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Uncommon truths
Don't look down

Hard data suggests an unprecedented loss of economic activity in many countries. Central banks are getting markets to look ahead and to not look down. We have vertigo and prefer IG to HY.

Like you, we are struggling to gauge the depth of this downturn. We have an increasing number of data points to help understand how much economic activity is being surrendered but can only guess the shape of the recovery.

Policymakers face the same problem and many are resorting to scenarios rather than making firm forecasts. For example, the UK's Office for Budget Responsibility (OBR) recently published a reference scenario based on a 35% decline in UK GDP during 2020 Q2 and a 13% decline for 2020. Last week the Bank of England (BOE) published an illustrative scenario that included a 25% drop in UK GDP during Q2 (after -3% in Q1), giving a full year decline of 14%, followed by +15% in 2021 and +3% in 2022. The BOE scenario assumes PPP-weighted global GDP growth slips from 3% in 2019 to -12% in 2020 before bouncing to 15% and 5% in 2021 and 2022, respectively.

Those scenarios share two features: first a shocking decline in GDP (the BOE 2020 scenario would be the worst since 1706, based on data from Global Financial Data) and, second, a rapid rebound. Both recoveries are pretty-much V-shaped, with the OBR, for example, projecting 27% GDP growth in 2020 Q3.

Several countries have already reported Q1 GDP data and a selection are shown in **Figure 1a**. Of those that have reported, China was the worst affected with a quarter-on-quarter (QOQ) decline of 9.8%. At the other extreme was the US with a decline of only 1.2% (not annualised). Also shown in **Figure 1a** is the Q1 average of the government response stringency index as calculated by the Blavatnik School of Government at the University of Oxford. This captures the extent to which economies have been shut down but also has economic and healthcare policy components, so it is no surprise that the correlation with Q1 GDP is imperfect.

Economies were not closed during the whole of the first quarter, so the loss of economic activity during the lockdown phase is only partially captured by those GDP numbers. China experienced the closest to a full quarter impact, with shutdown starting during the final week of January (complicated by it coinciding with the Lunar New Year). If we assume the shutdown remained in place during the rest of Q1, we estimate that the 9.8% GDP decline equated to a 13% loss of activity during the shutdown period (after assuming annual GDP growth would have been 6% without Covid-19).

As can be seen from **Figure 1b**, the Stringency Index suggests China has relaxed the restraints a little during Q2 but not enormously, so we suspect Q2 GDP growth could be positive but not enormous (we are guessing around 2% for current purposes but the Global Market Strategy Office will publish a more refined recovery path for major economies over the coming weeks). This is better than what we expect elsewhere but is not the V-shaped recovery we had originally hoped for.

Figure 1a – Blavatnik Stringency Index and GDP

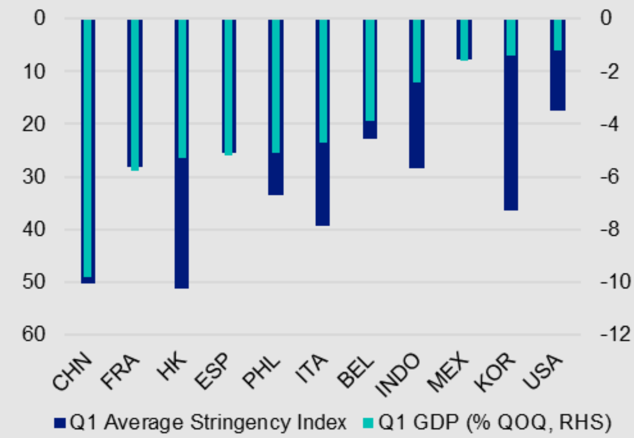
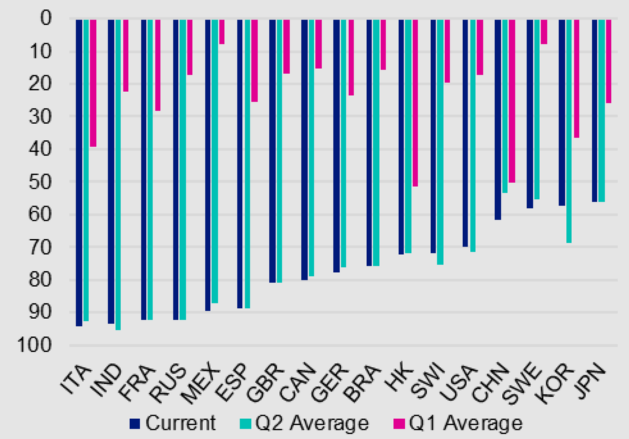


