Uncommon truths
Are the stars aligning for EM equities?

Emerging market currencies have weakened this year but EM equities have held their own against other regions. We think they are cheap and profit momentum could improve if oil has bottomed.

With Covid-19 starting in China and emerging market (EM) countries typically expected to suffer most during global crises, it wouldn't have been a surprise to see EM assets suffering more than developed market (DM) counterparts this year. However, things have not been that straightforward: though fixed income investors will be disappointed with the year-to-date outcome in emerging markets, the same does not apply to equity and real estate assets (see **Figure 3**). Returns in those cyclical EM assets may have been heavily negative but they have been no worse than in many developed markets.

EM currencies have been weak, with our real EM FX index falling by 6%-7% so far this year (to end April). As can be seen from **Figure 1**, this is as it should be given the sharp decline in commodity prices. Indeed, featuring among the weakest currencies so far this year are the Brazilian real (-32% versus USD), South African rand (-25%), Mexican peso (-22%) and Russian rouble (-16%).

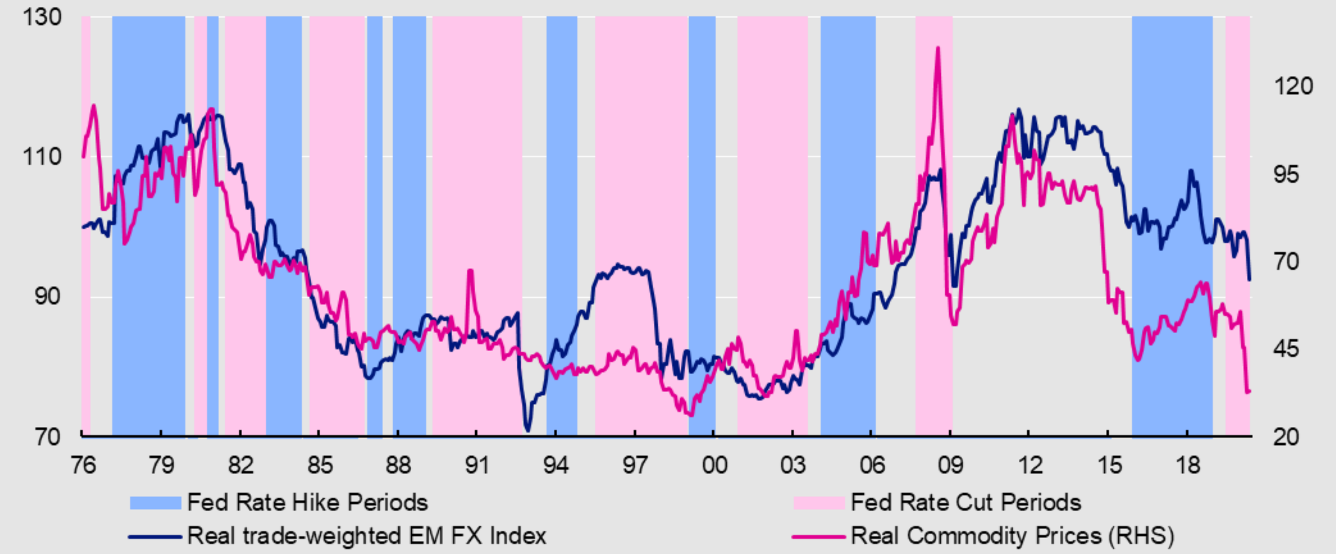
Probably because China's trade weighting has doubled since 2000, the correlation between our real EM FX index and real commodity prices is not as strong as it was. However, commodities remain a more important determinant of EM FX movements than does the Fed (see **Figure 1**), unless one believes that the Fed drives commodity markets.

With commodity prices so low (especially oil), could it be that EM currencies are close to bottoming? One counter argument is that our EM FX index is only in the middle of its historical range and not close to the bottom. However, with China now having such a big weighting in that trade-weighted index (nearly 40%), it may be that the FX index should no longer follow commodities all the way to the bottom (just as it didn't follow them all the way to the top prior to the global financial crisis). We suspect that if commodity price momentum turned positive, then many EM currencies would rebound.

