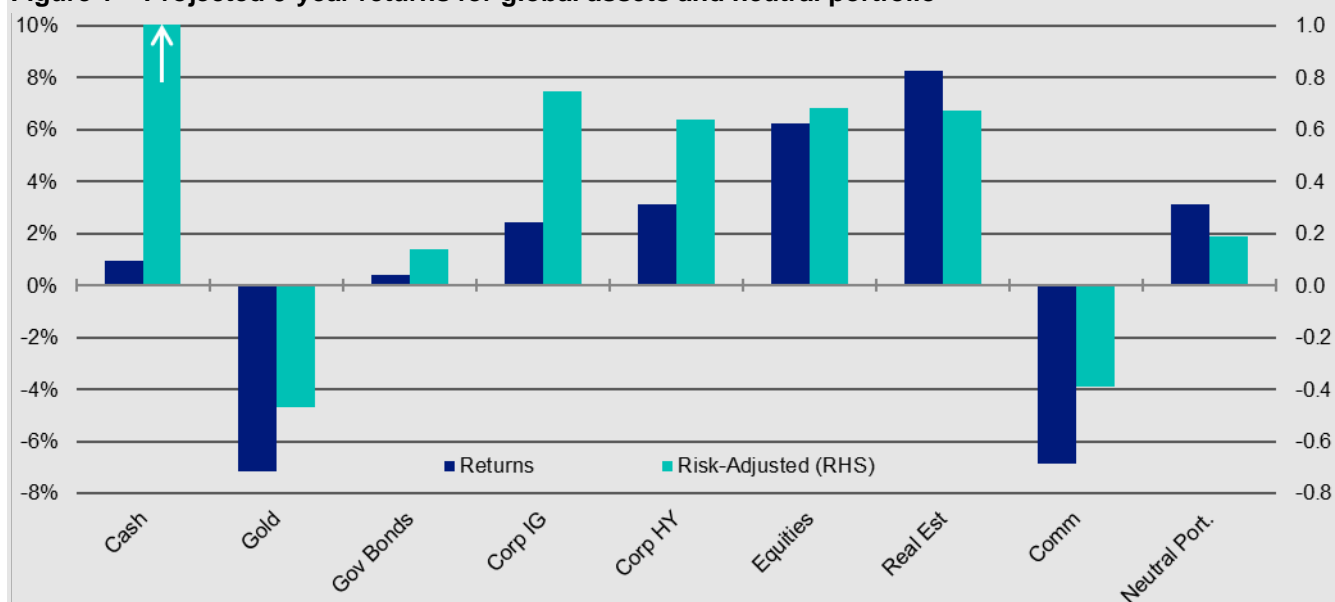
In our view:

- Equities offer good returns but are volatile and correlated to other assets. We reduce to further Underweight.
- Real estate has the potential to produce the best returns. We stay at Maximum.
- Corporate high-yield now looks more interesting. We remain Neutral.
- Corporate investment-grade preferred to sovereign debt. We stay Overweight.
- Government debt better but still unattractive. We add but remain Underweight.
- Emerging markets (EM) is still the sovereign space with the best potential. We stay Overweight.
- Cash returns are low but stable and de-correlated. We stay at Maximum.
- Commodities have not bottomed. We remain Zero-weighted.
- JPY remains the most attractive major currency but we remove FX hedges.

Assets where we expect the best returns

- Japanese real estate – estimated 13% 5yr annualised total return in USD
- Eurozone equities – estimated 11% 5yr annualised total return in USD
- EM sovereign debt – estimated 5% 5yr annualised total return in USD
- USD cash – projected 2% 5yr annualised total return in USD and good in a crisis

Figure 1 – Projected 5-year returns for global assets and neutral portfolio



Returns are annualised in local currency. Risk-adjusted returns are projected returns divided by historical 5y standard deviations. See appendices for definitions, methodology and disclaimers. There is no guarantee that these views will come to pass. Source: Invesco

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*Less equity more
government debt*

Summary and conclusions

The latest three months (since we last wrote) have seen volatility and dispersion of returns, especially when measured in US dollars. Yields have risen, especially on fixed income assets, though not on real estate. Though we think the best medium-term returns will be achieved on real estate and equities, consideration of the longevity of the economic cycle and our risk-return process leads us to slightly reduce the equity allocation to further below Neutral and to slightly raise the government debt position (thus reducing the Underweighting). We maintain Maximum exposures to cash and real estate, while remaining Overweight in investment-grade (IG) credit and Neutral in high-yield (HY) credit. We remain zero-weighted in commodities. We expect the best returns on Japanese real estate, eurozone stocks, emerging market (EM) debt and USD cash.

The global economy appears robust but we expect less growth and a bit more inflation over the coming year. We believe this is an environment that favours real estate and equities. Obvious risks are the planned reduction of asset purchases by major central banks, all-out trade war and political shocks (the Americas has a busy election calendar).

Judging by yields, valuations have largely improved in the last three months, which, all else being equal, could lead us to expect better returns. Credit yields have increased the most, but we already have a big position in IG (18% versus Neutral 10%) and do not wish to add any more to high-yield at this stage of the cycle (see **Figures 2** and **3**).

Despite the low yields on offer in many regions, we are boosting the allocation to government debt (to 21% from 18%, versus a Neutral allocation of 30%). Now that US 10-year yields are close to 3%, we can imagine a reasonable medium-term return (2.2% annualised over five years, assuming the yield rises to 3.5% in that time). Hence, we are adding to our US treasury position, taking it to 14% from 11% (versus Neutral 10%). We continue to believe that EM debt will give the best returns in the asset class, even allowing for the currency depreciation that we expect.

We do not believe the conditions are yet ripe for a recession and therefore do not fear an imminent equity bear market. However, US valuations are stretched, which we believe limits the potential for medium term returns (hence the big Underweight in US stocks). The same is not true elsewhere but economic and EPS momentum seems to be on the wane. Hence, we are shaving the positions in the eurozone and Japan by 1% each (though staying Overweight) and doing likewise in the UK (taking it Underweight).

Cash remains our diversifier of choice: we maintain the Maximum 10% exposure (due to the low returns expected elsewhere, its low volatility and low correlation to other assets).

Though healthy global growth could maintain commodity prices in the short term, we believe that real prices remain well above historical norms (except agriculture) and expect a correction over the long term. We remain zero-weighted.

Figure 2 – Expected total returns (annualised, local currency) and Model Asset Allocation*

	Expected Total Returns		Neutral Portfolio	Policy Range	Model Asset Allocation	Position vs Neutral
	1-year	5-year				
Cash & Gold	-5.6%	-3.1%	5%	0-10%		Overweight
Cash	0.6%	1.0%	2.5%	0-10%		Overweight
Gold	-11.8%	-7.1%	2.5%	0-10%		Underweight
Government Bonds	0.3%	0.4%	30%	10-50%	↑	Underweight
Corporate IG	0.9%	2.4%	10%	0-20%		Overweight
Corporate HY	0.1%	3.1%	5%	0-10%		Neutral
Equities	4.6%	6.2%	45%	20-70%	↓	Underweight
Real Estate	11.8%	8.3%	3%	0-6%		Overweight
Commodities	-15.0%	-6.8%	2%	0-4%		Underweight

*This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. Arrows show direction of change in allocations. See appendices for definitions, methodology and disclaimers. There is no guarantee that these views will come to pass. Source: Invesco

Model asset allocation*

Figure 3 – Model asset allocation (15/06/2018)

	Neutral	Policy Range	Allocation	Position vs Neutral	Hedged	Currency
Cash	5%	0-10%	10%			
Cash	2.5%		10%			
Gold	2.5%		0%			
Bonds	45%	10-80%	44%	↑		
Government	30%	10-50%	21%			
US	10%		14%	↑		
Europe ex-UK (Eurozone)	8%		2%			
UK	2%		2%			
Japan	8%		0%			
Emerging Markets	2%		3%			
Corporate IG	10%	0-20%	18%			
US Dollar	5%		10%			
Euro	3%		4%			
Sterling	1%		2%			
Japanese Yen	1%		2%			
Corporate HY	5%	0-10%	5%			
US Dollar	4%		5%			
Euro	1%		0%			
Equities	45%	20-70%	40%	↓		
US	25%		8%			
Europe ex-UK	7%		13%	↓		
UK	4%		3%	↓		
Japan	4%		7%	↓		
Emerging Markets	5%		9%			
Real Estate	3%	0-6%	6%			
US	1%		2%			
Europe ex-UK	1%		2%			
UK	0.5%		0%			
Japan	0.5%		1%			
Emerging Markets	0%		1%			
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%		43%	↑		
EUR	21%		23%	↓		
GBP	8%		8%	↑		
JPY	14%		11%	↓		
EM	7%		14%			
Total	100%		100%			

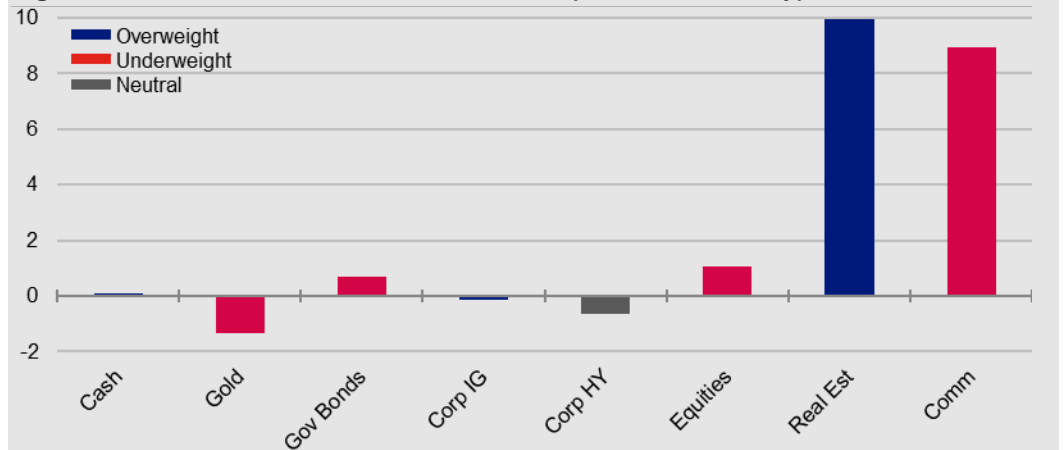
*This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. Cash is an equally weighted mix of USD, EUR, GBP and JPY. Currency exposure calculations exclude cash. Arrows show direction of change in allocations. See appendices for definitions, methodology and disclaimers. Source: Invesco

Real estate and commodities were the stand-out assets over the last three months

Since we last spoke

We last published The Big Picture on 21 March 2018 (see [More high-yield, less equity](#)). Subsequent asset class returns have been mixed, with real estate and commodities leading the way when measured in local currency terms (see **Figure 4**). Equities produced positive returns but to a lesser extent, while the performance of fixed income assets was mixed (see **Appendix 3** for the regional detail). Interestingly, gold suffered despite the decline in sovereign yields.

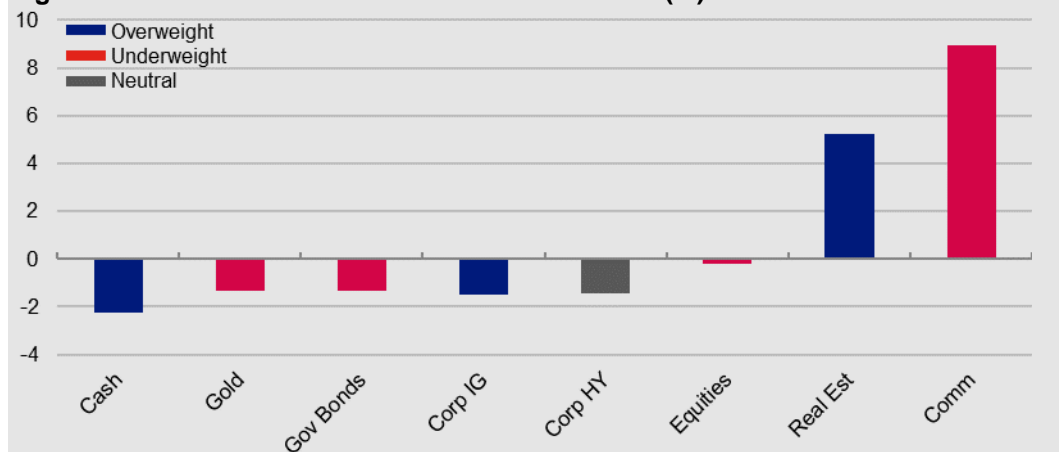
Figure 4 – Global three month* total returns (% , local currency)



*28/02/18 to 31/05/18. Colours represent model allocations during this period. See appendices for definitions and disclaimers. Past performance is no guarantee of future results. Source: Datastream and Invesco

The rebound of the greenback depressed returns when measured in US dollars (see **Figure 5**), except for commodities which are measured in USD. Cash returns were impacted because we use a mix of USD, EUR, GBP and JPY cash (see **Figure 3**).

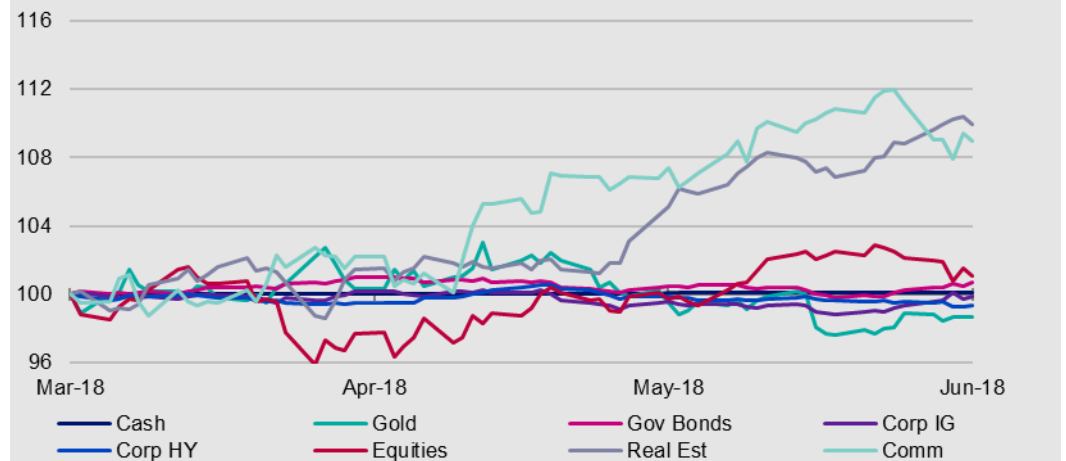
Figure 5 – Global three month* total returns in USD (%)



*28/02/18 to 31/05/18. Colours represent model allocations during this period. See appendices for definitions and disclaimers. Past performance is no guarantee of future results. Source: Datastream and Invesco

Though we missed the rally in commodities (we believe they remain expensive), we were well positioned to benefit from the rebound in real estate (we have been Maximum allocated for some time and remain so – see **Figure 3**). The weakness of emerging market (EM) currencies was problematic for us, given the Overweight EM positions in all asset categories (sovereign debt, equities and real estate).

Figure 6 shows the time path of returns over the last three months. Real estate and commodities seemed to compensate for the volatility in their returns (compared to more stable fixed income assets), whereas equities and gold did not, in our opinion.

Figure 6 – The time path of total returns (local currency) *

*From 28/02/18 to 31/05/18. See appendices for definitions and disclaimers. Past performance is no guarantee of future results. Source: Datastream and Invesco

What new factors do we need to consider?

Surprises aplenty

The obvious surprises since we last published were:

- The agreement to hold a meeting between President Trump and Supreme Leader Kim and the apparent agreement they concluded (details not yet known).
- The rebound in US economic data flows after a weak start to the year, which has allayed fears of a downturn.
- The rebound in the dollar after the mysterious weakness of 2017. This feels more natural to us at this stage of the cycle but it would appear to be hurting other assets, such as EM and some commodities.
- Disappointing eurozone economic data, which could be a concern if it continues.
- The broadening of trade initiatives by President Trump, including tariffs on steel and aluminium (now also to be imposed on NAFTA partners and the EU) and a bizarre attempt to negotiate a reduction in the trade imbalance between the US and China. In our opinion, a full-blown global trade war would reduce economic growth and boost inflation (in the first instance), and could be a game changer for global equity markets.
- The deterioration in relations between Russia and the rest of the world, especially the UK, resulted in heightened volatility of Russian assets.
- The negative performance of emerging markets currencies, with notable episodes in Russia, Turkey and Argentina.
- The formation of a populist coalition government in Italy, with the stated desire to reform the EU and the ECB, which has disturbed financial markets.
- The removal of Rajoy as prime minister in Spain, to be replaced by Socialist Pedro Sanchez.