Figure 1b – Blavatnik Stringency Index



The "Blavatnik Stringency Index" is the Oxford Covid-19 Government Response Stringency Index from the Blavatnik School of Government, Oxford. It measures the stringency of government responses to Covid-19, including the extent of school, business and travel shut-downs but also includes policy measures (both monetary and fiscal) and healthcare actions (testing etc.). The index ranges from 0 to 100, with higher scores indicating a more stringent response. The current value is as of 5 May 2020 and the Q2 average is calculated up to that date. GDP is calculated as the seasonally adjusted quarter on quarter change during 2020 Q1 (not annualised). See appendices for country abbreviations.
Source: Blavatnik School of Government, University of Oxford, Bloomberg and Invesco

Ironically, though the drop in GDP was not as large in European countries, the implied loss of economic activity during the lockdown period was greater than in China because the lockdown period was shorter. For example, applying the same methodology to France, where the full lockdown started in mid-March, the 5.8% QOQ drop in GDP equates to a 35%-36% loss of activity during that two-week period. This fits with INSEE's estimate of a 36% loss of activity, which it suggests will reduce annual GDP by three percentage points for each month of full lockdown (the BOE estimates the loss in the UK will be 1.25% of full year GDP for each two weeks of shutdown or around 2.5% per month).

A similar exercise for Italy suggests a 19% loss of activity during the lockdown period (GDP fell by 4.7% in Q1 and the full lockdown started after the first week of March). If the economy remained in full lockdown during April and for the first week of May with gradual loosening thereafter, we would expect a GDP decline of roughly 10% during Q2. Using the same Q2 assumptions for France suggests a Q2 drop in GDP of around 25%.

Along with India, Italy and France appear to have the most stringent government reactions of all the countries shown in **Figure 1b**. The US is among the less stringent and is benefitting from one of the larger fiscal policy boosts among large economies (the BOE estimates that US discretionary policy support is around 11% of 2019 GDP). Hence, it should be no surprise that we find the loss of US activity during the Q1 shutdown period to be only 9% (consistent with 1.2% GDP loss in Q1 and a shutdown that started in mid-March). Assuming no recovery in April and slight upticks in May and June, gives a roughly 5% loss of GDP during Q2 (around 18% annualised).

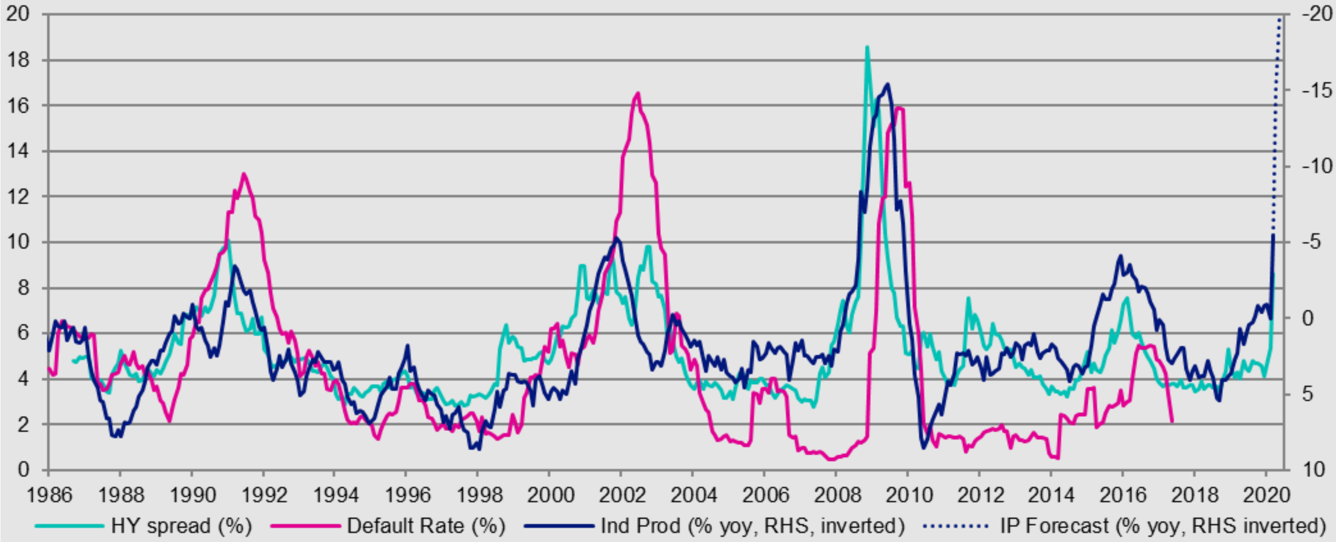
That may be an underestimation and sounds mild compared to what other countries are going through but is still far worse than anything seen since WW2 (the previous biggest quarterly drop in GDP was 2.6% in the first quarter of 1958). Turning to industrial production, we would not be surprised to see year-on-year declines of 20% or more over the coming months, which bodes ill for US high-yield (HY) default rates. Based on the past relationship shown in **Figure 2**, we imagine the default rate could reach 20%, with credit losses exceeding 10%. At which point we wonder if a yield of 8.2% is enough compensation.