Whether commodity prices have bottomed depends upon the economic cycle (in our opinion). We have previously written that we believe oil at $20 represents good value but this is not to say it cannot be pushed lower if the global economic recovery becomes a long, drawn out affair. Further, not all industrial commodities have been as weak as oil, with the CPI adjusted price of copper only 5% below its historical average (since January 1974). By comparison, oil is 69% below that benchmark.

Weak currencies and widening spreads explain why EM debt instruments have underperformed. Perhaps the weakness of currencies has also helped EM equities to hold their own in local currency terms but there may be other explanations.

Figure 1 – Emerging market currencies, commodities and the Fed



Note: 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. All indices rebased to 100 as of June 1976. As of April 2020.
Source: IMF, OECD, Oxford Economics, Bloomberg L.P., Refinitiv Datastream and Invesco.

Last week, we showed the link between the Blavatnik Stringency index and first quarter GDP growth (see here) and wondered if there was a similar relationship with year-to-date equity market performance. Well there isn't: first, we found no tendency for emerging market countries to be more or less stringent than developed world counterparts when it comes to Covid-19 lockdowns and, second, there is no relationship between the average Blavatnik index so far this year and year-to-date local currency equity returns. There was a slight tendency in DM for equity returns to weaken as stringency increased (R^2=0.01) but the reverse was true for EM (R^2=0.02). Those R^2 stats suggest there is no relationship.

We believe there is more mileage in the argument that EM equities are now so cheap that they are piquing the interest of investors. For instance, the EM dividend yield of 3.6% (as of 12 May 2020) is well above the historical norm of 2.5% (since January 1995) and, among major developed markets, is only bettered by that of the UK (4.2%).

When it comes to price-earnings ratios (PE), the current downturn makes it difficult to compare historical ratios and forecasting the immediate future is perilous. Therefore, we prefer cyclically adjusted PE (CAPE) ratios: the 10-year moving average of earnings used in such calculations smooths out the effect of the cycle. The EM CAPE on 12 May 2020 was 11.1, well below the 18.1 average seen since January 2005 and below the CAPE seen on all DM equity markets (US 27.7, Japan 17.7, UK 14.1 and Eurozone 14.0). **Figure 2a** shows the comparison with the US CAPE, which is still high, even by the elevated standards of recent decades.

Given our belief that starting valuations are the major determinant of long-term returns, perhaps we need to revisit our Underweight stance on EM equities as shown in **Figure 6** (the next Big Picture quarterly asset allocation review is due in mid-June).

However, before doing so we need to be confident about the future path of earnings. **Figure 2b** shows the paths of EM and US EPS since 2005. A cursory glance suggests that after rapid growth to 2011/12, EM EPS have at best stagnated, hence the flattening of the 10-year moving average. On the other hand, US EPS have powered higher and eventually overtook those of EM countries in 2017 (if both started at 100 in January 2005).

This makes it easy for those seeking earnings momentum to prefer the US equity market. However, it must be remembered that EM equity indices have more exposure to the energy and material sectors (13.2% in EM versus 5.4% in the US, as of 30 April 2020 according to MSCI). The gap is not what it once was due to the increasing weight of China in EM indices but no doubt has been an important factor is the relative weakness of EM EPS since commodity prices peaked in 2011. It could be an important factor in reversing that comparison if the oil price really has bottomed (which we think is possible).

In conclusion, though less important than before, we believe commodity prices still play an important role in the performance of emerging market currencies and equities. The decline in commodity prices since 2011 has had a dampening effect on EM currencies and EPS. We have been attracted by EM asset valuations for some time and for the first time this coincides with optimism that the oil price may have bottomed. Though short-term volatility remains a risk, we think the long-term stars are aligning for EM assets.

Unless stated otherwise, all data as of 15 May 2020.

