

## Uncommon truths

### 2023: a year in review



**Despite tightening central banks and economic slowdown, 2023 has been a good year for investors. If only the same could be said for my Aristotle List of surprises for the year.**

A year ago, we were expecting less economic growth but the belief that central banks would stop tightening led to optimism about market outcomes (see [2022 in review](#)). Though economies slowed and central banks tightened more than we expected, assets did well.

The best performing global assets so far in 2023 are equities and high yield (see **Figure 3**). The only asset class to generate negative returns is commodities. The -16.4% USD total return on our Neutral portfolio in 2022 (-12.9% in local currency) was followed by +12.3% in 2023 (+12.4%). The Neutral portfolio is a static mix of global cash, fixed income, equity, real estate and commodity assets (see **Figure 6** for weightings).

As a reminder of events, here are Bloomberg's most-read articles during 2023 (paraphrased):

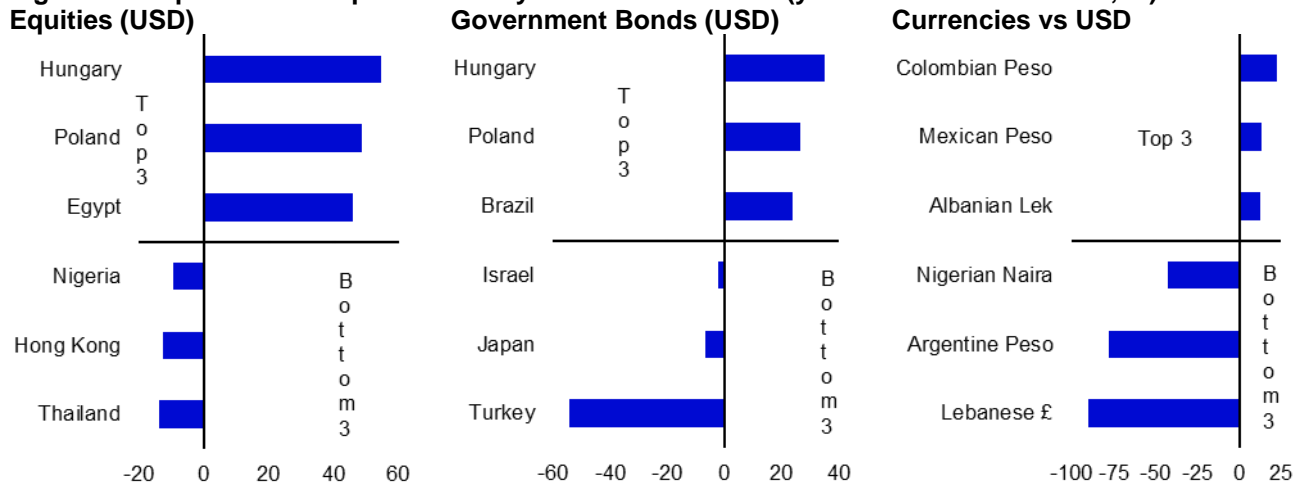
1. Goldman trader paid \$100m...stepping down (Dec 12)
2. SVB races to prevent a bank run... (Mar 10)
3. Goldman to cut about 3200 jobs... (Jan 9)
4. Stock mood turns ugly... (Jan 18)
5. US general warns Iran: stay out of conflict (Oct 10)
6. Fed pivots to rate cuts... (Dec 13)
7. JP Morgan in fight over client's losses (Dec 12)
8. Bond yields tumble as traders dial back Fed wagers (Jan 12)
9. Citigroup offers partial early bonuses... (Dec 13)
10. Stock close near lows of day...jobs in focus (Jan 5)

It is usually the case that bad news sells (many of the most read stories in 2022 were about Russia's invasion of Ukraine). However, we appear to have been less gloomy in our reading this year. Views about the Fed dominated the start and the end of the year (according to the most-read list), though there was a fair amount of parochial navel gazing with a lot of interest in news about individual banks. There was surprisingly little in the most read stories about the situation in Israel/Gaza and the regional banking mini crisis in the US.

The positive market outcomes suggest to me a willingness to look through the hawkishness of central banks to a time when they will be easing and economies accelerate. There have also been a range of idiosyncratic factors that have driven various assets (AI, poor real estate fundamentals and geopolitics, for example). Despite the fact we believe "bonds are back", equities have outperformed government bonds by a wide margin in 2023 (see **Figure 3**). The obvious exceptions among regions shown in **Figure 3** are EM and China, with government bonds outdoing stocks.