Though **Figure 2** suggests HY spreads tend to peak before industrial production growth bottoms (which itself comes before the peak in default rates), it seems hard to believe that spreads already peaked in March at levels normally associated with common recessions, rather than something more in line with the extraordinary recession that is unfolding.

An obvious explanation is that central banks are performing a sort of hypnosis on the markets ("look into my eyes"), which is persuading them to forget about the slump in the economy and to focus instead on the recovery. This can work if the markets look straight ahead and don't look down. However, our vertigo causes us to prefer investment-grade to HY credit at the moment (see **Figure 6**).

Unless stated otherwise, all data as of 09 May 2020.

Figure 2 – US industrial production, high-yield spreads and default rate



Note: Monthly data from January 1986 to May 2020 (as of 6 May 2020). "HY spread" is the difference between the yield on the BAML US High-Yield Corporate Index and that on the 10-year US treasury. "Ind Prod" shows the year-on-year percentage change in US industrial production. "Default rate" is the high-yield default rate as estimated by BAML (the series ends in May 2017). Past performance is no guarantee of future results. Source: BAML, Global Financial Data, Refinitiv Datastream and Invesco

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Figure 3 – Asset class total returns

Data as at 08/05/2020	Index	Current Level/RY	Total Return (USD, %) 1w	1m	QTD	YTD	12m	Total Return (Local Currency, %) 1w	1m	QTD	YTD	12m
Equities												
World	MSCI	490	2.5	6.3	11.1	-12.5	-2.1	2.6	5.9	10.9	-11.2	-1.1
Emerging Markets	MSCI	912	-0.5	4.5	7.7	-17.7	-10.6	-0.5	4.5	7.7	-12.8	-6.0
US	MSCI	2805	3.9	7.3	14.2	-8.2	4.3	3.9	7.3	14.2	-8.2	4.3
Europe	MSCI	1410	0.1	4.7	5.7	-19.9	-11.5	1.0	4.3	6.0	-17.0	-9.5
Europe ex-UK	MSCI	1724	-0.6	4.6	6.1	-17.9	-8.6	0.4	4.2	6.6	-15.7	-7.3
UK	MSCI	875	2.4	5.0	4.5	-25.6	-19.4	3.1	4.4	4.1	-20.8	-15.9
Japan	MSCI	2984	2.4	4.1	5.4	-12.1	-0.9	2.0	1.9	3.9	-13.9	-4.3
Government Bonds												
World	BofA-ML	0.32	-0.5	1.3	0.5	3.2	7.2	-0.3	0.6	0.2	4.0	7.4
Emerging Markets	BBloom	6.23	1.7	5.2	4.3	-11.8	-3.7	1.7	5.2	4.3	-11.8	-3.7