NAFTA under threat and European volatility

Potential flashpoints over the coming months

US mid-term elections are due in November and in the meantime, we shall be keeping an eye on:

- The fallout from the Kim-Trump meetings.
- The outcome of protracted NAFTA renegotiations, with collapse possible.
- The result of Mexican elections on July 1, with opinion polls suggesting a left-wing populist will become president, which we suspect would make a NAFTA agreement even less likely.
- The behaviour of the coalition partners in Italy: can they work together, how much will they antagonise the rest of the EU and how much reform will they attempt (see [The good, the bad and the ugly of the new Italian coalition](#)).
- The Spanish situation: how will the minority socialist government legislate and will Catalan independence become a factor again.
- Can the UK decide what it wants and negotiate a Brexit agreement with the EU?

Yields continue to rise, except for real estate

Changes in valuation – most assets now more attractive

There has been another rise in yield across most global asset classes (between 28/2/18 and 31/5/18), especially for credit (see **Figure 7**). Real estate was the exception, which should not be a surprise after the sharp rise in yields in the previous period. Other things being equal, this suggests more potential for investment returns, except for real estate.

High-yield (HY) and investment-grade (IG) credit yields have once again increased the most (more detail on yields is available in **Appendices 2** and **4**). The rise in HY yields was more noticeable in the eurozone (from 3.3% to 3.7%) than in the US (6.4% to 6.6%), which suited us as we were present in the US but not the eurozone. Both rising benchmark government yields and widening spreads were at play but it was in the eurozone that the change in spreads was most noticeable.

The rise in the global IG yield was focused in the US and the eurozone, with those in the UK and Japan unchanged. In contrast to what happened in HY markets, the rise in the US IG yield (from 3.8% to 4.0%) was largely down to the rise in benchmark treasury yields. In the eurozone, the rise in yield (from 1.0% to 1.1%) was entirely explained by higher government yields (the spread narrowed). UK IG yields were broadly unchanged (at 2.7%) but the spread increased (gilt yields declined over the period considered).

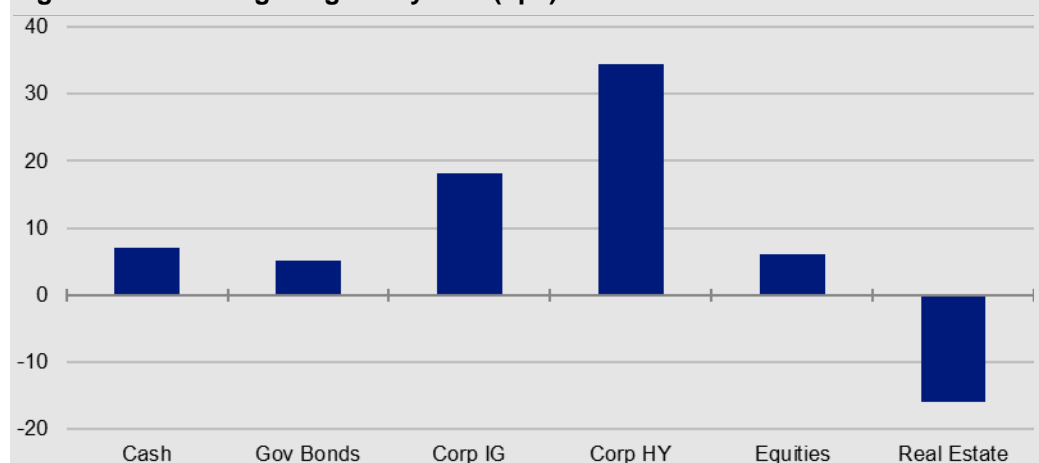
The global equity dividend yield increased marginally (to 2.4%). The yield remained unchanged on US and EM equities (1.9% and 2.7%, respectively) but increased in the Eurozone (to 3.1%) and Japan (2.0%). On the other hand, the UK dividend yield fell from 3.8% to 3.5%, the result of a rise in prices and a slight fall in dividends.

The global real estate yield fell from 4.1% to 3.9%, largely due to the sharp fall in the US yield (from 4.7% to 4.3%). That decline in US yields was caused by the rebound in prices after a poor start to the year. Yields also declined (slightly) in the eurozone (to 3.6%) and Japan (2.5%); in the former due to rising prices and in the latter due to both lower dividends and higher prices. Interestingly, yields increased in the UK and EM (to 3.7% in both) because dividend payments were on the rise.

Though commodities offer no yield, and cannot be compared with other assets on that basis, it should be noted that prices increased over the last three months, except for precious metals (see **Appendix 3**). As we will describe later, the prices of all commodity groups remain above long term historical norms (in real terms), except for agriculture.

Of course, the extent to which these changes in valuation impact our allocations depends upon the variation in assumptions about growth, inflation, policy settings etc. That is the subject matter of the next section (Asset allocation decision process).

Figure 7 – 3m change in global yields (bps)



From 28/02/18 to 31/05/18. See appendices for definitions and disclaimers. Past performance is no guarantee of future results. Source: Datastream and Invesco

A global economy in deceleration but not recession

Asset allocation decision process

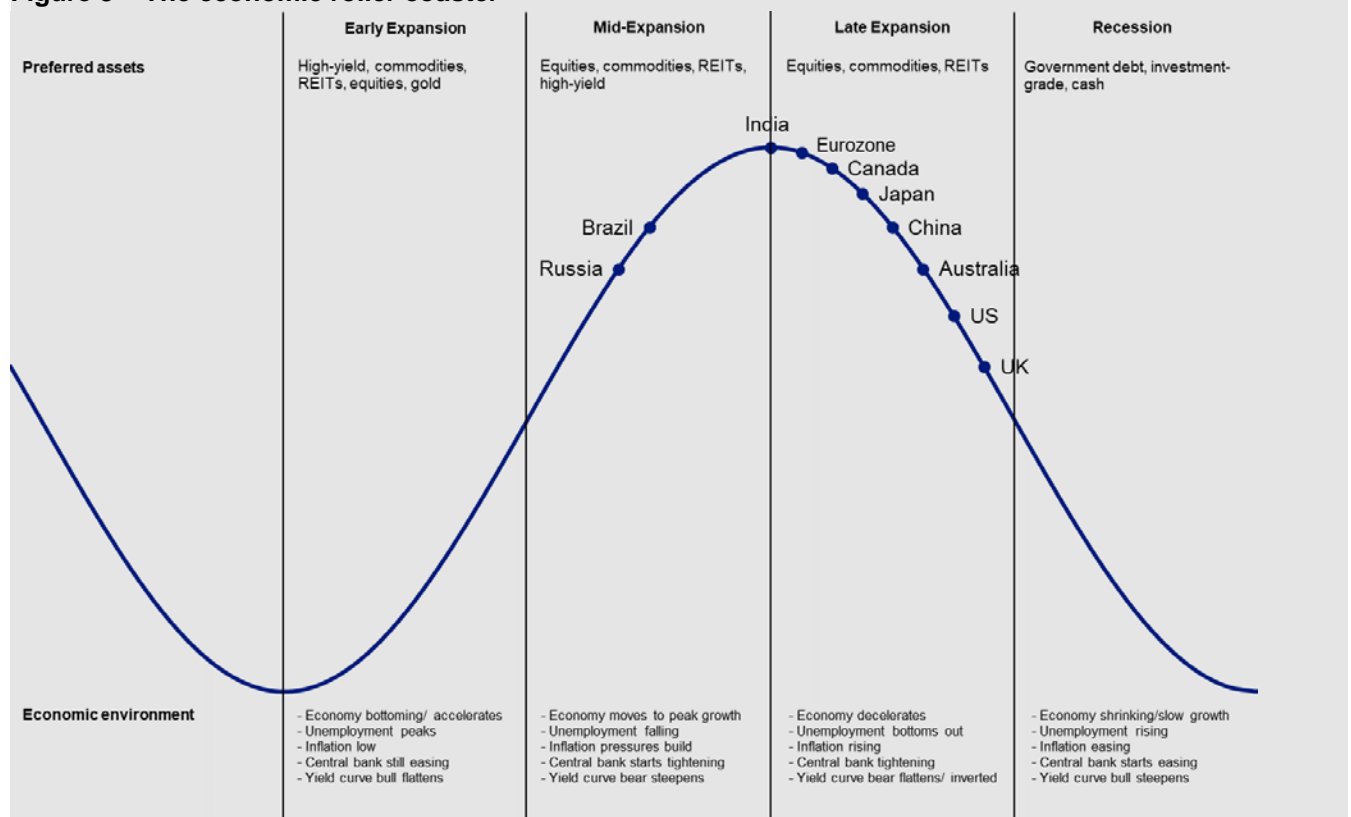
The consensus economic forecasts shown in **Appendix 1** suggest the acceleration seen during 2017 is fading: global GDP is expected to grow by 3.8% in 2018, as in 2017, with a slight deceleration to 3.7% in 2019. Were it not for an expected acceleration in the US economy, those forecasts would be suggesting less global growth this year than last. The consensus view seems to be that inflation will continue to rise this year (with global CPI inflation of 3.3%) before slipping to 3.1% in 2019.

Figure 8 gives an update of where we think the 10 largest economies are within their economic cycles. Though we suspect that many economies are in the late expansion phase, we do not know how long they will stay there before slipping into recession. For the moment, we see little threat of that happening although export volume growth has slipped and the threat of a trade war is a concern. **Figure 9** shows the deceleration in export volumes based on a USD measure of exports (which we suspect gives an overly optimistic picture due to the weakness of the dollar during late 2017 and early 2018).

Should we be worried about the late expansion phase, given that it is typically a period in which inflation tends to pick-up, central banks tighten and economic growth declines? Our historical analysis of asset returns suggests equities, real estate and industrial commodities usually perform well at this stage of the cycle. It is not until we pass into the recession phase that asset class leadership passes to fixed income instruments (and gold, we suspect).

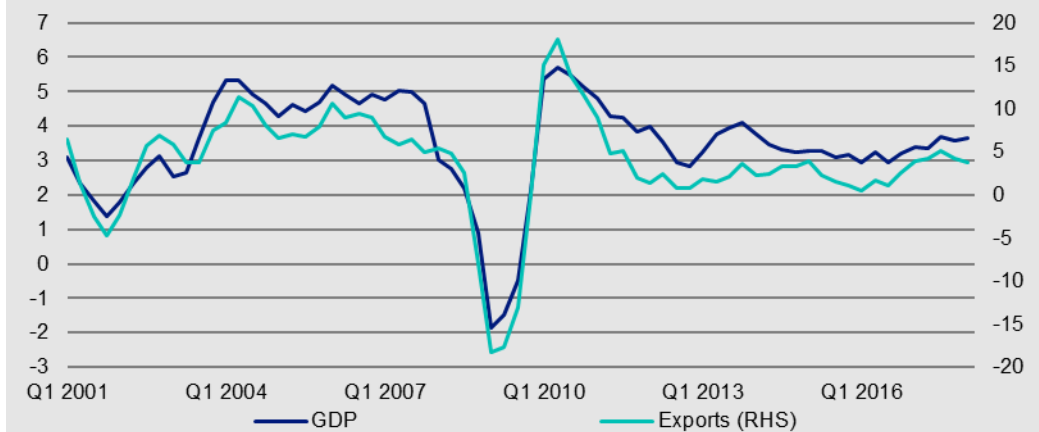
For the purposes of our five-year asset class return projections, we assume that a global recession will occur at some stage in the next five years but, importantly, we do not expect it within the next 12 months.

Figure 8 – The economic roller coaster



The chart shows our view of the cyclical positioning of the world's 10 largest economies. The selection of preferred assets is based on our research published in "Asset allocation in pictures" in November 2017. See appendices for definitions, methodology and disclaimers. Source: Invesco

Figure 9 – Global GDP and export volumes in USD (% yoy)



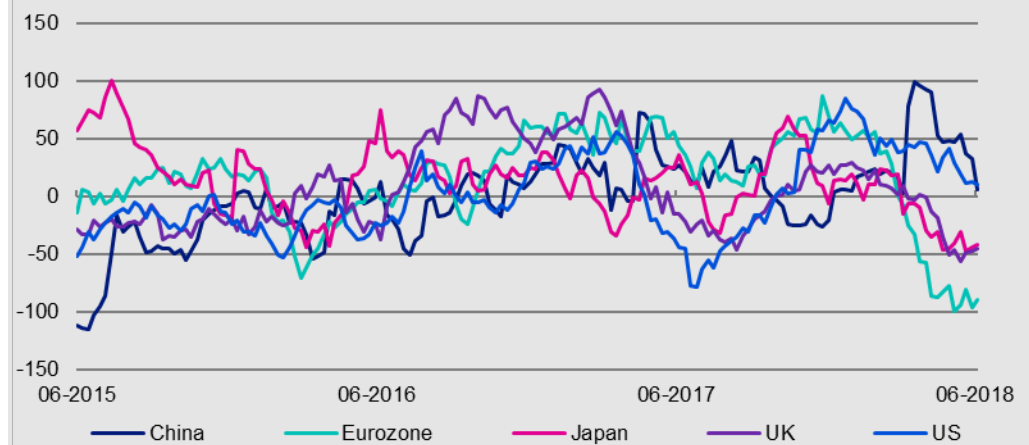
2001 Q1 to 2018 Q1. Source: IMF, Netherlands Bureau for Economic Policy Analysis, Datastream and Invesco

Disappointing data flows are hopefully temporary

It is hard to escape the conclusion that economic data flows have been disappointing in a range of countries so far during 2018. **Figure 10** shows that it is not just the eurozone -- the UK and Japan have also had their fair share of disappointments. Also, the positive surprises that were common in China and the US are now less so.

We suspect the erratic nature of Chinese surprises was related to the timing of the lunar new year, so would not read too much into the subsequent decline there. However, in the case of the US, it is quite common for the second quarter of the year to provide the weakest surprises, or biggest negative shocks, something we wrote about last time (see [More high-yield, less equity](#)). Hence, we are not surprised to see US surprises fade and, if history repeats itself, we may even see the US index turn negative over coming months (bear in mind that these surprise indices are rolling three-month averages and are therefore something of a lagging indicator).

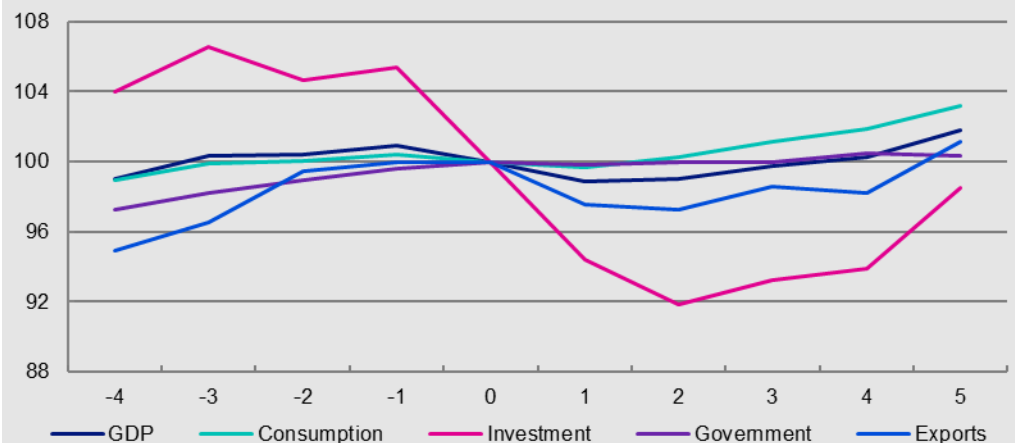
Figure 10 – Citi Economic Surprise Indices from June 2015 to June 2018



Source: Citigroup, Datastream and Invesco

The recession canaries are not yet singing

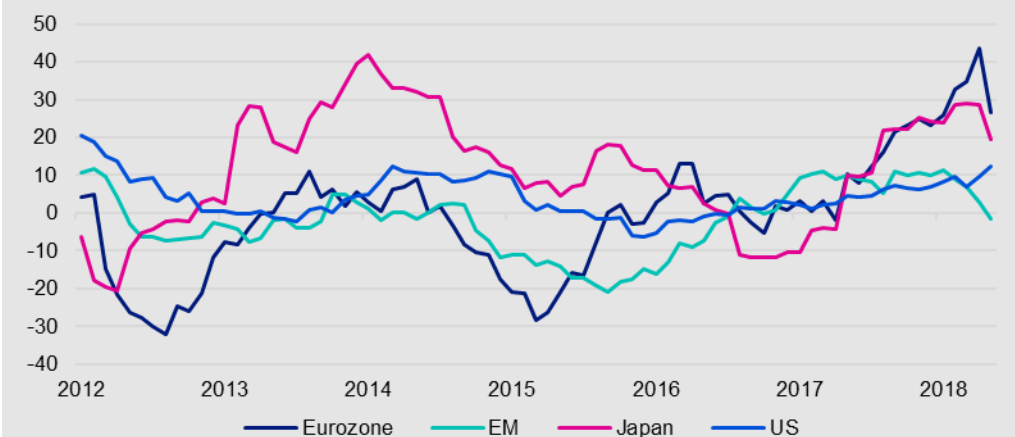
However, we do not believe that would be indicative of a coming US recession. Why? Largely because, apart from the length of this cycle, we do not see the signs we would expect to see before a recession. First, we do not believe the Fed is yet restrictive and therefore do not feel that monetary policy has become a negative factor (Fed rates remain well below nominal GDP growth); second, wages may have accelerated but only gently and not enough to depress profits (in our opinion) and, finally, this cycle has not seen a lot of capital investment and not enough to compete away profits, again in our opinion.