**Figure 1** shows the results of our annual ranking within asset groups. As is often the case, emerging markets dominate both ends of the spectrum, though Japanese government bonds appear in the bottom three of that category when expressed in US dollars. Argentinian assets were doing reasonably well (in USD) until the new government recently announced a drastic devaluation of the currency. Otherwise, Hungarian and Polish assets have fared well, despite the proximity to Ukraine, but Turkish government bonds have suffered from the dramatic tightening of central bank policy deemed necessary to curb inflation.

**Figure 1 – Top and bottom performers by asset class in 2023 (year-to-date total returns, %)**



**Past performance is no guarantee of future results.** As of 15 December 2023. Equity data is based on Datastream indices; government bond indices are supplied by ICE BofA; currencies are based on WM/Refinitiv exchange rates. Source: LSEG Datastream and Invesco Global Market Strategy Office.

As suggested by the most-read list, it is not only in Turkey that central banks have dominated the thoughts of investors and markets. As the year progressed, we had to adjust to the fact that major central banks (except the BOJ and the PBOC) were going to tighten more than expected at the start of the year.

This caused a dramatic reversal in bond markets, with US 10-year yields approaching 5% in October, causing some commentators to speculate about yields rising to the 6%-7% range. However, we were of the opinion that at 5% those yields were attractive (see [Can yields go much higher?](#)). **Figure 2** shows how nominal and real 10-year treasury yields had risen to pre-global financial crisis levels, which we think presented a reasonable opportunity, especially since the global economy still appeared to be slowing.

The more recent decline in bond yields was aided by the continued decline in inflation (and recent hints from the Fed that rate cuts are now on the agenda). That decline in inflation was foreshadowed by item #1 on my list of 10 surprises for 2023 (published on 8 January 2023 - see [The Aristotle List](#)). Unfortunately, the rest of the list was not so successful, as shown below (with my self-evaluation in blue):

1. US core CPI inflation falls below 4.0% (TBD)
2. The Fed panics & reduces rates in late 2023 (No)
3. USDJPY falls below 115 (No)
4. Boris Johnson makes a comeback as PM (No)
5. Turkey chooses a new president (No)
6. NYSE FANG+ falls again during 2023 (No)
7. USD denominated Ukraine government debt outperforms (Yes)
8. Pakistan stocks outperform major indices (Yes)
9. Chinese stocks outperform (No)
10. Ireland wins Rugby World Cup 2023 (No)

Remember, this list does not represent my central scenario but is rather an attempt to identify non-consensus ideas that I believe have a reasonable chance of occurring (thereby surprising most investors). They must therefore be put in the context of the prevailing sentiment at the start of the year (when inflation was broadly expected to be sticky and EM assets were not as popular as now).

This was the worst year that I can remember for the Aristotle List and especially hard to take after the success of 2022 (9/10 correct). I am reminded of the words of Rudyard Kipling: "If you can meet success and failure and treat them both as impostors, then you are a balanced man...", which I think should be remembered by investors in good times and bad.

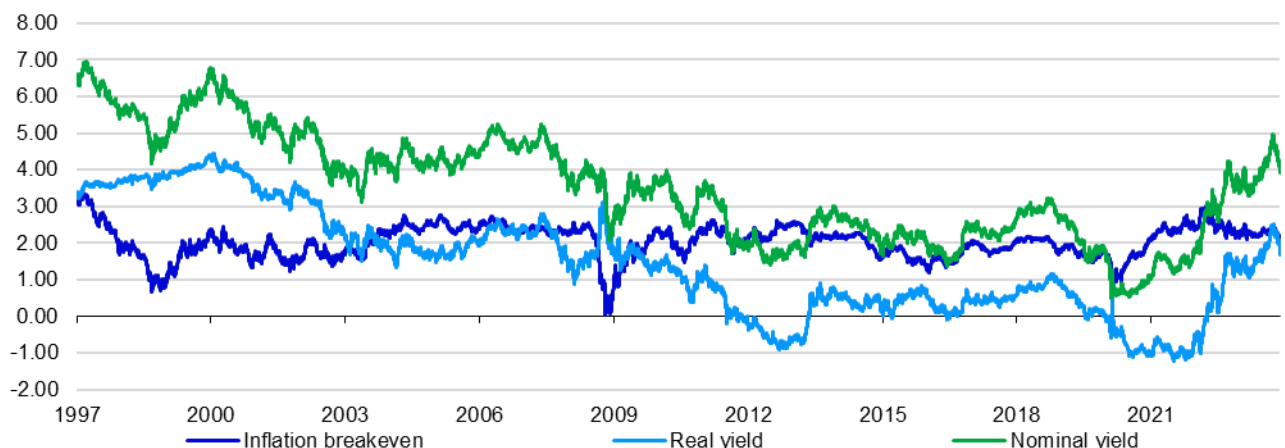
I will publish the selections for 2024 in early January. I have met many investors over recent weeks and months which helps to judge the prevailing mood. I am hoping a break over the Christmas and New Year period will provide more inspiration than last year.