US (10y)	Datastream	0.68	-0.4	0.4	-0.3	13.9	21.4	-0.4	0.4	-0.3	13.9	21.4
Europe	Bofa-ML	0.26	-1.7	1.0	-1.0	-2.9	1.6	-0.5	0.9	-0.1	0.3	4.7
Europe ex-UK (EMU, 10y)	Datastream	-0.53	-1.8	2.2	-0.2	0.3	2.0	-0.5	2.2	0.7	3.6	5.1
UK (10y)	Datastream	0.20	-0.6	2.0	1.4	-0.2	5.3	0.1	1.4	1.0	6.1	9.9
Japan (10y)	Datastream	0.00	0.2	2.3	1.6	2.0	3.2	-0.3	0.1	0.2	-0.1	-0.3
IG Corporate Bonds												
Global	BofA-ML	2.44	-0.9	3.2	3.8	-2.0	4.4	-0.6	3.0	3.9	-0.7	5.5
Emerging Markets	BBloom	6.17	0.9	7.1	7.7	-6.8	2.6	0.9	7.1	7.7	-6.8	2.6
US	BofA-ML	2.87	-0.9	3.2	4.2	0.0	8.1	-0.9	3.2	4.2	0.0	8.1
Europe	BofA-ML	1.26	-1.7	2.9	2.1	-6.2	-3.8	-0.5	2.9	3.1	-3.2	-0.9
UK	BofA-ML	2.37	-0.7	3.6	6.0	-5.4	1.9	0.1	3.0	5.5	0.6	6.3
Japan	BofA-ML	0.52	0.4	2.2	1.3	1.7	3.4	-0.1	0.0	-0.1	-0.4	-0.1
HY Corporate Bonds												
Global	BofA-ML	8.10	0.5	4.9	5.0	-9.8	-4.7	0.7	4.9	5.1	-9.2	-4.1
US	BofA-ML	8.10	1.0	5.0	4.5	-9.2	-4.4	1.0	5.0	4.5	-9.2	-4.4
Europe	BofA-ML	5.91	-1.9	3.2	4.3	-13.0	-8.4	-0.7	3.1	5.2	-10.2	-5.6
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	-1.3	-0.2	-1.8	-3.5	-3.7	0.0	0.0	-0.1	-0.2	-0.5
UK		0.00	-0.8	0.2	-0.1	-6.3	-4.1	0.0	0.0	0.0	0.1	0.6
Japan		0.00	0.2	2.0	0.8	1.8	3.1	0.0	0.0	0.0	0.0	-0.1
Real Estate (REITs)												
Global	FTSE	1519	1.2	1.8	5.5	-24.4	-17.1	2.4	1.7	6.5	-22.0	-14.6
Emerging Markets	FTSE	1814	-2.5	0.2	3.0	-26.5	-16.9	-1.3	0.1	4.0	-24.1	-14.3
US	FTSE	2407	1.9	0.6	6.2	-24.6	-17.9	1.9	0.6	6.2	-24.6	-17.9
Europe ex-UK	FTSE	2863	0.4	2.5	3.2	-23.3	-13.2	1.7	2.4	4.2	-20.8	-10.6
UK	FTSE	1095	-1.5	-1.7	2.1	-30.7	-17.4	-0.8	-2.3	1.6	-26.3	-13.8
Japan	FTSE	2368	4.8	7.3	6.0	-20.3	-8.3	4.3	5.0	4.5	-22.0	-11.4
Commodities												
All	GSCI	1444	7.2	-8.8	-3.4	-44.3	-43.4	-	-	-	-	-
Energy	GSCI	178	15.1	-21.4	-8.0	-64.2	-64.3	-	-	-	-	-
Industrial Metals	GSCI	1022	2.0	3.1	1.8	-16.1	-15.4	-	-	-	-	-
Precious Metals	GSCI	1966	1.2	1.9	7.6	9.9	30.0	-	-	-	-	-
Agricultural Goods	GSCI	299	0.0	-3.0	-5.2	-14.1	-6.0	-	-	-	-	-
Currencies (vs USD)*												
EUR		1.08	-1.3	-0.2	-1.7	-3.3	-3.1	-	-	-	-	-
JPY		106.67	0.2	2.0	0.8	1.8	3.2	-	-	-	-	-
GBP		1.25	-0.7	0.6	0.4	-6.0	-4.2	-	-	-	-	-
CHF		1.03	-1.0	0.1	-1.0	-0.3	5.1	-	-	-	-	-
CNY		7.07	-0.2	-0.1	0.1	-1.6	-4.1	-	-	-	-	-