Figure 11 – Components of US GDP before and after the onset of recessions*

*Note: components of GDP (in constant prices) are shown in the four quarters before and five quarters after that in which recession starts (all components are indexed to 100 in that quarter). The chart shows the average path of each component across the eight recessions since 1950. Source: Datastream and Invesco

Investment and profits play a key role in economic downturns

We have previously written on this topic (see [The anatomy of a US recession](#)) and **Figure 11** gives a hint as to why it is important to focus on profits -- investment seems to play a key role in the onset of recession in the US. Indeed, in that same document we identified three indicators that are almost always present either before or during a US recession: falling profits, falling investment and a falling equity market. President Trump's tax cuts could help to prolong the profit and investment cycles and, for that, we should be thankful (see **Figure 12**).

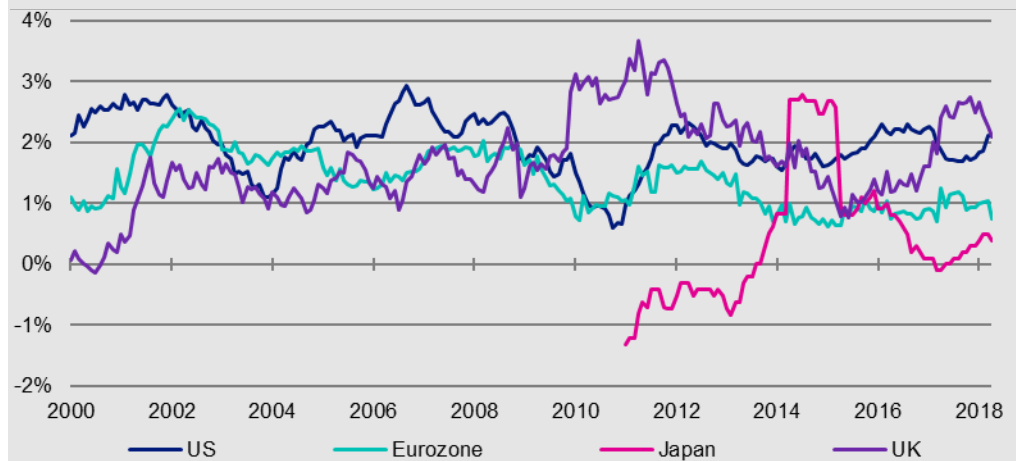
Figure 12 – Earnings per share growth (% yoy)

Based on Datastream indices. As of May 2018. Source: Datastream and Invesco

Inflation remains under control which should keep central banks on the easy side

While the global economy has accelerated over recent years, there is still little sign that inflation is following suit. Admittedly, headline measures of inflation have once again received a boost from commodity prices but core inflation remains stable in most large economies (see **Figure 13**). We wrote earlier in the year about why the US Phillips curve doesn't seem to be working (see *The Phillips curve, be careful what you wish for*, February 11, 2018). We concluded it was a mix of: mismeasurement of unemployment; demographic change and movement of the Phillips curve itself (due to changes in inflation expectations). To the extent it was the latter, we suggested there may be a reversal of the process, perhaps leading to a surprising acceleration of wages. We are still waiting but hold on to the belief that core inflation will eventually rise.

Figure 13 – Core CPI by region (% yoy)



From January 2000 to April 2018. Source: Datastream and Invesco

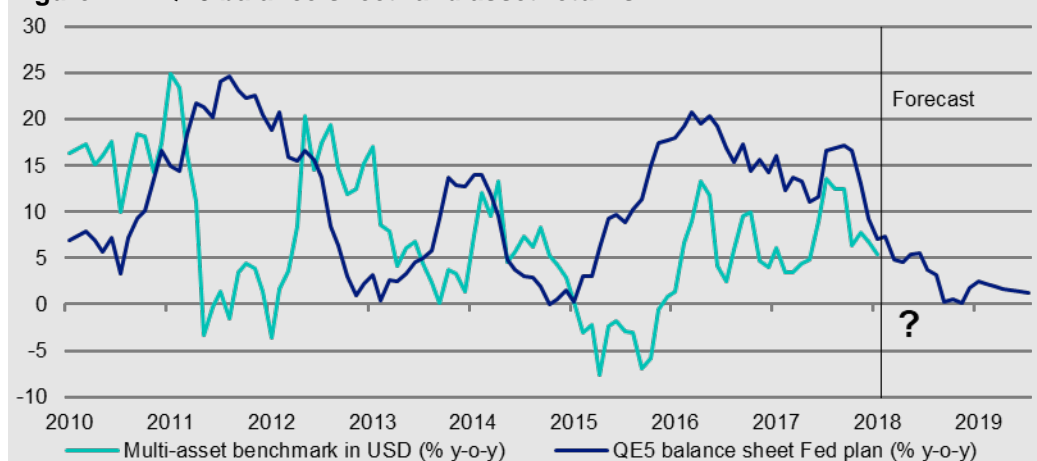
But the lack of central bank asset purchases may limit portfolio returns

However, it is not all good news from central banks. **Figure 14** shows how we expect the aggregate balance sheet of the QE5 to develop through to the end of 2019 (the QE5 is the group of central banks that have used quantitative easing in a meaningful way: The Fed, ECB, BOE, SNB and BOJ). Unfortunately, the combination of Fed balance sheet reductions and anticipated tapering by the ECB should bring the aggregate balance sheet growth close to zero (it would be negative were it not for the assumption that the BOJ continues buying assets in line with current plans).

Not surprisingly, in recent years there has been a reasonable correlation between the growth of that aggregate balance sheet and the returns provided by a global multi-asset portfolio (represented by our Neutral allocation, as shown in **Figure 3**). Based on that historical relationship, and given our assumptions about the behaviour of these central banks, we fear that portfolio returns will be limited over the coming 12-18 months.

The question then becomes which assets will offer the best returns and, as will be revealed over the coming sections, we continue to believe that equity-like assets will be more rewarding than fixed income counterparts over the coming years.

Figure 14 – QE5 balance sheet* and asset returns



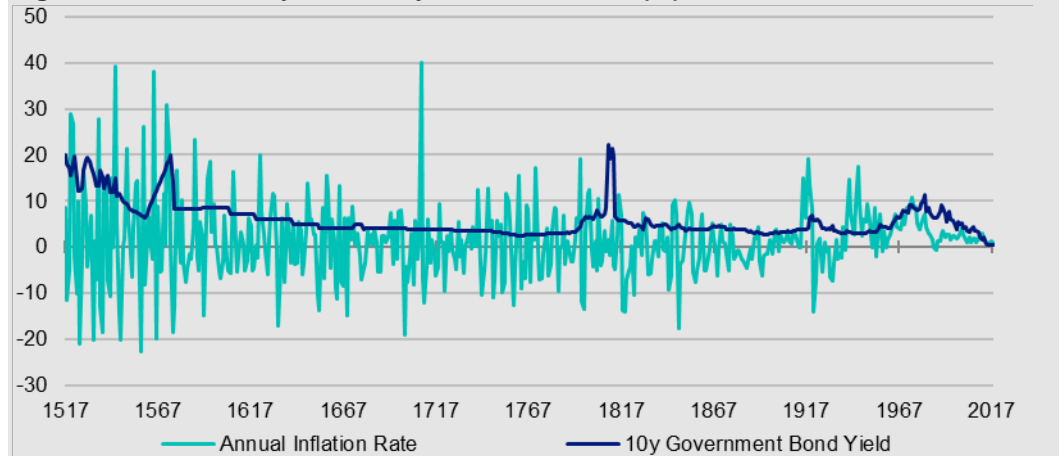
* Aggregate balance sheet of Fed, ECB, BOE, BOJ and SNB, in USD and rebased to 100 in June 2006. The forecast considers the plans of the Fed and ECB (assuming ECB makes no further asset purchases after December 2018). It is also assumed: SNB tapers gradually during 2018; BOE makes no further purchases and that BOJ continues buying according to its current plan. The multi-asset benchmark is a fixed weighted index based on our Neutral asset allocation (see Figure 3). From January 2010 to December 2019. Past performance is no guarantee of future results. Source: Datastream and Invesco

Bond yields are up but remain low

Valuations remain a limiting factor

As outlined earlier, fixed income yields have risen but remain low (depressed by the loose policies of several central banks since the financial crisis). For instance, **Figure 15** shows that Dutch government yields have never been this low in the last 500 years, a period during which deflation and economic disaster were common.

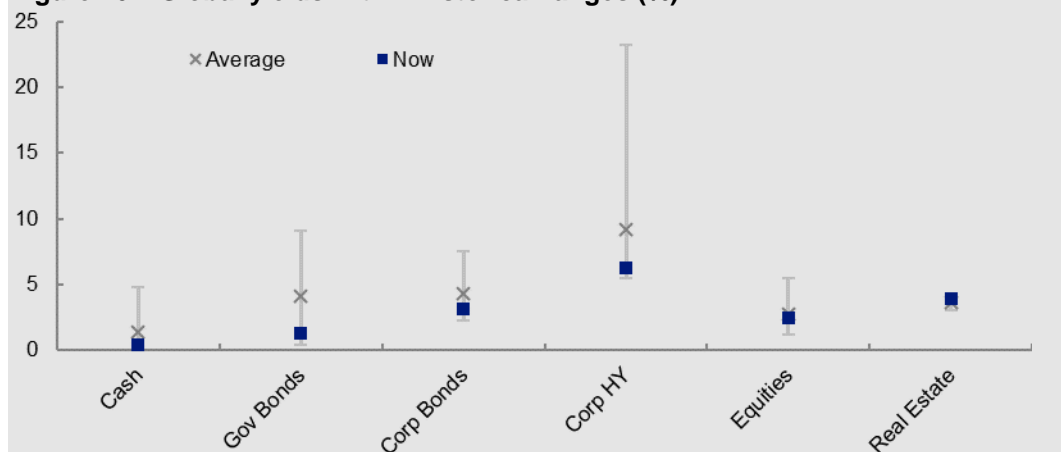
Figure 15 – Dutch 10-year bond yields since 1517 (%)



Annual data. 2018 data is as of 31 May 2018. Past performance is no guarantee of future results. Source: Global Financial Data, Datastream and Invesco

Figure 16 shows that yields across fixed income groups remain close to historical lows (see **Appendix 2** for regional detail). This naturally limits the scope for returns, which we expect to be close to zero over the next year (see the full set of projections in **Appendix 4**). The yields on equities and real estate are better than those available on local fixed income alternatives in many places and are relatively close to historical norms. As we believe that starting valuations are an important determinant of medium term investment outcomes, this yield configuration alone would lead us to a preference for equities and real estate, assuming we are not about to enter recession.

Figure 16 – Global yields within historical ranges (%)



Start dates are: cash 1/1/01; govt bonds 31/12/85; corp bonds 31/12/96; corp HY 31/12/97; equities 1/1/73; REITs 18/2/05. See appendices for definitions, methodology and disclaimers. Past performance is no guarantee of future results. As of 31 May 2018. Source: Datastream and Invesco

What has gone wrong with IG credit and EM debt? Do we need to cut positions?

Though we have tended to Underweight fixed income assets over recent years, we have had a long-term commitment to EM debt and more recently to IG credit. Both have been disappointing this year (see **Appendix 3**) and in the following sections we examine whether anything has happened to change our opinions.

Credit has performed poorly this year

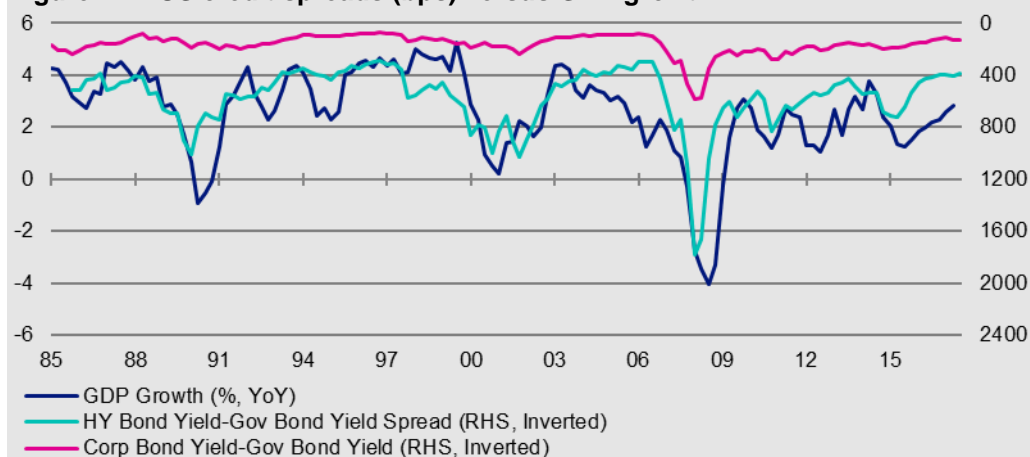
Is the credit cycle turning?

IG has been the worst performing global asset class this year, with HY next in line (see **Appendix 3**). Is the problem one of rising benchmark yields, widening spreads or increased downgrade and default activity?

Spreads haven't moved a great deal.

As outlined earlier, the rise in credit yields has stemmed partly from higher benchmark government yields and partly from widening spreads. However, **Figure 17** suggests US credit spreads remain close to cyclical trends.

Figure 17 – US credit spreads (bps) versus GDP growth



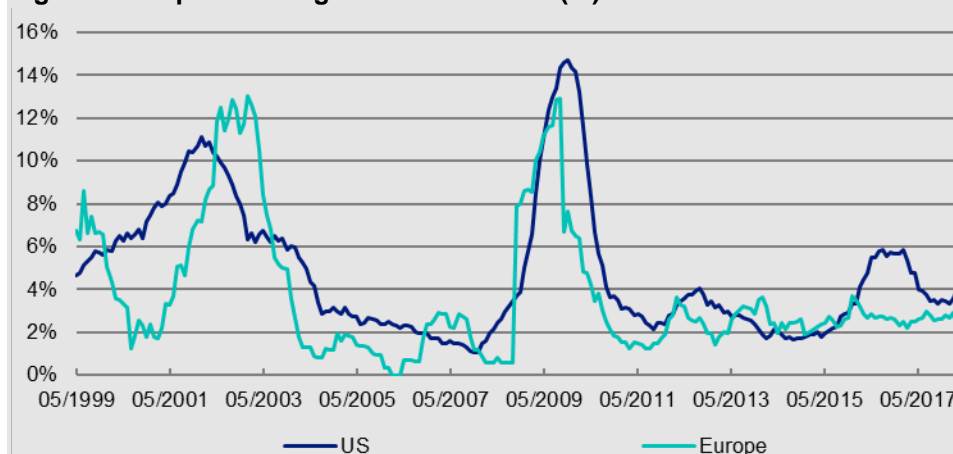
Based on BofAML US High Yield and US Investment Grade Indices. As of 31 May 2018. Past performance is no guarantee of future returns. Source: BofAML, Datastream and Invesco

It is both good news and bad news that spreads haven't widened to a significant degree: good because it suggests the cycle is still intact; bad because the cyclical widening lies ahead of us. In our projections we assume that IG and HY spreads will broadly return to historical norms over the next five years, with a move in that direction over the next 12 months (see our assumptions in **Appendix 5**).