I continue to believe the main driver of returns will be economic and policy cycles. I think the global economy is slowing, that inflation will continue to fall and that central banks will soon be cutting rates (aggressively). As outlined in the [Big Picture 2024 Outlook](#) document, that led me to be cautious about riskier assets in the short term but to expect that multi-asset returns to the end of 2024 would be among the best since 2019. However, the recent rally in most asset markets suggests a lot of what I was expecting has already happened, perhaps dimming the outlook for returns.

On that note, all that remains is for Andras and I to wish you and your loved ones a happy holiday season.

*Unless stated otherwise, all data as of 15 December 2023.*

**Figure 2: Chart of the year: rising US 10-year yields meant that bonds were finally back in 2023 (%)**



Notes: **past performance is no guarantee of future results.** Daily data from 29 January 1997 to 15 December 2023. "Real yield" is the 10-year TIPS yield. Source: LSEG Datastream and Invesco Global Market Strategy Office

**Figure 3 – Asset class total returns**

Data as at 15/12/2023	Index	Current Level/Ry	Total Return (USD, %)					Total Return (Local Currency, %)				
			1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
<b>Equities</b>												
World	MSCI	716	2.6	4.9	9.5	20.9	19.6	2.2	4.2	8.2	20.8	19.1
Emerging Markets	MSCI	1001	2.7	1.9	5.4	7.6	7.4	2.3	1.4	3.7	8.3	7.5
China	MSCI	55	1.8	-6.1	-4.9	-11.6	-10.9	1.6	-6.3	-5.4	-11.2	-10.4
US	MSCI	4505	2.6	5.3	10.7	25.7	23.9	2.6	5.3	10.7	25.7	23.9
Europe	MSCI	1986	2.2	5.5	9.2	18.6	17.5	0.8	4.2	5.2	14.6	13.8
Europe ex-UK	MSCI	2479	2.4	6.0	10.7	20.9	19.9	1.0	5.0	6.8	17.4	16.3
UK	MSCI	1148	1.5	3.6	4.2	11.2	10.0	0.3	1.5	0.1	5.4	5.8
Japan	MSCI	3631	2.4	4.4	6.1	18.4	17.8	0.5	-2.0	0.8	27.2	21.4
<b>Government Bonds</b>												
World	BofA-ML	3.04	2.7	5.5	7.1	2.7	1.2	1.8	3.8	4.8	3.5	1.1
Emerging Markets	BBloom	7.70	3.7	10.9	13.2	14.3	11.4	3.7	10.9	13.2	14.3	11.4
China	BofA-ML	2.55	1.2	2.4	3.8	2.2	2.9	0.4	0.4	0.9	4.4	4.9
US (10y)	Datastream	3.92	2.6	5.5	6.2	3.1	0.1	2.6	5.5	6.2	3.1	0.1
Europe	BofA-ML	2.72	3.3	5.3	10.3	8.9	5.8	1.9	4.8	7.0	6.5	3.2
Europe ex-UK (EMU, 10y)	Datastream	1.99	3.5	5.7	10.8	10.1	6.0	2.1	5.2	7.4	7.7	3.4
UK (10y)	Datastream	3.77	4.2	6.9	11.6	10.4	5.3	2.9	4.8	7.3	4.6	1.3
Japan (10y)	Datastream	0.71	2.5	7.4	6.0	-6.0	-3.5	0.6	0.9	0.7	1.0	-0.5
<b>IG Corporate Bonds</b>												
Global	BofA-ML	4.81	2.7	5.5	7.8	8.7	6.3	2.2	5.2	6.7	7.8	5.5
Emerging Markets	BBloom	7.10	2.5	6.8	7.8	9.4	8.2	2.5	6.8	7.8	9.4	8.2
China	BofA-ML	3.31	1.1	2.3	3.6	1.9	2.3	0.3	0.3	0.7	4.1	4.2
US	BofA-ML	5.25	2.6	6.2	7.6	8.1	5.4	2.6	6.2	7.6	8.1	5.4
Europe	BofA-ML	3.68	2.8	3.9	8.4	10.1	8.6	1.4	3.4	5.2	7.6	5.9
UK	BofA-ML	5.41	3.6	6.2	11.3	14.3	10.0	2.4	4.1	6.9	8.2	5.9
Japan	BofA-ML	0.93	2.1	6.8	5.6	-6.0	-2.7	0.2	0.3	0.3	1.0	0.2
<b>HY Corporate Bonds</b>												
Global	BofA-ML	7.98	2.1	4.2	6.3	12.0	10.5	1.8	4.0	5.6	11.4	9.9
US	BofA-ML	7.98	1.9	4.1	5.9	12.3	10.2	1.9	4.1	5.9	12.3	10.2
Europe	BofA-ML	6.61	2.8	4.0	8.3	13.9	13.0	1.4	3.5	5.0	11.4	10.3
<b>Cash (Overnight LIBOR)</b>												
US		5.33	0.1	0.4	0.9	4.6	4.9	0.1	0.4	0.9	4.6	4.9
Euro Area		3.89	-0.5	3.3	3.6	4.7	6.6	0.1	0.3	0.7	2.9	3.1
UK		5.19	0.9	5.0	5.1	9.5	8.4	0.1	0.4	0.9	4.3	4.5
Japan		-0.02	1.8	2.8	1.7	-10.7	-7.9	0.0	0.0	0.0	0.0	0.0
<b>Real Estate (REITs)</b>												
Global	FTSE	1621	5.5	9.7	13.4	8.4	6.1	4.1	9.1	10.0	6.0	3.5
Emerging Markets	FTSE	1251	3.9	1.1	3.9	-3.9	-3.5	2.5	0.6	0.8	-6.1	-5.9
US	FTSE	3060	6.1	11.8	15.1	12.5	8.9	6.1	11.8	15.1	12.5	8.9
Europe ex-UK	FTSE	2493	6.4	12.6	24.4	20.0	15.8	5.0	12.0	20.7	17.4	13.0
UK	FTSE	860	6.6	8.6	22.0	15.3	10.6	5.3	6.4	17.3	9.2	6.4
Japan	FTSE	2177	2.5	6.0	6.1	4.0	3.5	0.6	-0.5	0.8	11.7	6.7
<b>Commodities</b>												
All	GSCI	3352	1.1	-4.3	-10.6	-4.1	-2.0	-	-	-	-	-
Energy	GSCI	580	1.0	-6.4	-16.6	-5.0	-3.2	-	-	-	-	-
Industrial Metals	GSCI	1565	3.0	0.7	-1.5	-6.6	-5.6	-	-	-	-	-
Precious Metals	GSCI	2276	1.4	2.9	9.0	9.5	12.2	-	-	-	-	-
Agricultural Goods	GSCI	522	-0.7	-2.2	1.1	-6.6	-3.5	-	-	-	-	-
<b>Currencies (vs USD)*</b>												
EUR		1.09	1.2	0.4	3.1	1.8	2.5	-	-	-	-	-
JPY		142.17	2.0	6.5	5.1	-7.8	-3.1	-	-	-	-	-
GBP		1.27	1.2	2.1	4.0	5.6	3.9	-	-	-	-	-
CHF		1.15	1.1	2.0	5.1	6.2	6.7	-	-	-	-	-
CNY		7.12	0.7	1.8	2.6	-3.1	-2.0	-	-	-	-	-