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 08/05/2020	Global				
	1w	1m	QTD	YTD	12m
Energy	**1.4**	**0.8**	**-22.5**	**-22.5**	**-27.8**
Basic Materials	**0.4**	**2.5**	**-3.0**	**-3.0**	**-3.4**
Basic Resources	1.0	5.5	-2.9	-2.9	-2.8
Chemicals	-0.3	-0.7	-3.1	-3.1	-4.3
Industrials	**0.0**	**-0.8**	**-5.3**	**-5.3**	**-5.3**
Construction & Materials	-1.6	-0.6	-7.9	-7.9	-8.5
Industrial Goods & Services	0.2	-0.8	-4.9	-4.9	-4.9
Consumer Discretionary	**0.6**	**2.9**	**1.8**	**1.8**	**0.9**
Automobiles & Parts	0.5	3.2	-6.2	-6.2	-5.0
Media	0.8	2.8	-3.1	-3.1	-4.4
Retailers	1.3	4.4	18.4	18.4	17.7
Travel & Leisure	-1.1	0.8	-17.9	-17.9	-19.2
Consumer Products & Services	0.5	1.9	1.1	1.1	0.1
Consumer Staples	**-1.5**	**-3.6**	**3.1**	**3.1**	**-0.4**
Food, Beverage & Tobacco	-1.3	-3.8	0.4	0.4	-5.5
Personal Care, Drug & Grocery Stores	-1.7	-3.3	8.3	8.3	5.4
Healthcare	**-0.2**	**1.2**	**16.2**	**16.2**	**20.9**
Financials	**-2.5**	**-4.6**	**-16.1**	**-16.1**	**-17.5**
Banks	-3.3	-5.3	-21.5	-21.5	-23.9
Financial Services	-0.8	-1.3	-8.8	-8.8	-7.1
Insurance	-3.0	-7.2	-13.3	-13.3	-15.4
Real Estate	**-0.8**	**-3.7**	**-6.4**	**-6.4**	**-10.1**
Technology	**2.9**	**5.3**	**18.2**	**18.2**	**29.5**
Telecommunications	**-1.2**	**-3.1**	**5.8**	**5.8**	**0.8**
Utilities	**-2.1**	**-5.0**	**0.3**	**0.3**	**-2.6**

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

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

Data as at 08/05/2020	Absolute					Relative to Market				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Growth	5.3	10.1	18.7	-8.4	4.9	1.7	3.2	4.5	0.3	1.0
Low volatility	3.2	6.0	12.8	-5.2	6.3	-0.4	-0.6	-0.7	3.8	2.4
Price momentum	4.2	7.3	13.1	-7.0	1.2	0.6	0.6	-0.4	1.8	-2.5
Quality	3.7	5.9	13.5	-15.4	-7.0	0.1	-0.7	-0.1	-7.3	-10.5
Size	3.5	8.0	21.5	-28.7	-23.4	0.0	1.2	7.0	-22.0	-26.2
Value	3.4	7.7	21.9	-29.4	-22.4	-0.2	1.0	7.3	-22.7	-25.3
Market	3.6	6.7	13.6	-8.7	3.9					
Market - Equal-Weighted	3.6	6.5	14.3	-16.2	-6.8					

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 08/05/2020	Absolute					Relative to Market				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Growth	3.0	8.6	13.2	-7.7	5.3	1.7	3.4	5.7	11.1	14.3
Low volatility	1.4	7.0	8.7	-11.6	-0.4	0.1	2.0	1.4	6.4	8.2
Price momentum	2.8	9.9	11.5	-6.7	5.7	1.5	4.7	4.1	12.3	14.8
Quality	2.0	8.0	13.8	-18.4	-6.3	0.7	2.9	6.2	-1.8	1.8
Size	0.0	6.1	13.0	-23.6	-10.8	-1.2	1.1	5.5	-8.1	-3.2
Value	-1.2	1.4	6.8	-34.3	-29.4	-2.5	-3.4	-0.4	-20.9	-23.4
Market	1.3	5.0	7.2	-16.9	-7.9					
Market - Equal-Weighted	1.1	5.7	9.4	-19.2	-10.0					

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

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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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