Figure 2a – EM vs US cyclically-adjusted PE

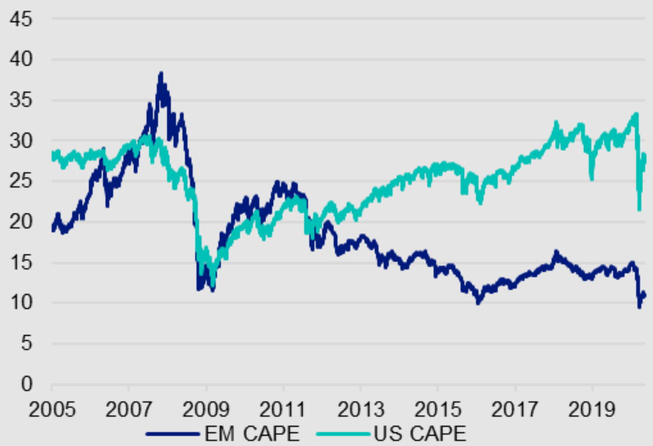
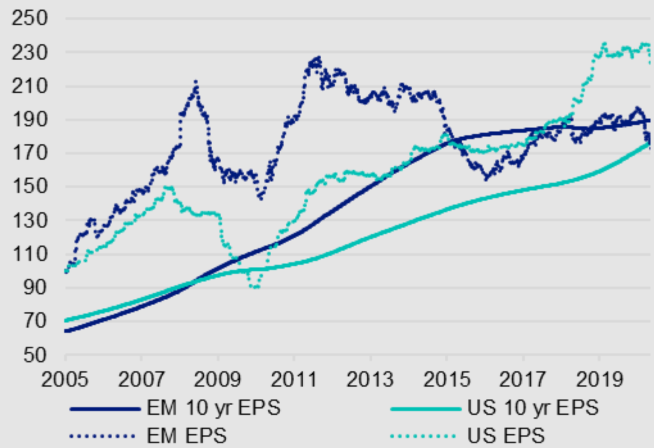


Figure 2b – EM vs US EPS (3/1/05 = 100)



Note: daily data from 3 January 2005 to 12 May 2020, based on Datastream indices. CAPE = Cyclically Adjusted Price/Earnings and uses a 10-year moving average of earnings per share (EPS). In Figure 2b, EPS is rebased to 100 on 3 January 2005 and "10 yr EPS" = 10-year moving average of EPS. Source: Refinitiv Datastream and Invesco