Default & downgrade rates seem unremarkable

Figure 18 suggests there was a slight uptick in US defaults during Q1 (to 3.9%, which Moody's blames partly on record retail sector defaults) and a slight decline in Europe (to 2.4%). Likewise, IG downgrade activity seems unremarkable: for example, Moody's made 47 downgrades in the US during Q1, exactly in line with the Q1 average of the previous five years. We don't think credit markets are about to collapse but believe that rising government yields, widening spreads and normalising default rates will limit returns over the next five years (see the projections in **Appendix 4**).

Figure 18 – Speculative grade default rates (%)



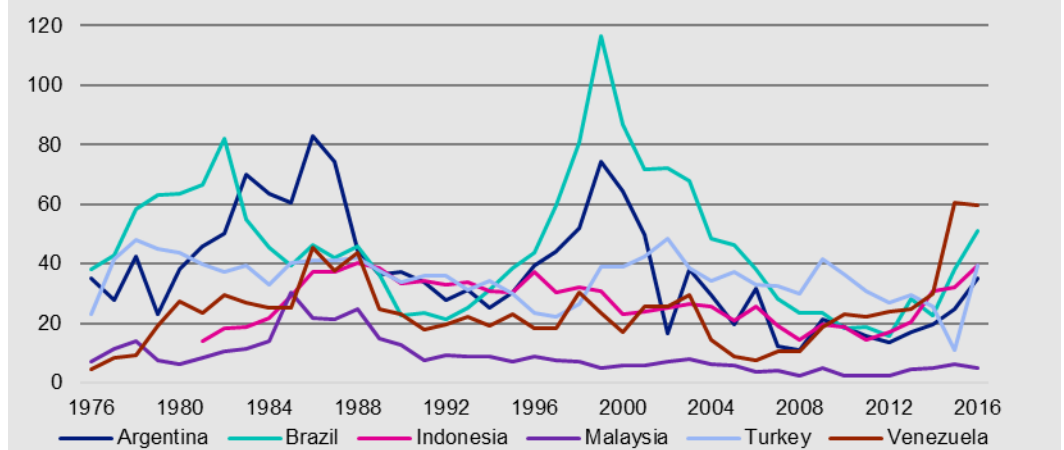
Trailing 12-month issuer weighted rates from Moody's. From 31/5/99 to 30/4/18. Past performance is no guarantee of future returns. Source: Moody's and Invesco

We expected short term weakness in EM currencies but not this much

Emerging markets: down but not out

We have been positive on EM assets for some time, especially debt (see [Global debt still on the rise: we favour EM](#)) but recent FX weakness is a concern (see [Appendix 3](#)).

Figure 19 – External debt servicing as % of exports (1976-2016)



Source: World Bank, Datastream and Invesco

This was not totally unexpected. In the last Big Picture document, we wrote: “we do expect some short-term weakness in EM currencies as the dollar recovers some of the ground recently lost against all currencies”. However, some EM currencies have been particularly weak (the currencies of Russia, Brazil, Turkey and Argentina lost 10% or more of their value versus USD over the last three months). More worrying is the common perception that emerging markets are suffering a collective problem because of Fed interest rate hikes and rising US yields, the idea being that debt service costs have become too high (see [Figure 19](#) for some of the more extreme cases, many of which have recently had currency or other financial market problems).

We do not fear a generalised EM crisis

However, we doubt recent developments suggest a generalised EM crisis. First, some problems were not related to economic stress (Russia, for example, which suffered after the imposition of sanctions); second, we believe there is no general EM debt problem and financial markets have quickly identified the vulnerabilities that exist; third, history suggests Fed rate hikes have no systematic impact on EM currencies (see [Figure 20](#)).

Figure 20 – Real EM FX and commodities (indices rebased to 100 as of June 1976)



Emerging currency indices are trade weighted averages of national currencies versus US dollar (trade weights are based on total trade flows for each country). There are 18 currencies in the EM basket – those of China, South Korea, Mexico, India, Russia, Singapore, Malaysia, Brazil, Thailand, Poland, Turkey, Indonesia, Czech Republic, South Africa, Hungary, Nigeria, Chile and Philippines (ordered by size of trade flows). Real adjustments use national CPI indices versus that of the US. “Real Commodity Prices” is the GSCI Spot Index in USD deflated by US CPI. All indices rebased to 100 as of June 1976. Source: China National Bureau of Statistics, IMF, OECD, Oxford Economics, GSCI, Bloomberg L.P., Datastream and Invesco.

But we suspect FX weakness will limit EM asset class returns over the medium term (as we always have done)

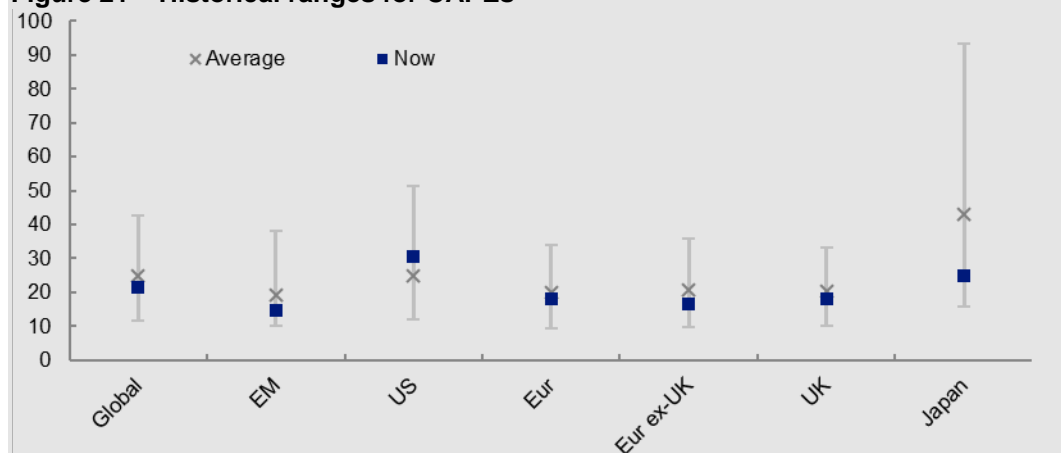
Hence, with our EM currency index now in the middle of its historical range we see no valuation argument for believing there will be a big currency move in one direction or other. Nevertheless, we would not be surprised to see further downside over our forecast horizon (5% over one year and 10% over five years), due partly to a weakening of commodity prices (see later sections) and the effect of higher inflation. Those currency forecasts limit our EM asset projected returns but still leave them respectable in USD terms (see **Appendix 4**).

Equities are reasonable value, apart from the US market

Equity valuations: the US sticks out like a sore thumb

As was shown in **Figure 12**, earnings per share growth is healthy in most regions (though recently fading in EM) and this is feeding through to dividends, which underpins our belief that valuations are no obstacle to global equity markets (see **Figures 16** and **21**). The full set of our assumptions is shown in **Appendices 4** and **5**.

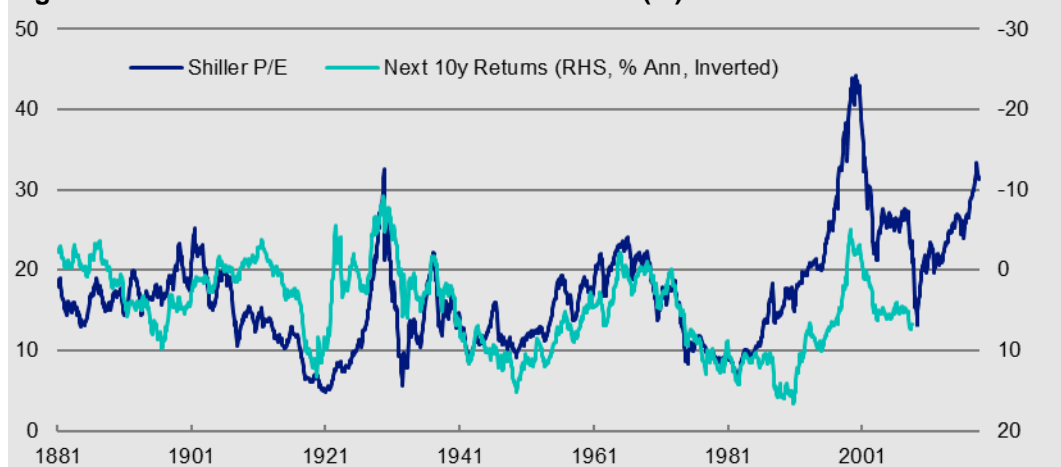
Figure 21 – Historical ranges for CAPEs



Note: CAPE = Cyclically Adjusted Price/Earnings and uses a 10-year moving average of earnings. From 1983 (except for EM from 2005). As of 31 May 2018. Source: Datastream and Invesco

The only equity valuation problem that we identify is the US (bloated by Fed QE activity, in our opinion). **Figure 22** shows the extent of the problem – the Shiller PE is now around 32, a level historically associated with low or negative returns over the following five to ten years. By the way, if we roll forward a few years to remove the financial crisis period from the denominator, the Shiller PE declines a bit but remains close to 30.

Figure 22 – S&P 500 Shiller PE and future returns (%)

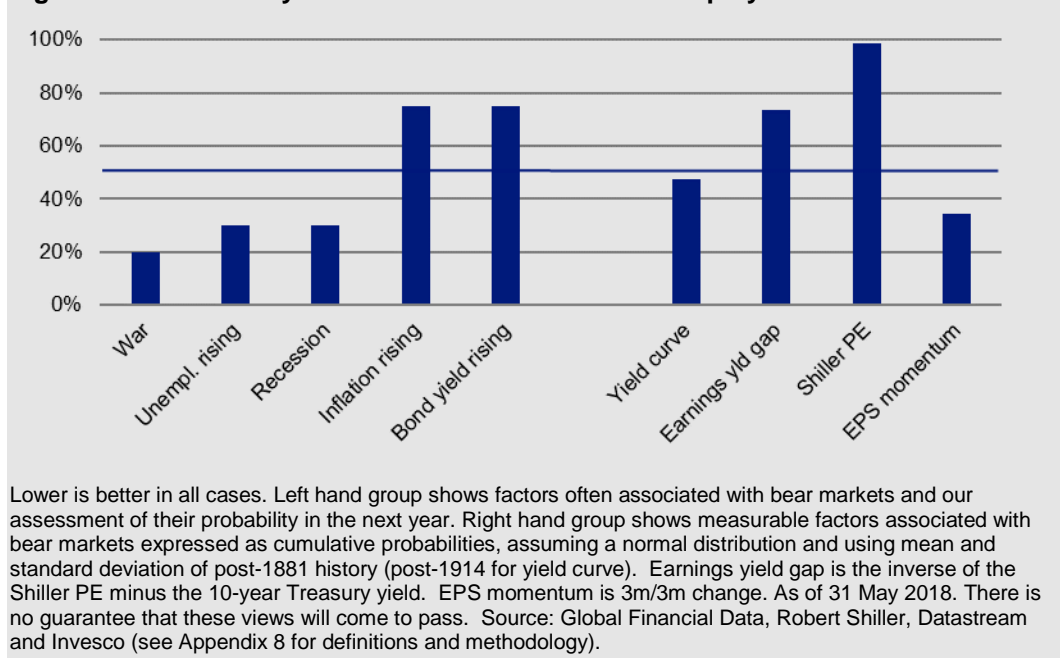


From January 1881 to May 2018. Past performance is no guide to future returns. See appendices for definitions and disclaimers. Source: Robert Shiller and Invesco

But extended valuations are neither necessary nor sufficient to provoke a bear market

Though we believe that rich valuations limit the potential for long term returns, we also believe they are neither necessary nor sufficient to provoke an immediate bear market (see our analysis in *Asset allocation in pictures* published in November 2017). We find that US equity bear markets are associated with a range of factors and that elevated valuations are not that high on the list.

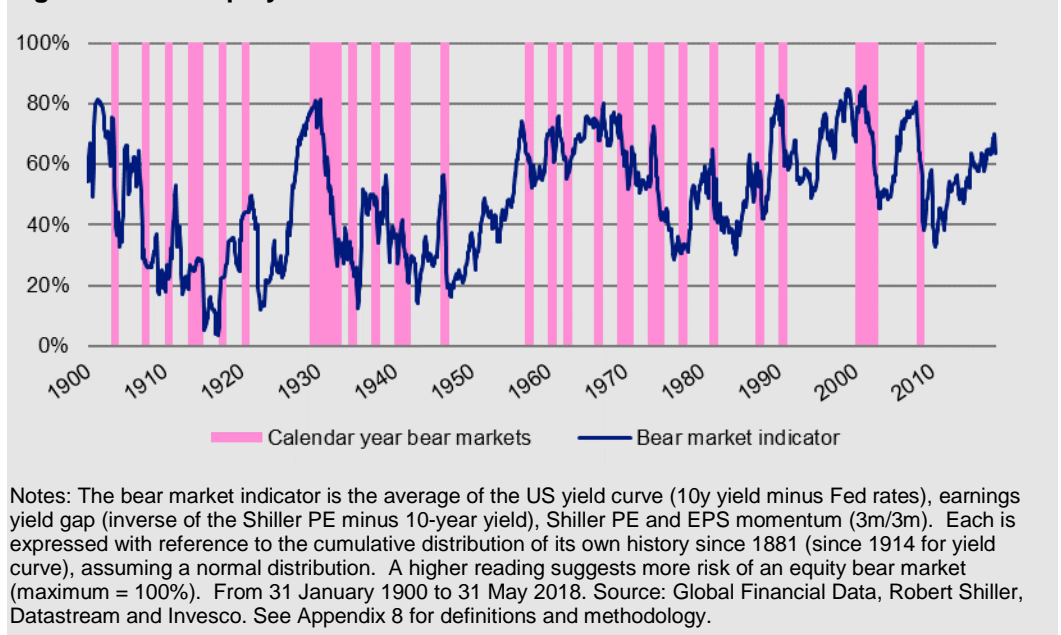
Figure 23 – Probability of factors associated with US equity bear markets



We think inflation and rising bond yields will be a risk but not yet

Our assessment of the risks is shown in **Figure 23** (the left-hand portion shows our subjective probabilities over the next 12 months, while the right-hand part of the chart shows objective market based measures). Though we view the risk of war as more elevated than normal because of President Trump’s belligerence (normally we would put it at 10%), we view inflation and rising bond yields as more likely to be factors. However, we don’t think bond yields have yet reached a level that poses a true risk (historically, that level is more like 5% than 3% for 10-year yields – see *What’s in a correlation*, published in February 2018).

Figure 24 – US equity bear market indicator since 1900



Our bear market indicator is at 63%: the wrong side of normal but not a disaster

Figure 24 shows our US equity bear market indicator, which is a simple average of the four indicators on the right-hand side of **Figure 23**. As can be seen from **Figure 23**, the Shiller PE and the related earnings yield gap are higher than the 50% historical average (the Shiller PE is at the 99th percentile of its historical range, assuming it is normally distributed). However, the slope of the yield curve is still a touch steeper than usual and EPS momentum is pretty good. Taken together, they add up to a bear market indicator of 63%, which is the wrong side of normal (50%) but we would not yet categorise it as dangerously so (a reading of 75%-80% would have us worried).

US equities have outperformed other regional counterparts so far this year (see **Appendix 3**) but other regions are more attractive in our opinion. First, their valuations are not as stretched (see **Figure 21**). Second, the economic cycles in most other regions are not as advanced as in the US, which gives the hope of better upside in earnings and dividends (though US corporates are receiving a boost this year from the cut in corporate taxes -- see **Figure 12**). We project a five-year annualised return of 3.5% on US equities (see **Appendix 4**), versus near double-digit returns in other regions.

Real estate is wrongly labelled as a bond proxy, in our opinion, and we expect better returns than on other asset classes

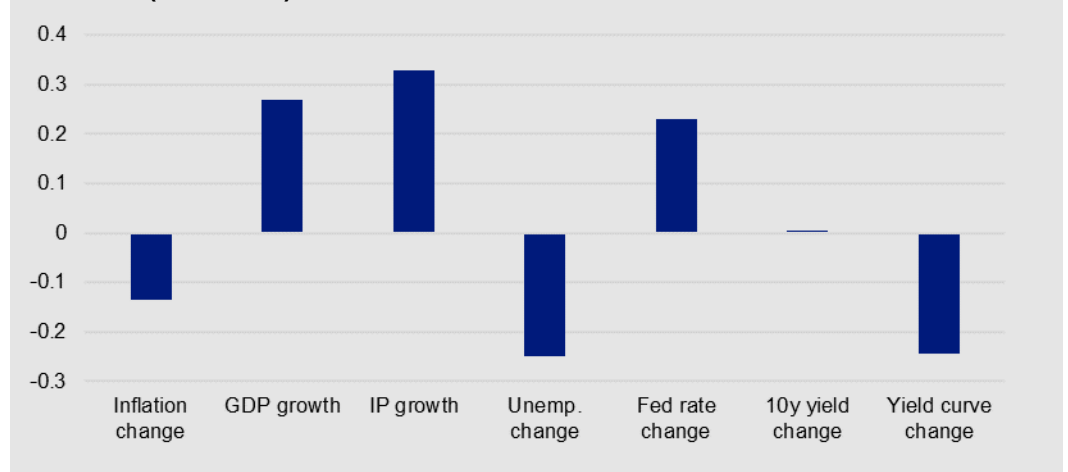
Real estate is not a bond proxy

The real estate asset class made a bad start to the year but has done very well in the last three months (see **Figures 4** and **5**). Many investors believe it is a bond proxy and therefore will suffer as bond yields rise.

That seemed to be the case at the start of the year but a longer-term perspective suggests otherwise. **Figure 25** shows the correlation between the real return on US REITs and several cyclical indicators over the last 30 years. Not surprisingly, REITs seem to do better when the economy is growing, though not when inflation is on the rise. Interestingly, they also seem to perform well when the Fed is raising rates and when the yield curve flattens (as is happening now). However, there is no correlation with 10-year treasury yields.

In many ways, real estate is like the equity asset class: its performance comes from a mix of yield and growth and the underlying assets do better when the economy is expanding. A global REIT yield of 3.9% is attractive compared to fixed income alternatives, especially when growth is added. When the US yield was 4.7% at the last time of writing, we thought it was too good an opportunity to miss. The subsequent 10% total return has diminished that yield to 4.3% but we still believe the US real estate asset class can generate a double digit total return over the next 12-months (and not far from that on an annualised basis over the next five years – see **Appendix 4**).

Figure 25 – Correlation between US CPI adjusted REIT returns and cyclical indicators (1987-2017)



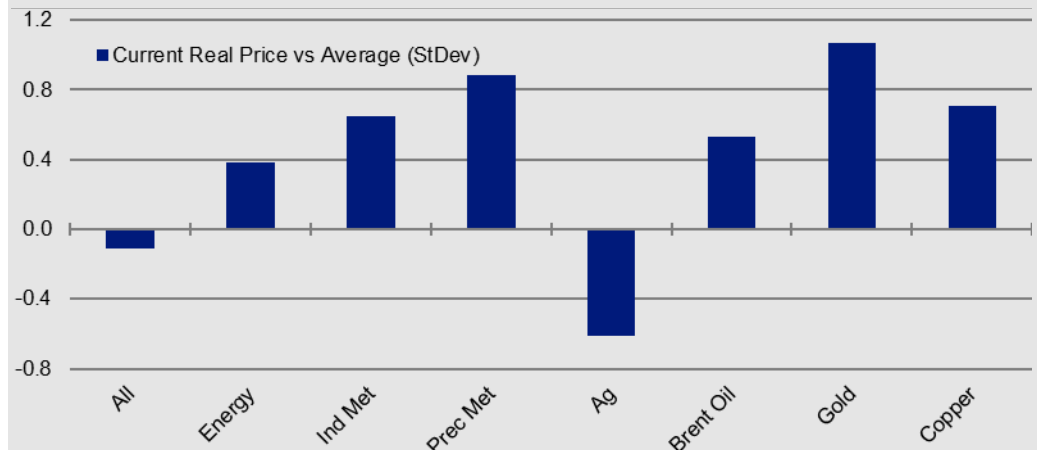
Based on calendar year data from 1987 to 2017 inclusive, using GPR General US index (total returns in US dollars). See appendices for definitions, methodology and disclaimers. Source: Bloomberg, Datastream, Federal Reserve Bank of St. Louis, Global Financial Data, GPR, Robert Shiller and Invesco.

Commodities may look cheap compared to US equities but we think they are expensive in absolute terms

Commodities are expensive but continue to deliver

Commodities were once again the strongest performing asset class over the last three months, when all returns are expressed in USD (see **Appendix 3**). The energy segment was particularly strong. Hence, the premium to historical norms (in real terms) has further widened. Agriculture is the only group that remains below those historical norms (see **Figure 26**) and metals appear to be very expensive.

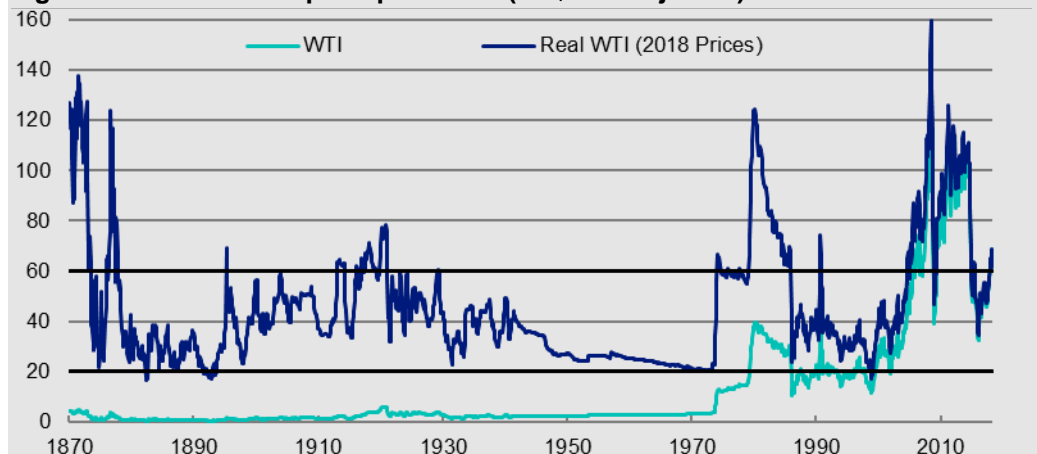
Figure 26 – Commodity prices deflated by US CPI versus historical norms



Abbreviations: "Ind Met" is industrial metals, "Prec Met" is precious metals and "Ag" is agriculture. Historical ranges start on: All and Ag 31/12/69; Energy 31/12/82; Ind Met 3/1/77; Prec Met 2/1/73; Brent 1/6/87; gold 1/1/74; copper 1/1/74. As of 31 May 2018. See appendices for definitions, methodology and disclaimers. Source: GSCI, Datastream, Invesco

The history of oil suggests a period of extreme weakness usually occurs before a commodity bear market ends. **Figure 27** shows that US oil tends to bottom at around \$20 (in today's prices). Global economic strength could be a support for now but we doubt oil, gold or copper have bottomed.

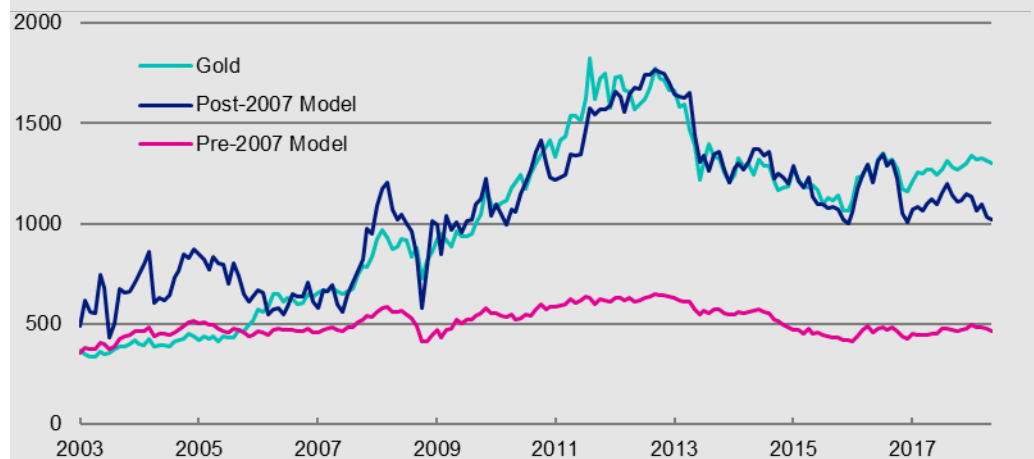
Figure 27 – Real US oil price per barrel (US\$ CPI adjusted)



Source: Global Financial Data, Datastream, Invesco

Though gold has weakened, our model suggests it should have fallen even further (see **Figure 28**). Given current levels of treasury yields and the dollar, the model suggests gold should be just above \$1000. Perhaps the concerns that drove gold to a premium to our model when President Trump was elected have increased. Alternatively, gold may now be acting differently. For instance, our model suggests that since 2007, the coefficient on inflation expectations has been negative (gold falls when inflation expectations rise). Perhaps, with growing concerns about inflation, that coefficient has switched back to being positive (as it was prior to 2007), so that gold now rises with expected inflation. But beware: our pre-2007 model would now put gold below \$500.

Figure 28 – Gold versus model predicted value (USD per ounce)



Gold is modelled as a function of real 10-year US Treasury yield, 10-year US inflation breakeven and trade-weighted USD. There is no guarantee that these views will come to pass.
Source: Datastream and Invesco

We project returns over one and five-year horizons: we think real estate and equities will deliver the best returns over both horizons

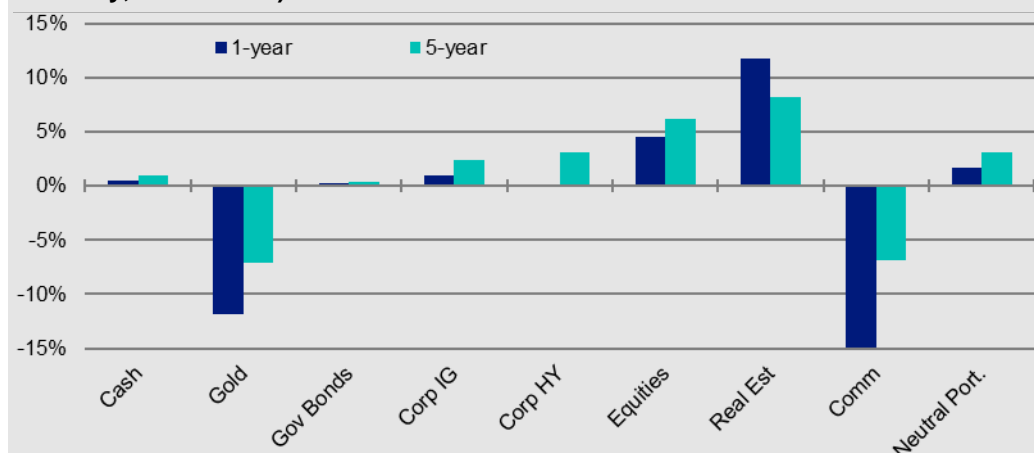
Our expected returns favour “equity-like” assets

Expected returns can be impacted by changes in asset prices and/or changes in assumptions. As shown in **Figure 7**, there has been a rise in the yield on many assets which, other things equal, could push us to be more optimistic about future returns.

Figure 29 shows a summary of our projected returns by global asset class. The main changes to our assumptions since we last published reflect the fact that three months have since passed; we assume the Fed will be that bit further through its tightening cycle at the 12-month horizon (in fact we assume Fed rates will then be 2.50%, which is where we imagine they will be on average over the coming cycles – see **Figure 30** for our market forecasts). With the passage of time, and the feeling that some of the anticipated EPS and DPS growth in the eurozone and Japan is now behind us, we have scaled back our 12-month equity and real estate growth estimates.

A short rationale for the five-year projections is that central bank rates and bond yields are expected to rise; IG and HY spreads are expected to normalise from below-average levels; equity and real estate yields are expected to be broadly stable but income and growth (below historical norms) produce mid-single-digit returns. Commodity prices are expected to normalise in real terms. The full set of assumptions is shown in **Appendices 4 & 5**.

Figure 29 – Expected total returns on global assets and neutral portfolio (local currency, annualised)



There is no guarantee that these views will come to pass. See appendices for definitions, methodology and disclaimers. Source: Invesco

Elections could see populist presidents in both Brazil and Mexico but of very different types

Risk factors: politics and trade wars

In the last edition of The Big Picture, we wrote extensively about politics and the risk of a trade war. Unfortunately, the market calm that we noted after the Italian elections did not last. The formation of a populist coalition has spooked financial markets, especially in Italy. There has been a lot of focus on the anti-EU and fiscal profligacy parts of their programme but, as we noted in [The good, the bad and the ugly](#), the full policy document bears a striking resemblance to the policies of President Trump. Nevertheless, the market reception has been very different, despite Italy being in better shape to benefit from a fiscal boost, in our opinion. Also, we believe that a lot of what they say about EU reform makes sense.

The big political set pieces of the second half of the year will be in the Americas, with elections in Mexico (July 1), Brazil (October 7 and 28) and the US (November 6). According to recent opinion polls, Mexico is about to elect a left-wing populist president: Andres Manuel Lopez Obrador (AMLO) will achieve more than 50% of the vote based on three surveys conducted by Reforma, Parametria and Varela y Asociados. If he does become president, it is easy to imagine a deterioration in the relationship between the US and Mexico, which could spell the end of the NAFTA agreement. Along with trade disputes between the US and China and the imposition of steel and aluminium tariffs by the US, this could pose a serious threat to global trade and the global economy. This is currently our biggest fear – a sharp slowdown in the global economy could provoke an equity bear market, in our opinion.

Recent opinion polls in Brazil point to the possibility of a right-wing populist president in the form of Jair Bolsonaro (Social Liberal Party). Since Lula was banned from the election, Bolsonaro has become the front runner for the first round of elections and looks as though he would defeat all-comers in the second-round (he was lagging Marina Silva in a second-round run-off but no longer). A reading of his views puts him pretty much in the same camp as President Trump, whether on economic, social, moral or immigration issues. Whether that would be good or bad for Brazil is to be seen.

Figure 30 – Market forecasts

		Current (31/05/18)	Forecast	
			1-year	5-year
Central Bank Rates	US	1.75	2.50	2.50
	Eurozone	-0.40	-0.25	1.00
	China	4.35	4.00	4.00
	Japan	-0.10	-0.10	0.50
	UK	0.50	0.50	1.50
10yr Bond Yields	US	2.86	3.25	3.50
	Eurozone	0.34	0.60	2.25
	China	3.65	3.75	4.00
	Japan	0.04	0.05	1.00
	UK	1.28	1.25	2.50
Exchange Rates/US\$	EUR/USD	1.17	1.20	1.20
	USD/CNY	6.41	6.70	7.00
	USD/JPY	108.82	100.00	85.00
	GBP/USD	1.33	1.25	1.40
	USD/CHF	0.99	1.00	1.00
Equity Indices	S&P 500	2705	2625	2900
	Euro Stoxx 50	3407	3750	4750
	FTSE A50	12343	13250	17500
	Nikkei 225	22202	25250	30000
	FTSE 100	7678	7625	9500
Commodities (US\$)	Brent/barrel	76	55	40
	Gold/ounce	1304	1150	900
	Copper/tonne	6845	6500	5000

Notes: There is no guarantee that these views will come to pass. See Appendices for definitions, methodology and disclaimers. Source: Datastream and Invesco

US mid-term elections could go either way but Democrats must fancy their chances of diluting the power of the Republicans

Finally, US mid-term elections look to be finely balanced. Remembering that Republicans currently hold 51 out of 100 seats in the Senate and 235 out of 435 seats in the House of Representatives (versus 193 for the Democrats), the traditional swing away from the party of the incumbent president would be enough to produce a Democrat Congress in opposition to President Trump.

This is even more so if we consider that President Trump currently has the lowest approval rating of any President at this stage of the election cycle since June 1954 (Gallup was not conducting the survey prior to that). At 41% he is doing less well than even Jimmy Carter (43% in June 1978), Bill Clinton (46% in June 1994) and Barack Obama (46% in June 2010).

Also, nationwide opinion polls suggest that Democrats continue to enjoy a comfortable lead over Republicans. According to Real Clear Politics, an average of recent opinion polls puts the gap at 7.6% (46.0% versus 38.4%), which though down on the 13% gap at the end of 2017 (49.1% vs 36.1%) is much better than the actual House of Representatives result in 2016, when the popular vote gave 48.0% to the Democrats and 49.1% to the Republicans.