Invesco

Figure 3 – Asset class total returns

Data as at 15/05/2020	Index	Current Level/RY	Total Return (USD, %) 1w	1m	QTD	YTD	12m	Total Return (Local Currency, %) 1w	1m	QTD	YTD	12m
Equities												
World	MSCI	478	-2.4	2.6	8.5	-14.6	-3.3	-2.0	2.8	8.6	-13.0	-2.0
Emerging Markets	MSCI	901	-1.1	1.6	6.5	-18.6	-8.6	-0.8	1.9	6.8	-13.5	-4.0
US	MSCI	2742	-2.2	3.5	11.7	-10.2	2.9	-2.2	3.5	11.7	-10.2	2.9
Europe	MSCI	1349	-4.2	1.1	1.3	-23.2	-14.5	-3.2	2.4	2.7	-19.6	-11.8
Europe ex-UK	MSCI	1654	-4.0	1.3	1.9	-21.2	-11.4	-3.5	1.9	3.0	-18.6	-9.5
UK	MSCI	832	-4.8	0.7	-0.4	-29.1	-22.9	-2.2	3.8	1.8	-22.5	-18.2
Japan	MSCI	2945	-1.3	0.7	4.1	-13.2	-1.2	-0.5	0.6	3.4	-14.3	-3.1
Government Bonds												
World	BofA-ML	0.31	-0.4	-0.1	0.0	2.7	6.3	0.1	0.2	0.3	4.1	7.2
Emerging Markets	BBloom	6.12	1.2	3.4	5.5	-10.8	-2.5	1.2	3.4	5.5	-10.8	-2.5
US (10y)	Datastream	0.63	0.5	-0.2	0.2	14.5	20.9	0.5	-0.2	0.2	14.5	20.9
Europe	Bofa-ML	0.28	-0.6	-0.3	-1.5	-3.4	1.1	-0.1	0.5	-0.1	0.2	4.7
Europe ex-UK (EMU, 10y)	Datastream	-0.53	-0.6	-0.2	-0.8	-0.3	0.9	-0.1	0.5	0.6	3.5	4.5
UK (10y)	Datastream	0.20	-2.6	-2.4	-1.2	-2.8	3.0	0.0	0.6	1.0	6.2	9.3
Japan (10y)	Datastream	0.00	-0.8	0.3	0.8	1.2	1.8	0.0	0.2	0.2	-0.1	-0.2
IG Corporate Bonds												
Global	BofA-ML	2.43	-0.1	-0.2	3.6	-2.1	4.1	0.1	0.1	4.0	-0.6	5.4
Emerging Markets	BBloom	6.02	1.0	2.9	8.8	-5.8	3.8	1.0	2.9	8.8	-5.8	3.8
US	BofA-ML	2.81	0.5	-0.2	4.7	0.5	8.3	0.5	-0.2	4.7	0.5	8.3
Europe	BofA-ML	1.35	-1.0	-0.5	1.1	-7.2	-4.7	-0.5	0.3	2.5	-3.7	-1.3
UK	BofA-ML	2.45	-3.4	-2.8	2.4	-8.7	-0.8	-0.8	0.1	4.7	-0.2	5.3
Japan	BofA-ML	0.52	-0.8	0.1	0.5	0.8	1.9	0.0	0.0	-0.1	-0.4	-0.1
HY Corporate Bonds												
Global	BofA-ML	8.16	-0.4	-0.2	4.5	-10.2	-4.6	-0.3	0.0	4.8	-9.5	-3.9
US	BofA-ML	8.28	-0.7	-0.8	3.8	-9.9	-4.5	-0.7	-0.8	3.8	-9.9	-4.5
Europe	BofA-ML	6.02	-0.9	-1.8	3.3	-13.8	-9.0	-0.4	-1.0	4.7	-10.6	-5.7
Cash (Overnight LIBOR)												
US		0.00	0.0	0.0	0.0	0.3	1.6	0.0	0.0	0.0	0.3	1.6
Euro Area		0.00	-0.2	-0.9	-2.0	-3.7	-4.0	0.0	0.0	-0.1	-0.2	-0.5
UK		0.00	-2.4	-3.3	-2.5	-8.6	-5.3	0.0	0.0	0.0	0.1	0.6
Japan		0.00	-0.3	0.4	0.5	1.4	2.3	0.0	0.0	0.0	0.0	-0.1
Real Estate (REITs)												
Global	FTSE	1405	-7.4	-5.6	-2.3	-30.0	-24.1	-7.0	-4.9	-0.9	-27.4	-21.4
Emerging Markets	FTSE	1761	-2.8	-3.0	0.1	-28.5	-17.0	-2.4	-2.2	1.5	-25.9	-14.1
US	FTSE	2172	-9.6	-8.7	-4.1	-31.9	-27.5	-9.6	-8.7	-4.1	-31.9	-27.5
Europe ex-UK	FTSE	2687	-6.2	-2.2	-3.2	-28.0	-19.9	-5.7	-1.4	-1.8	-25.3	-17.0
UK	FTSE	983	-10.2	-10.4	-8.3	-37.8	-25.2	-7.7	-7.6	-6.3	-32.0	-20.7
Japan	FTSE	2215	-6.5	0.3	-0.9	-25.5	-16.1	-5.7	0.2	-1.5	-26.5	-17.8
Commodities												
All	GSCI	1459	1.0	-1.6	-2.4	-43.7	-43.4	-	-	-	-	-
Energy	GSCI	185	3.7	-6.5	-4.6	-62.8	-63.4	-	-	-	-	-
Industrial Metals	GSCI	1001	-2.1	-1.1	-0.3	-17.9	-17.6	-	-	-	-	-
Precious Metals	GSCI	2022	2.9	1.5	10.7	13.1	32.2	-	-	-	-	-
Agricultural Goods	GSCI	294	-1.6	-2.9	-6.6	-15.4	-8.1	-	-	-	-	-
Currencies (vs USD)*												
EUR		1.08	-0.2	-0.9	-1.9	-3.5	-3.4	-	-	-	-	-
JPY		107.04	-0.3	0.4	0.5	1.5	2.4	-	-	-	-	-
GBP		1.21	-2.6	-3.0	-2.2	-8.5	-5.8	-	-	-	-	-
CHF		1.03	-0.1	-0.7	-1.1	-0.4	3.8	-	-	-	-	-
CNY		7.10	-0.4	-0.5	-0.3	-2.0	-3.2	-	-	-	-	-

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

Figure 4 – World equity sector total returns relative to market (%)