However, things are not that simple: first, even though all seats in the House of Representatives are up for grabs, there will be a change in district boundaries that is generally reckoned to favour Republicans (they oversaw the redistricting process and Democrat supporters are concentrated in a limited number of urban areas) and, second, not all Senate seats are up for grabs and, of those that are, 25 are currently held by Democrats versus only 8 held by Republicans (so Democrats have more to lose).

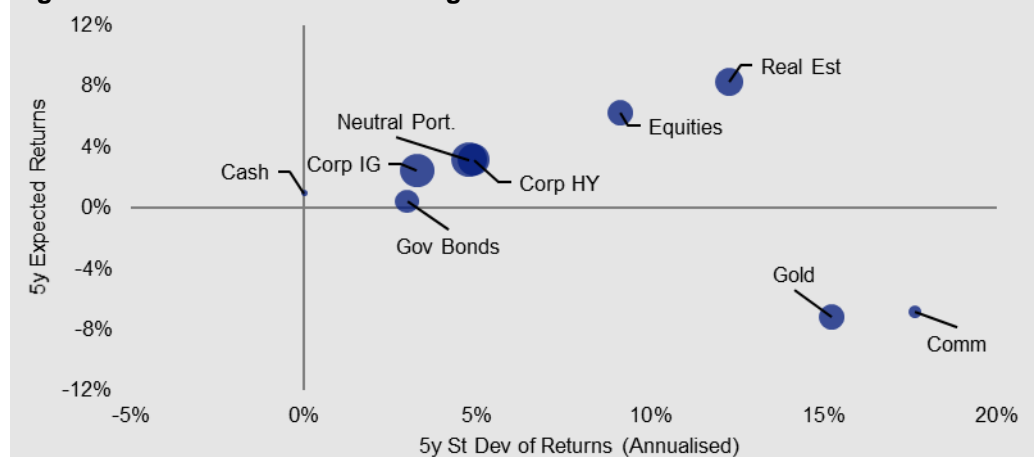
In truth, virtually any outcome is possible but we suspect President Trump will face a more hostile Congress after the elections. This could make it more difficult to implement new policies but that may not be all bad.

The optimiser likes the returns that we expect on real estate but is also attracted to cash despite the low returns that we project (it also has low volatility and low correlation to other assets)

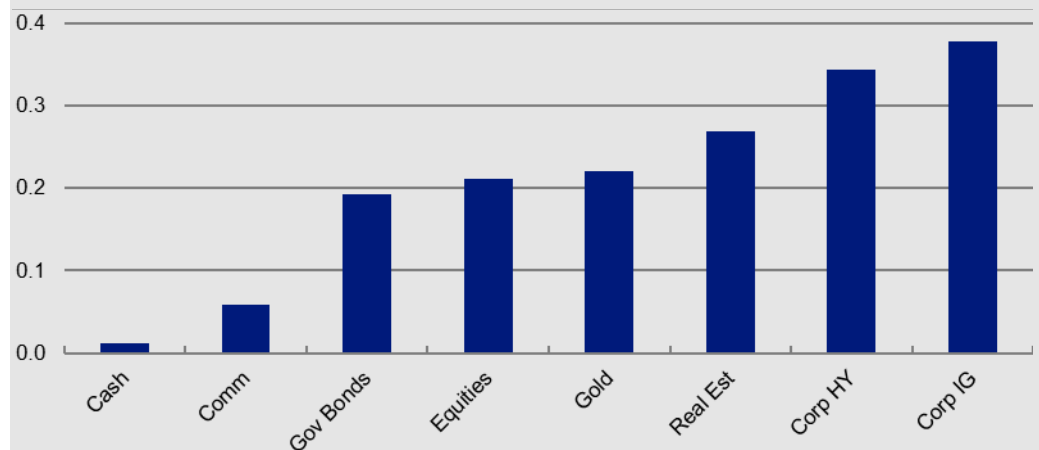
Optimisation favours cash and real estate

Running an optimisation based on the expected returns shown in **Appendix 4** allows us to balance risk and reward (we optimise for global asset class weights and then allocate across the regions within each asset class). The optimiser is a useful tool but judgement is the final ingredient. **Figure 31** compares our projected five-year local currency returns with historical volatilities. For the most part, extra volatility is associated with higher expected returns (the commodity outlier is due to our bearish long-term price forecasts).

Figure 31 – Return versus risk for global assets



Based on local currency returns. Size of bubbles is in proportion to average pairwise correlation with other assets. Cash is an equally weighted mix of USD, EUR, GBP and JPY. Neutral portfolio weights shown in Figure 2. There is no guarantee that these views will come to pass. See Appendices for definitions, methodology and disclaimers. Source: BAML, MSCI, GSCI, FTSE, Datastream and Invesco

Figure 32 – Average pairwise correlations between global asset classes

Notes: Correlations calculated using monthly local currency total return in the last five years for global asset classes. We take an average of all pairs across each asset class. Source: BAML, MSCI, GSCI, FTSE, Datastream and Invesco

Correlations also play a role: the optimiser will favour those assets that offer the most diversification (cash and commodities according to **Figure 32**). The optimised allocations are shown in **Figure 33** (based on local currency returns). Some results are clear: cash and real estate positions are maximised and commodity positions (including gold) minimised, no matter whether we use one-year or five-year returns or whether we maximise the Sharpe Ratio or maximise returns (subject to volatility being no higher than for the Neutral portfolio). Those conclusions are not new for our process.

The optimiser suggests a balanced allocation across “equity-like” and other assets

On the other hand, the outcomes are contradictory for fixed income and equities. Both IG and HY credit are accorded maximum allocations based on our five years projections but not if we use the one-year returns (**Figure 29** shows that we expect better credit returns over five years, as rising rates and widening spreads are expected to damage one-year returns). Sovereign debt, on the other hand, is less penalised if we use one-year projections (returns are expected to be close to zero over both horizons). The optimal allocations for the equity asset class are, overall, below neutral (the five-year weightings are lower because of how the outlook for other assets changes as we switch horizons).

Given that we have written about the importance of lengthening time horizons and not getting caught up in too many short-term decisions (see [All things come to he who waits](#)), we focus on the five-year results when there are such differences.

Figure 33 – Optimised allocations for global assets (using local currency returns)

	Neutral Portfolio	Policy Range	Using 1y Return		Using 5y Return		Model Asset Allocation*
			Sharpe Ratio	Max Return	Sharpe Ratio	Max Return	
Cash & Gold	5%	0-10%	10%	10%	10%	10%	10%
Cash	2.5%	0-10%	10%	10%	10%	10%	10%
Gold	2.5%	0-10%	0%	0%	0%	0%	0%
Government Bonds	30%	10-50%	47%	24%	25%	13%	↑ 21%
Corporate IG	10%	0-20%	3%	14%	20%	20%	18%
Corporate HY	5%	0-10%	0%	0%	10%	10%	5%
Equities	45%	20-70%	34%	46%	29%	41%	↓ 40%
Real Estate	3%	0-6%	6%	6%	6%	6%	6%
Commodities	2%	0-4%	0%	0%	0%	0%	0%

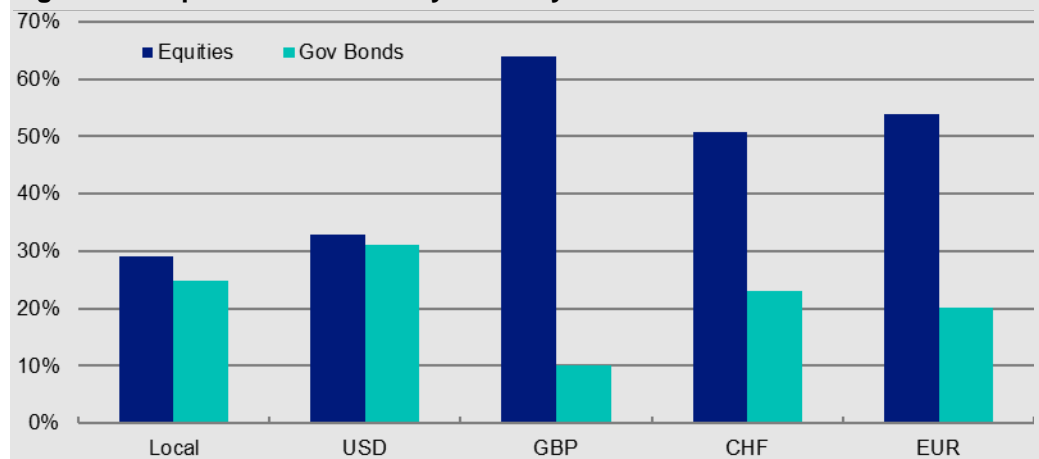
Notes: Based on local currency returns (for both the projected returns and historical covariance matrix). Cash is an equally weighted mix of USD, EUR, GBP and JPY. “Sharpe Ratio” shows the results of maximising the Sharpe Ratio. “Max Return” maximises returns while not exceeding the volatility of the Neutral Portfolio. * This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. See appendices for definitions, methodology and disclaimers. Arrows show direction of change in allocations. Source: Invesco

The optimisation results vary according to which currency base is used: CHF, EUR and GBP currency bases would result in bigger allocations to equities and less to IG

We use local currency returns in the optimisation process to avoid the bias that comes from our currency forecasts. However, we also run the optimisation from the point of view of investors based in USD, EUR, GBP and CHF (see **Appendix 6**).

Figure 34 shows how the choice of currency base impacts optimal allocations to equities and government debt (the minimum for the latter is 10%). Interestingly, the translation of returns into another currency does make a difference (the Sharpe Ratios of asset groups are affected in different ways). Though some of the conclusions remain the same (preference for real estate and cash), there are some big differences (if we were CHF, EUR or GBP based, we would have more equities and less IG than indicated in **Figure 33**).

Figure 34 – Optimal allocations by currency base



The chart shows optimal allocations for global equities and government bonds, depending upon the currency base of the investor (based on maximising the Sharpe Ratio when using 5yr projected returns). The expected returns and covariance matrix are translated into the relevant currency base (cash returns are those in the relevant currency). The allowable ranges are 10%-50% for government bonds and 20%-70% for equities. See appendices for definitions, methodology and disclaimers. Source: Datastream and Invesco

We continue to gradually dampen the expected volatility of the model portfolio as the economic cycle advances and fixed income yields rise

Model Asset Allocation: more sovereign, less equity, no FX hedges

In arriving at our allocations for the coming period, we are focused largely on the five-year outlook in local currency terms but we can and do allow for shorter term risks/opportunities and for how the currency base changes the conclusions. This time we are reducing the exposure to equities and boosting the allocation to sovereign debt (see the final column of **Figure 33**).

The big question is whether to take advantage of the rise in yields on fixed income assets? The only reason not to do so would be if we felt the global economic and profit outlook had improved enough to offset the higher yields, which we do not.

Hence, we are reducing the **equity** position from 43% to 40% (45% would be Neutral). We are doing this by shaving the position in the UK by 1% (to Underweight) after strong recent performance. We are also reducing the eurozone and Japan by 1% each (but remain Overweight), regions where economic and profit momentum seem to have waned (see **Figure 3** for the regional detail of our allocations). We still expect near double digit annualised total returns over five years in both regions but that is not as good as it was (see **Appendix 4**).

Given the evidence in **Figure 7** (and the result of the optimisation process) it might be expected that we would be adding to the IG and or HY positions. However, we are already very close to the maximum we allow ourselves in **IG** and the only place we could add is the eurozone: given the low returns that we expect there, we are not inclined to do that. As for **HY** we did increase it to Neutral last time and do not want to increase it further (despite what the optimiser says), as history suggests it is one of the more sensitive asset classes to a downturn in the economic cycle, which will eventually come.

So, that leaves **government** debt which we increase from a very Underweight 18% to a slightly less Underweight 21% (30% is our Neutral allocation). Apart from emerging markets (EM), where we are already heavily exposed (and suffering right now), the only other sovereign market where we anticipate anything like decent returns over the next five years is the US. Hence, we are increasing the position in US treasuries from 11% to 14% versus a Neutral 10%.

Otherwise, the model asset allocation remains unchanged. **Cash** remains at the maximum allowed (the projected return on other assets is insufficient to overcome the attractive characteristics of cash i.e. low volatility and low correlation to other assets), as does **real estate**.

We also remain zero-weighted in **commodities (including gold)**, because of the negative returns that we project.

No reaction to the Italian situation (eurozone fixed income yields are too low and equity/real estate potential is high)

Apart from the slight reduction in the eurozone equity position, we have chosen not to react to the political situation in Italy and the effect it is having on financial markets. We find that eurozone fixed-income yields are too low to be of interest, especially with the ECB expected to stop buying assets at some stage this year. On the other hand, we still find eurozone equities and real estate to be good value. The Italian government could destabilise the eurozone but it could also boost the Italian economy and perhaps move the EU in the right direction.

We keep the faith with emerging markets

Likewise, we have chosen not to react to the weakening of emerging market currencies. We are surprised at the domino effect moving across EM economies but do not expect it to become a generalised problem. We do expect EM currencies to weaken over the coming years but do not expect a crisis. Despite predicting a 10% decline in EM currencies versus the US dollar over a five-year period, our projections still suggest that the total return on EM assets will surpass those on US counterparts (except for real estate – see **Appendix 4**). Recent months have been painful but we are in EM markets for the long-haul.

We no longer feel the need to hedge into the yen, though it remains well below historical norms

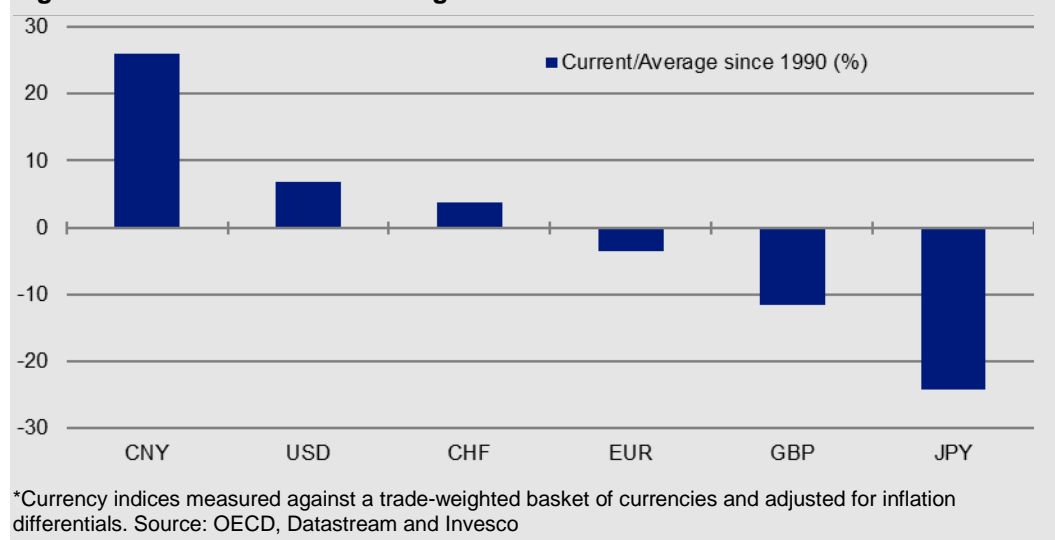
Finally, we are removing the currency hedges that we introduced three months ago. At that time, we feared the effect of trade wars on the global economy and therefore partially hedged some of our USD and GBP exposure into JPY. Though we still have those concerns, it seems that for now the markets are relatively serene about the risks. In the meantime, the yen has strengthened against sterling and weakened against the dollar, so the effect on our model portfolio was mixed.

One further reason to remove the hedges is that we are incrementally moving the model portfolio out of equity-like assets into more stable fixed-income groups (including cash). A few years ago, we were aggressive in our preference for equity-like assets but no longer. This is naturally reducing the expected volatility of the portfolio and removing the need for defensive measures such as currency hedging.

Figure 35 suggests the yen is the major currency that remains the furthest below its long term historical norms. For now, the BOJ stands out as the major central bank most likely to continue with aggressive asset purchases, which may depress the Japanese currency in the short term. To the extent that is true, when the BOJ decides to first taper and then stop those asset purchases, the yen could strengthen significantly (**Figure 30** shows that we expect USD/JPY to be 85 in five years).

Though sterling looks attractive based on **Figure 35**, we suspect the Brexit process will permanently weaken the pound versus historical norms and fear more Brexit related downside over the coming year.

Figure 35 – Real effective exchange rates*



Where do we expect the best returns?

Each quarter we highlight a list of four assets based on our projections. When we published the March 2018 edition, we nominated the following list: eurozone equities, US real estate, emerging market sovereign debt and JPY cash.