Data as at 15/05/2020	Global				
	1w	1m	QTD	YTD	12m
Energy	**-2.5**	**4.3**	**-24.5**	**-24.5**	**-29.6**
Basic Materials	**0.5**	**2.6**	**-2.4**	**-2.4**	**-2.8**
Basic Resources	1.3	4.6	-1.5	-1.5	-1.4
Chemicals	-0.5	0.4	-3.4	-3.4	-4.6
Industrials	**-1.2**	**0.4**	**-6.4**	**-6.4**	**-6.5**
Construction & Materials	-1.5	-0.9	-9.3	-9.3	-9.9
Industrial Goods & Services	-1.2	0.6	-6.0	-6.0	-6.0
Consumer Discretionary	**0.3**	**0.6**	**2.1**	**2.1**	**1.2**
Automobiles & Parts	-1.3	-0.5	-7.4	-7.4	-6.2
Media	1.1	1.1	-2.0	-2.0	-3.3
Retailers	2.5	1.8	21.4	21.4	20.7
Travel & Leisure	-2.1	-1.6	-19.6	-19.6	-20.9
Consumer Products & Services	-1.1	0.5	0.0	0.0	-1.0
Consumer Staples	**0.9**	**-3.6**	**4.0**	**4.0**	**0.5**
Food, Beverage & Tobacco	0.6	-3.6	1.0	1.0	-4.9
Personal Care, Drug & Grocery Stores	1.3	-3.6	9.7	9.7	6.8
Healthcare	**3.0**	**2.7**	**19.7**	**19.7**	**24.5**
Financials	**-2.3**	**-4.6**	**-18.0**	**-18.0**	**-19.3**
Banks	-2.5	-5.2	-23.4	-23.4	-25.8
Financial Services	-1.8	-1.1	-10.5	-10.5	-8.8
Insurance	-2.5	-7.5	-15.4	-15.4	-17.5
Real Estate	**-3.4**	**-6.1**	**-9.6**	**-9.6**	**-13.1**
Technology	**1.3**	**4.7**	**19.8**	**19.8**	**31.2**
Telecommunications	**0.6**	**-2.2**	**6.5**	**6.5**	**1.4**
Utilities	**-0.2**	**-5.3**	**0.0**	**0.0**	**-2.8**

Notes: Returns shown are for Datastream sector indices versus the total market index. Past performance is no guarantee of future results.
Source: Refinitiv Datastream and Invesco

Invesco

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

Data as at 15/05/2020	Absolute					Relative to Market				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Growth	-2.9	6.4	15.2	-11.1	3.3	-0.7	3.3	3.7	-0.4	0.8
Low volatility	-1.0	3.4	11.7	-6.2	4.2	1.2	0.3	0.5	5.1	1.7
Price momentum	-0.5	4.3	12.6	-7.5	1.0	1.7	1.2	1.3	3.6	-1.5
Quality	-4.1	2.3	8.9	-18.8	-9.2	-1.9	-0.8	-2.0	-9.1	-11.4
Size	-9.4	1.5	10.1	-35.4	-29.5	-7.4	-1.6	-0.9	-27.7	-31.2
Value	-9.3	2.3	10.5	-36.0	-28.9	-7.3	-0.8	-0.5	-28.3	-30.6
Market	-2.2	3.1	11.1	-10.7	2.5					
Market - Equal-Weighted	-5.0	1.8	8.6	-20.4	-10.7					

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

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

Data as at 15/05/2020	Absolute					Relative to Market				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Growth	-3.7	5.1	9.0	-11.2	2.9	-0.1	2.8	5.5	11.0	14.9
Low volatility	-1.7	3.6	6.8	-13.1	-2.6	2.0	1.3	3.4	8.5	8.9
Price momentum	-1.7	6.2	9.7	-8.3	4.3	2.0	3.9	6.2	14.5	16.6
Quality	-6.1	4.3	6.9	-23.4	-10.0	-2.6	2.0	3.5	-4.3	0.6
Size	-5.9	3.4	6.4	-28.1	-14.4	-2.3	1.1	3.1	-10.2	-4.4
Value	-7.3	-0.5	-1.1	-39.1	-33.1	-3.8	-2.7	-4.2	-24.0	-25.2
Market	-3.6	2.3	3.3	-19.9	-10.5					
Market - Equal-Weighted	-4.3	2.9	4.6	-22.7	-12.7					