A difficult period for our previous selections but largely because of bounce in USD

It turned out to be one of our more difficult quarters, with total returns on the four highlighted assets varying between -7.7% and 9.9%, to give an average -0.75% in USD (see **Appendix 3** for details). To put this into context, the return on a fixed weighted version of our Neutral benchmark (see **Figure 2**) would have been 1.0% (the best performing assets were energy (+14.6%) and US real estate (+9.9%); the worst were emerging market debt (-7.7%) and emerging market equities (-5.7%)).

As an aside, the local currency performance of our selected list ranged from -0.5% to 9.9%, with an average of 2.7%, with the local currency fixed weighted version of our Neutral benchmark producing a 1.0% return (virtually identical to the USD version). This suggests our selections as a group were adversely impacted by the rebound in the dollar.

US real estate was the best performer among our list (and second best among all assets), with a return of 9.9% in USD. The returns came partly from dividend income and growth but mainly from the decline in yield from 4.7% to 4.3%.

Next came JPY cash with a total return of -2.0% in USD. With yen cash rates very close to zero, those losses are due entirely to the rebound of the dollar. It could have been worse, sterling and euro cash gave total returns of -3.2% and -4.2%, respectively, over the period considered!

The return on eurozone equities was -3.2% in USD. However, the return was +1.2% in local currency terms, demonstrating that dollar strength was the main problem. Although the dividend yield did increase (from 3.0% to 3.1%), dividend income and growth was more than enough to compensate.

The real disappointment out of our list, especially considering the good performance over several years, was the total return of -7.7% on EM debt, making it the worst performing asset over the period considered. The yield increased from 6.5% to 6.8% but the effect of this was largely balanced by income, so that the total return in local currency terms was -0.5%. The weakness of emerging market currencies obviously had a big role to play in the 7.7% loss in USD.

Looking ahead we focus on USD cash, Japanese real estate, eurozone equities and emerging market debt

Turning to the period ahead, we have used the return projections in **Appendix 4** to make our new selection (with two picks remaining unchanged and two new entries).

One of the new entries is **USD cash**. We view cash as a good diversifier and dampener of volatility and US cash rates are higher than any of the other developed market rates that we look at. We predict a return of 2.0% over 12 months and 2.4% annualised over five years. That may not seem a lot but is not far behind the 3.5% annualised five-year return that we expect on US equities, with much, much less volatility.

Within **real estate**, we are returning to **Japan**, having done so well out of US REITs over the last three months. We expect yields to remain at around the current 2.5% and expect income growth of around 4% per year over the next five years. This combination is enough to generate annualised total returns of 9.7% and 7.2% over the coming one and five years, respectively, which we believe will translate into USD annualised returns of 19.3% and 12.6% (we expect the yen to appreciate over the medium term).

Within equities, we are sticking with the **eurozone**, despite the flat year-to-date performance. Though we believe peak growth rates are behind us, we expect dividend growth of 6% per year over the next five years. This, added to a yield of 3% (we expect a slight reduction from the current 3.1%), should produce annualised total returns of 12.8% and 9.9%, respectively, over one and five years. Taking into

account our currency forecasts, gives projected USD annualised total returns of 15.8% and 10.5%, respectively. We assume the Italian political situation will settle down and, on that basis, expect better performance from eurozone equities during the second half of the year.

Finally, we stick with **emerging market debt**, despite the recent currency weakness. The projected return advantage that we expect versus US treasuries is not what it was but we continue to believe it is the only sovereign debt market to offer the possibility of acceptable returns. Our projections allow for no change in yield over the coming year from the 6.8% currently available and we expect a slight rise to 7.0% in five years. However, ongoing income should be enough to generate total annualised returns of 7.0% and 6.8% over one-year and five-years, respectively. Even when we allow for anticipated currency losses, those annualised total returns are 1.6% and 4.6%, respectively, when expressed in USD. We currently have no preference between local and hard currency versions of EM debt.

Hence, the four assets are now:

- Japan real estate
- Eurozone equities
- Emerging market sovereign debt
- USD cash

Appendices

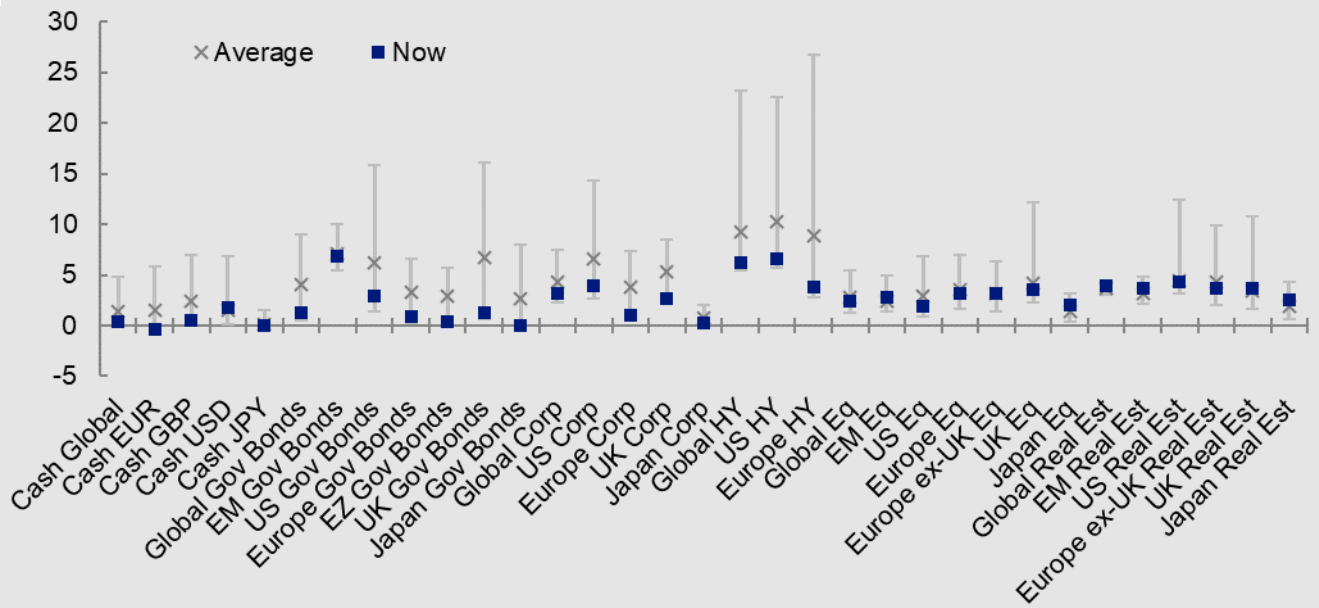
Appendix 1: Consensus economic forecasts
Figure 36 – Consensus economic forecasts

GDP Growth (%)				
	2016	2017	2018	2019
World	3.2	3.8	3.8	3.7
US	1.5	2.3	2.8	2.4
Eurozone	1.8	2.4	2.3	1.9
China	6.7	6.9	6.5	6.3
Japan	0.9	1.7	1.2	1.0
UK	1.9	1.8	1.4	1.5
Brazil	-3.5	1.0	2.5	2.9
Russia	-0.2	1.5	1.8	1.7
India	8.2	6.4	7.3	7.0
Canada	1.4	3.1	2.1	1.9
Australia	2.6	2.3	2.7	2.8
CPI Change (%)				
	2016	2017	2018	2019
World	2.8	3.0	3.3	3.1
US	1.3	2.1	2.5	2.2
Eurozone	0.2	1.5	1.5	1.6
China	2.0	1.6	2.2	2.2
Japan	-0.1	0.5	1.0	1.0
UK	0.7	2.7	2.5	2.1
Brazil	2.8	3.3	4.0	4.3
Russia	7.1	3.7	3.1	4.0
India	5.0	3.3	5.3	5.6
Canada	1.4	1.6	2.3	2.1
Australia	1.3	1.9	2.2	2.3
Nominal GDP (%)				
	2016	2017	2018	2019
World	6.1	6.9	7.2	6.9
US	2.8	4.4	5.4	4.7
Eurozone	2.0	3.9	3.8	3.5
China	8.8	8.6	8.8	8.6
Japan	0.8	2.2	2.2	2.0
UK	2.6	4.5	3.9	3.6
Brazil	-0.8	4.3	6.6	7.3
Russia	6.9	5.3	5.0	5.8
India	13.6	9.9	12.9	13.0
Canada	2.8	4.7	4.4	4.0
Australia	3.9	4.2	5.0	5.2

Source: Bloomberg L.P., except for India (provided by Oxford Economics). There is no guarantee that these views will come to pass.

Appendix 2: Global valuations vs history

Figure 37 – Regional yields within historical ranges



Notes: Past performance is no guarantee of future results. See appendices for definitions, methodology and disclaimers.
 Source: BAML, FTSE, Datastream, Invesco

Appendix 3: Asset class total returns

Data as at 31/05/2018	Index	Current Level/Ry	Total Return (USD, %)				Total Return (Local Currency, %)			
			3m	YTD	12m	5y*	3m	YTD	12m	5y*
Equities										
World	MSCI	509	-0.9	0.4	12.4	9.5	0.6	1.1	11.6	10.8
Emerging Markets	MSCI	1121	-5.7	-2.5	14.4	4.9	-2.9	-0.3	15.5	8.2
US	MSCI	2580	0.3	2.2	14.5	12.9	0.3	2.2	14.5	12.9
Europe	MSCI	1717	-1.3	-2.1	5.5	5.9	2.9	0.3	2.9	8.3
Europe ex-UK	MSCI	1996	-3.2	-2.9	4.2	6.8	1.2	-0.2	1.7	9.0
UK	MSCI	1229	3.6	-0.1	9.0	4.1	7.3	1.6	5.7	6.8
Japan	MSCI	3422	-2.3	0.7	15.0	8.6	-0.5	-2.9	12.9	10.2
Government Bonds										
World	BofA-ML	1.31	-1.3	-0.2	1.8	1.3	0.7	-0.2	0.1	2.6
Emerging Markets	JPM	6.80	-7.7	-4.2	0.5	-1.6	-0.5	1.1	5.7	6.5
US (10y)	Datastream	2.86	0.8	-2.8	-3.2	1.2	0.8	-2.8	-3.2	1.2
Europe	Bofa-ML	0.91	-3.6	-2.6	4.0	1.6	0.7	0.2	0.2	3.7
Europe ex-UK (EMU, 10y)	Datastream	0.34	-1.2	-1.3	5.1	1.8	3.2	1.5	1.2	4.0
UK (10y)	Datastream	1.28	-0.9	-1.6	3.0	1.7	2.6	0.1	-0.1	4.3
Japan (10y)	Datastream	0.04	-1.6	3.9	2.3	1.0	0.2	0.2	0.5	2.5
IG Corporate Bonds										
Global	BofA-ML	3.12	-1.5	-2.7	1.4	2.2	-0.1	-1.8	0.3	3.2
US	BofA-ML	3.95	-0.2	-2.6	0.1	3.1	-0.2	-2.6	0.1	3.1
Europe	BofA-ML	1.06	-4.6	-3.3	4.5	0.8	-0.3	-0.5	0.7	3.0
UK	BofA-ML	2.69	-2.7	-2.7	2.9	2.6	0.8	-1.1	-0.2	5.3
Japan	BofA-ML	0.30	-1.7	3.9	2.4	-0.5	0.1	0.2	0.6	1.0
HY Corporate Bonds										
Global	BofA-ML	6.21	-1.4	-1.4	2.5	4.5	-0.6	-0.9	1.8	5.0
US	BofA-ML	6.57	0.0	-0.3	2.3	4.9	0.0	-0.3	2.3	4.9
Europe	BofA-ML	3.74	-5.2	-4.0	5.5	3.1	-0.9	-1.2	1.7	5.2
Cash (Overnight LIBOR)										
US		1.71	0.4	0.7	1.3	0.5	0.4	0.7	1.3	0.5
Euro Area		-0.44	-4.2	-2.7	3.5	-2.3	-0.1	-0.2	-0.4	-0.2
UK		0.48	-3.2	-1.4	3.6	-2.2	0.1	0.2	0.4	0.4
Japan		-0.03	-2.0	3.5	1.8	-1.6	0.0	0.0	0.0	0.0
Real Estate (REITs)										
Global	FTSE	1845	5.2	-0.6	7.7	5.9	10.0	2.2	3.7	8.1
Emerging Markets	FTSE	2366	-2.7	-0.1	22.6	5.1	1.7	2.8	18.1	7.4
US	FTSE	2815	9.9	-2.4	2.3	6.7	9.9	-2.4	2.3	6.7
Europe ex-UK	FTSE	3534	4.2	-0.7	12.3	10.0	8.9	2.2	8.2	12.3
UK	FTSE	1212	5.2	-1.2	9.8	6.0	8.9	0.4	6.6	8.8
Japan	FTSE	2642	1.5	9.3	5.7	1.2	3.3	5.4	3.8	2.7
Commodities										
All	GSCI	2784	8.9	8.9	25.8	-9.6	-	-	-	-
Energy	GSCI	526	14.6	13.6	42.4	-12.4	-	-	-	-
Industrial Metals	GSCI	1432	1.7	-1.1	21.9	0.2	-	-	-	-
Precious Metals	GSCI	1557	-1.3	-1.3	0.6	-2.5	-	-	-	-
Agricultural Goods	GSCI	408	1.2	7.6	0.1	-10.4	-	-	-	-
Currencies (vs USD)**										
EUR		1.17	-4.1	-2.6	4.0	-2.1	-	-	-	-
JPY		108.82	-2.0	3.6	1.8	-1.6	-	-	-	-
GBP		1.33	-3.4	-1.6	3.1	-2.6	-	-	-	-
CHF		1.01	-4.2	-1.2	-1.8	-0.6	-	-	-	-
CNY		6.41	-1.2	1.5	6.2	-0.9	-	-	-	-

Notes: *Five-year returns are annualised. **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.

Appendix 4: Expected returns (%)

	Historical						Projected					
	Total Return (USD)		Yield		Yield		Capital Return		Total Return		Total Return (USD)	
	10y	Overall	Now	Average	1y	5y	1y	5y	1y	5y	1y	5y
Cash	-2.4	2.1	0.4	1.4	0.7	1.4	0.0	0.0	0.6	1.0	1.8	2.6
USD	0.5	1.7	1.7	1.6	2.5	2.5	0.0	0.0	2.0	2.4	2.0	2.4
EUR	-2.8	2.9	-0.4	1.5	-0.3	1.0	0.0	0.0	-0.4	0.2	2.3	0.7
GBP	-3.6	1.8	0.5	2.4	0.5	1.5	0.0	0.0	0.5	0.9	-5.6	1.9
JPY	-0.2	0.4	0.0	0.1	0.0	0.6	0.0	0.0	-0.1	0.2	8.7	5.3
Gov. bonds	2.4	6.6	1.3	4.1	1.5	2.4	-1.1	-1.4	0.3	0.4	3.1	2.2
US	3.1	7.1	2.7	4.7	3.1	3.5	-2.5	-1.0	0.2	2.2	0.2	2.2
Eurozone	1.9	7.4	0.8	4.6	0.9	2.5	-0.1	-2.1	0.7	-0.7	3.4	-0.1
UK	2.2	7.8	1.2	5.6	1.2	2.2	0.1	-1.3	1.3	0.3	-4.8	1.3
Japan	2.1	5.8	0.1	2.1	0.2	1.1	-0.5	-1.3	-0.4	-0.8	8.4	4.2
EM	8.7	8.9	6.8	7.1	6.8	7.0	0.0	-0.2	7.0	6.8	1.6	4.6
Corp bonds	3.8	5.2	3.1	4.3	3.6	4.5	-2.3	-1.4	0.9	2.4	1.2	2.7
US Dollar	5.4	7.7	4.0	6.6	4.6	5.1	-3.1	-1.2	1.0	3.5	1.0	3.5
Euro	1.8	4.2	1.1	3.8	1.3	3.0	-1.2	-2.1	0.0	-0.3	2.6	0.3
Sterling	2.9	5.5	2.7	5.3	2.8	4.0	-0.7	-1.4	2.0	1.8	-4.1	2.9
Japanese Yen	1.0	1.8	0.3	0.8	0.3	1.2	0.2	-1.0	0.5	-0.4	9.3	4.6
High-yield	7.5	6.7	6.2	9.2	7.3	9.3	-4.5	-2.4	0.1	3.1	0.4	3.0
US Dollar	7.7	8.3	6.6	10.2	7.8	9.2	-4.9	-2.1	-0.3	3.6	-0.3	3.6
Euro	5.1	6.0	3.7	8.9	4.4	8.2	-2.7	-3.7	0.0	0.0	2.6	0.5
Equities	6.0	9.6	2.4	2.7	2.5	2.8	2.1	3.6	4.6	6.2	4.4	6.4
US	9.1	10.2	1.9	2.9	2.1	2.5	-3.2	1.3	-1.2	3.5	-1.2	3.5
Europe ex-UK	2.1	10.0	3.1	3.1	3.0	3.0	9.5	6.7	12.8	9.9	15.8	10.5
UK	2.1	9.7	3.5	4.1	3.7	3.8	-0.7	4.1	2.9	8.0	-3.3	9.1
Japan	3.3	9.3	2.0	1.4	1.9	1.8	13.7	7.0	15.9	9.0	26.1	14.5
EM	2.0	11.1	2.7	2.5	2.7	2.7	8.0	6.8	10.9	9.7	5.3	7.4
Real Estate	4.1	6.5	3.9	3.6	3.7	3.8	7.7	4.3	11.8	8.3	11.7	8.6
US	5.9	12.0	4.3	4.5	4.0	4.0	7.5	4.7	12.0	8.9	12.0	8.9
Europe ex-UK	4.7	7.1	3.6	4.3	3.5	4.0	9.0	1.4	12.9	5.2	15.9	5.8
UK	0.4	4.5	3.7	3.4	3.6	3.7	2.8	3.2	6.6	7.0	0.2	8.1
Japan	1.7	1.2	2.5	1.9	2.5	2.5	7.0	4.6	9.7	7.2	19.3	12.6
EM*	13.0	13.0	3.7	3.2	3.7	3.7	7.0	5.4	10.9	9.3	5.4	7.0
Commodities	-11.7	7.1	-	-	-	-	-15.0	-6.8	-15.0	-6.8	-15.0	-6.8
Energy	-15.0	4.8	-	-	-	-	-28.1	-12.2	-28.1	-12.2	-28.1	-12.2
Ind. Metals	-3.4	6.6	-	-	-	-	-5.0	-6.1	-5.0	-6.1	-5.0	-6.1
Prec. Metals	2.6	6.2	-	-	-	-	-11.8	-7.1	-11.8	-7.1	-11.8	-7.1
Agriculture	-6.9	2.9	-	-	-	-	10.0	5.0	10.0	5.0	10.0	5.0

Notes: *Less than 10y history for Emerging Market Real Estate. See appendices for definitions, methodology and disclaimers. There is no guarantee that these views will come to pass. Source: BAML, JP Morgan, MSCI, FTSE, GSCI, Datastream and Invesco

Appendix 5: Key assumptions
Key assumptions for 1-year projected returns

	US	Eurozone/ Europe ex-UK	UK	Japan	EM	China
Central bank rates (%)	2.50	-0.25	0.50	-0.10	-	4.00
Sovereign spreads vs rates (bps)	60	115	75	20	-	-
Corporate IG spreads vs sovereign (bps)	150	40	160	10	-	-
Corporate HY spreads vs sovereign (bps)	475	350	-	-	-	-
Corporate HY default rates (%)	4.0	2.5	-	-	-	-
Corporate HY recovery rates (%)	43	50	-	-	-	-
Equities dividend growth (%)*	7.0	6.0	5.0	8.0	8.0	7.0
Equities dividend yield (%)*	2.1	3.0	3.7	1.9	2.7	2
Real estate dividend growth (%)*	0.0	6.0	0.0	7.0	7.0	-
Real estate dividend yield (%)*	4	3.5	3.6	2.5	3.7	-

Notes: *assumptions for Europe ex-UK. One-year assumptions are based on our analysis of how current values compare to historical norms (assuming some degree of reversion to the mean, except where our analysis suggests historical norms are unlikely to be a guide to the future), adjusted for our view about the development of the economic and financial market cycles over the next year in each region.

There is no guarantee that these views will come to pass.

Source: Invesco

Key assumptions for 5-year projected returns

	US	Eurozone/ Europe ex-UK	UK	Japan	EM	China
Central bank rates (%)	2.50	1.00	1.50	0.50	-	4.00
Sovereign spreads vs rates (bps)	100	150	75	50	-	-
Corporate IG spreads vs sovereign (bps)	165	50	180	10	-	-
Corporate HY spreads vs sovereign (bps)	575	575	-	-	-	-
Corporate HY default rates (%)	4.5	4.0	-	-	-	-
Corporate HY recovery rates (%)	43	50	-	-	-	-
Equities dividend growth (%)*	7.0	6.0	6.0	4.0	6.5	7.0
Equities dividend yield (%)*	2.5	3.0	3.8	1.8	2.7	2.0
Real estate dividend growth (%)*	4.0	3.0	4.0	4.0	5.0	-
Real estate dividend yield (%)*	4.0	4.0	3.7	2.5	3.7	-

Notes: *assumptions for Europe ex-UK. Five-year assumptions are based on our analysis of how current values compare to historical norms (assuming a large degree of reversion to the mean, except where our analysis suggests historical norms are unlikely to be a guide to the future). Economic and financial market cycle considerations may impact assumptions about the early stages of the five-year horizon but, except in extreme circumstances, we assume that projected long-term norms will prevail in five years. There is no guarantee that these views will come to pass.

Source: Invesco

Appendix 6: Optimised allocations for global assets for different currency bases

Optimised allocations for global assets in USD

	Neutral Portfolio	Policy Range	Using 1y Return		Using 5y Return		Model Asset Allocation*
			Sharpe Ratio	Max Return	Sharpe Ratio	Max Return	
Cash & Gold	5%	0-10%	10%	1%	10%	10%	10%
Cash	2.5%	0-10%	10%	1%	10%	10%	10%
Gold	2.5%	0-10%	0%	0%	0%	0%	0%
Government Bonds	30%	10-50%	50%	50%	31%	26%	↑ 21%
Corporate IG	10%	0-20%	2%	0%	20%	12%	18%
Corporate HY	5%	0-10%	0%	0%	0%	0%	5%
Equities	45%	20-70%	32%	43%	33%	46%	↓ 40%
Real Estate	3%	0-6%	6%	6%	6%	6%	6%
Commodities	2%	0-4%	0%	0%	0%	0%	0%

Based on USD returns (for both the projected returns and historical covariance matrix). Cash is USD cash. "Sharpe Ratio" shows the results of maximising the Sharpe Ratio. "Max Return" maximises returns while not exceeding the volatility of the Neutral Portfolio. *This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. Arrows show direction of change of allocations. See appendices for methodology and disclaimers.
Source: Invesco

Optimised allocations for global assets in GBP

	Neutral Portfolio	Policy Range	Using 1y Return		Using 5y Return		Model Asset Allocation*
			Sharpe Ratio	Max Return	Sharpe Ratio	Max Return	
Cash & Gold	5%	0-10%	10%	6%	10%	10%	10%
Cash	2.5%	0-10%	10%	6%	10%	10%	10%
Gold	2.5%	0-10%	0%	0%	0%	0%	0%
Government Bonds	30%	10-50%	31%	32%	10%	11%	↑ 21%
Corporate IG	10%	0-20%	0%	0%	0%	0%	18%
Corporate HY	5%	0-10%	0%	0%	10%	10%	5%
Equities	45%	20-70%	53%	56%	64%	63%	↓ 40%
Real Estate	3%	0-6%	6%	6%	6%	6%	6%
Commodities	2%	0-4%	0%	0%	0%	0%	0%

Based on GBP returns (for both the projected returns and historical covariance matrix). Cash is GBP cash. "Sharpe Ratio" shows the results of maximising the Sharpe Ratio. "Max Return" maximises returns while not exceeding the volatility of the Neutral Portfolio. *This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. Arrows show direction of change of allocations. See appendices for methodology and disclaimers.
Source: Invesco

Optimised allocations for global assets in CHF

	Neutral Portfolio	Policy Range	Using 1y Return		Using 5y Return		Model Asset Allocation*
			Sharpe Ratio	Max Return	Sharpe Ratio	Max Return	
Cash & Gold	5%	0-10%	10%	0%	10%	10%	10%
Cash	2.5%	0-10%	10%	0%	10%	10%	10%
Gold	2.5%	0-10%	0%	0%	0%	0%	0%
Government Bonds	30%	10-50%	50%	48%	23%	25%	↑ 21%
Corporate IG	10%	0-20%	0%	0%	0%	0%	18%
Corporate HY	5%	0-10%	0%	0%	10%	10%	5%
Equities	45%	20-70%	34%	46%	51%	49%	↓ 40%
Real Estate	3%	0-6%	6%	6%	6%	6%	6%
Commodities	2%	0-4%	0%	0%	0%	0%	0%

Based on CHF returns (for both the projected returns and historical covariance matrix). Cash is CHF cash. "Sharpe Ratio" shows the results of maximising the Sharpe Ratio. "Max Return" maximises returns while not exceeding the volatility of the Neutral Portfolio. *This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. Arrows show direction of change of allocations. See appendices for methodology and disclaimers.
Source: Invesco

Optimised allocations for global assets in EUR

	Neutral Portfolio	Policy Range	Using 1y Return		Using 5y Return		Model Asset Allocation*
			Sharpe Ratio	Max Return	Sharpe Ratio	Max Return	
Cash & Gold	5%	0-10%	10%	10%	10%	10%	10%
Cash	2.5%	0-10%	10%	10%	10%	10%	10%
Gold	2.5%	0-10%	0%	0%	0%	0%	0%
Government Bonds	30%	10-50%	34%	33%	20%	28%	↑ 21%
Corporate IG	10%	0-20%	0%	0%	0%	0%	18%
Corporate HY	5%	0-10%	0%	0%	10%	10%	5%
Equities	45%	20-70%	50%	51%	54%	46%	↓ 40%
Real Estate	3%	0-6%	6%	6%	6%	6%	6%
Commodities	2%	0-4%	0%	0%	0%	0%	0%

Based on EUR returns (for both the projected returns and historical covariance matrix). Cash is EUR cash. "Sharpe Ratio" shows the results of maximising the Sharpe Ratio. "Max Return" maximises returns while not exceeding the volatility of the Neutral Portfolio. *This is a theoretical portfolio and is for illustrative purposes only. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. Arrows show direction of change of allocations. See appendices for methodology and disclaimers.
Source: Invesco

Appendix 7: Methodology for asset allocation, expected returns and optimal portfolios

Portfolio construction process

The optimal portfolios are theoretical and not real. We use optimisation processes to guide our allocations around “neutral” and within prescribed policy ranges based on our estimations of expected returns and using historical covariance information. This guides the allocation to global asset groups (equities, government bonds etc.), which is the most important level of decision. For the purposes of this document the optimal portfolios are constructed with a one-year and five-year horizon.

Which asset classes?

We look for investibility, size and liquidity. With that in mind, we have chosen to include: equities, bonds (government, corporate investment grade and corporate high-yield), REITs to represent real estate, commodities and cash (all across a range of geographies). We use cross-asset correlations to determine which decisions are the most important.

Neutral allocations and policy ranges

We use market capitalisation in USD for major benchmark indices to calculate neutral allocations. For commodities, we use industry estimates for total ETP market cap + assets under management in hedge funds + direct investments. We use an arbitrary 5% for the combination of cash and gold. We impose diversification by using policy ranges for each asset category (the range is usually symmetric around neutral).

Expected/projected returns

The process for estimating expected returns is based upon yield (except commodities, of course). After analysing how yields vary with the economic cycle, and where they are situated within historical ranges, we forecast the direction and amplitude of moves over the next one year and five years. Cash returns are calculated assuming a straight-line move in short term rates towards our targets (with, of course, no capital gain or loss). Bond returns assume a straight-line progression in yields, with capital gains/losses predicated upon constant maturity (effectively supposing constant turnover to achieve that). Forecasts of corporate investment-grade and high-yield spreads are based upon our view of the economic cycle. Coupon payments are added to give total returns. Equity and REIT returns are based on dividend growth assumptions. We calculate total returns by applying those growth assumptions and adding the forecast dividend yield. No such metrics exist for commodities; therefore, we base our projections on US CPI-adjusted real prices relative to their long-term averages and views on the economic cycle. All expected returns are first calculated in local currency and then, where necessary, converted into other currency bases using our exchange rate forecasts.

Optimising the portfolio

Using a covariance matrix based on monthly local currency total returns for the last 5 years and we run an optimisation process that maximises the Sharpe Ratio. The optimiser is based on the Markowitz model.

Currency hedging

We adopt a cautious approach when it comes to currency hedging as currency movements are notoriously difficult to accurately predict and sometimes hedging can be costly. Also, some of our asset allocation choices are based on currency forecasts. We use an amalgam of central bank rate forecasts, policy expectations and real exchange rates relative to their historical averages to predict the direction and amplitude of currency moves.

Appendix 8: Definitions of data and benchmarks

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 values in the market forecast table (figure 30) use Datastream benchmark 10-year yields for the US, Eurozone, Japan and the UK and the Thomson Reuters China benchmark 10-year yield for China. Historical and projected yields and returns (figures 1, 2, 4, 5, 6, 7, 29, 31, 32, 33, 34 and appendices 4 and 6) are based on Bank of America Merrill Lynch government bond indices with historical ranges starting on 31st December 1985 for the Global, Europe ex-UK, UK and Japanese indices and 30th January 1978 for the US. The emerging markets yields and returns are based on the JP Morgan emerging markets global composite government bond index with the historical range starting on 31st December 2001. The same indices are used to construct figure 16 and appendix 2.

Corporate investment grade (IG) bonds: Bank of America Merrill Lynch investment grade corporate bond indices with historical ranges starting on 31st December 1996 for the Global, 31st January 1973 for the US dollar, 1st January 1996 for the euro, 31st December 1996 for the British pound, and 6th September 2001 for the Japanese yen indices.

Corporate high yield (HY) bonds: Bank of America Merrill Lynch high yield indices with historical ranges starting on 29th August 1986 for the US dollar, and 31st December 1997 for the Global and euro indices.

Equities: We use MSCI benchmark indices to calculate projected returns and calculate long-term total returns with historical ranges starting on 31st December 1969 for the Global, US, Europe ex-UK, UK and Japanese indices, and 31st December 1987 for the emerging markets index. Equity index valuations (figures 16, 21 and appendix 2) are based on dividend yields and price-earnings ratios using Datastream benchmark indices with historical ranges starting on 1st January 1973 for the Global, US, Europe ex-UK and Japanese indices, on 31st December 1969 for the UK index and 2nd January 1995 for the Emerging Markets index.

Real estate: We use FTSE EPRA/NAREIT indices with historical ranges starting on 29th December 1989 for the US, Europe ex-UK, UK and Japanese indices, 18th February 2005 for the Global index, and 31st October 2008 for the Emerging Markets index.

Commodities: Goldman Sachs Commodity Index with historical ranges starting on 31st December 1969 for the All Commodities and Agriculture indices, 31st December 1982 for the Energy index, 3rd January 1977 for the Industrial Metals index, and 2nd January 1973 for the Precious Metals index. We refer to oil & gas and industrial metals as industrial commodities.

Definitions and sources for Figures 23 and 24

US Federal Reserve (Fed) interest rate: Fed Discount Rate from November 1914 to October 1982, then the Fed Funds Rate is used (source: Global Financial Data, Datastream)

US 10-year treasury yield (bond yield): monthly from 1871 (source: Robert Shiller and Datastream)

US Shiller PE and Earnings Per Share (EPS): the Shiller PE is a price to earnings ratio constructed by dividing price by the average earnings per share in the previous 10 years (with both numerator and denominator adjusted for inflation). It is what is commonly known as a cyclically-adjusted PE ratio. It is constructed by US academic Robert Shiller. We also use the raw EPS data from his database to calculate EPS momentum on a 3m/3m basis (the percentage change in the latest three months versus the previous three months). Data is monthly from 1881 (source Robert Shiller – see [here](#)). EPS momentum data since June 1973 is derived from S&P 500 index and PE data sourced from Datastream.

US stock/equity index: we have calculated a total return index for broad US stocks based on index and dividend data from US academic Robert Shiller and Datastream. The index prior to 1926 is Robert Shiller's recalculation of data from Common Stock Indexes by Cowles & Associates (see [here](#)). From 1926 to 1957, the Shiller data is based on the S&P Composite Index and thereafter is based on the S&P 500 as we know it today.

Definitions of data and benchmarks for Appendix 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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