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

Invesco

Figure 6 – Model asset allocation

	Neutral	Policy Range	Allocation	Position vs Neutral	Hedged	Currency
Cash	**5%**	**0-10%**	↑ **10%**			
Cash	2.5%		5%			
Gold	2.5%		↑ 5%			
Bonds	**45%**	**10-80%**	↓ **40%**			
Government	30%	10-50%	↑ 20%			
US	10%		↑ 9%			
Europe ex-UK (Eurozone)	8%		0%			
UK	2%		↑ 3%			
Japan	8%		4%			
Emerging Markets	2%		4%			
Corporate IG	10%	0-20%	20%			
US Dollar	5%		10%			
Euro	2%		↓ 2%			
Sterling	1%		↑ 4%			
Japanese Yen	1%		↓ 1%			
Emerging Markets	1%		↑ 3%			
Corporate HY	5%	0-10%	↓ 0%			
US Dollar	4%		↓ 0%			
Euro	1%		↓ 0%			
Equities	**40%**	**20-60%**	↓ **30%**			
US	24%		↑ 14%			
Europe ex-UK	6%		↓ 2%			
UK	3%		↑ 6%			
Japan	3%		↓ 6%			
Emerging Markets	4%		↓ 2%			
Real Estate	**8%**	**0-16%**	**16%**			
US	2%		↑ 5%			
Europe ex-UK	2%		2%			
UK	1%		↑ 1%			
Japan	2%		↑ 5%			
Emerging Markets	1%		↑ 3%			
Commodities	**2%**	**0-4%**	↑ **4%**			
Energy	1%		↑ 2%			
Industrial Metals	0.3%		1%			
Precious Metals	0.3%		0%			
Agriculture	0.3%		↑ 1%			
Total	**100%**		**100%**			

Currency Exposure (including effect of hedging)				
USD	49%		↑ 47%	
EUR	20%		↓ 7%	
GBP	7%		↑ 16%	
JPY	15%		↑ 18%	
EM	8%		↓ 13%	
Total	**100%**		**100%**	

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

Figure 7 – Model allocations for Global sectors

	Neutral	Invesco	
Energy	**4.1%**	**Overweight**	↑
Basic Materials	**4.0%**	**Neutral**	↑
Basic Resources	2.1%	Underweight	↓
Chemicals	1.9%	Overweight	↑
Industrials	**12.4%**	**Underweight**	
Construction & Materials	1.5%	Underweight	↓
Industrial Goods & Services	10.9%	Underweight	
Consumer Discretionary	**13.7%**	**Underweight**	↓
Automobiles & Parts	2.0%	Neutral	
Media	1.3%	Underweight	↓
Retailers	4.9%	Neutral	↑
Travel & Leisure	1.9%	Underweight	↓
Consumer Products & Services	3.7%	Underweight	↓
Consumer Staples	**8.0%**	**Overweight**	
Food, Beverage & Tobacco	5.1%	Overweight	
Personal Care, Drug & Grocery Stores	2.9%	Overweight	
Healthcare	**11.2%**	**Neutral**	↓
Financials	**15.6%**	**Neutral**	↑
Banks	7.3%	Overweight	↑
Financial Services	4.4%	Neutral	↑
Insurance	3.9%	Underweight	
Real Estate	**4.2%**	**Overweight**	
Technology	**17.6%**	**Overweight**	↑
Telecommunications	**5.2%**	**Neutral**	↑
Utilities	**4.0%**	**Underweight**	

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

Appendix

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 horizon.

Which asset classes?

We look for investibility, size and liquidity. 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 year. 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 (as are forecasts of credit losses). 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. Another version maximises Return subject to volatility not exceeding that of our Neutral Portfolio. 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.

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Definitions of data and benchmarks for Figure 3

Sources: we source data from Datastream unless otherwise indicated.

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

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

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

Corporate investment grade (IG) bonds: Bank of America Merrill Lynch investment grade corporate bond total return indices, except for in emerging markets where we use the Barclays Bloomberg emerging markets corporate US dollar bond index.

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

Country abbreviations

BRA	Brazil
CAN	Canada
CHN	China
ESP	Spain
FRA	France
GBR	United Kingdom
GER	Germany
HK	Hong Kong
IND	India
INDO	Indonesia
ITA	Italy
JPN	Japan
KOR	South Korea
MEX	Mexico
PHL	Philippines
RUS	Russia
SWE	Sweden
SWI	Switzerland
USA	United States of America

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