Notes: **Past performance is no guarantee of future results.** \*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). Please see appendix for definitions, methodology and disclaimers.

Source: Refinitiv Datastream and Invesco

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

Data as at 15/12/2023	Global				
	1w	1m	QTD	YTD	12m
<b>Energy</b>	<b>-1.6</b>	<b>-5.2</b>	<b>-11.2</b>	<b>-9.1</b>	<b>-6.2</b>
<b>Basic Materials</b>	<b>1.1</b>	<b>0.7</b>	<b>-0.5</b>	<b>-8.2</b>	<b>-7.3</b>
Basic Resources	1.4	1.5	-0.1	-8.0	-6.4
Chemicals	0.5	-0.3	-1.0	-8.5	-8.7
<b>Industrials</b>	<b>1.3</b>	<b>3.1</b>	<b>2.1</b>	<b>-0.9</b>	<b>-0.9</b>
Construction & Materials	2.1	4.8	4.5	10.5	9.9
Industrial Goods & Services	1.2	2.8	1.7	-2.4	-2.3
<b>Consumer Discretionary</b>	<b>0.4</b>	<b>-0.2</b>	<b>0.8</b>	<b>5.9</b>	<b>4.0</b>
Automobiles & Parts	0.0	-1.5	-6.1	17.6	8.1
Media	0.1	0.0	5.3	4.0	3.8
Retailers	0.8	-0.9	1.9	6.3	5.3
Travel & Leisure	0.2	0.9	0.0	0.9	-0.6
Consumer Products & Services	0.4	1.2	3.8	1.7	2.3
<b>Consumer Staples</b>	<b>-1.9</b>	<b>-3.2</b>	<b>-5.2</b>	<b>-16.4</b>	<b>-15.9</b>
Food, Beverage & Tobacco	-1.6	-3.2	-5.2	-16.2	-15.5
Personal Care, Drug & Grocery Stores	-2.3	-3.4	-5.1	-16.9	-16.7
<b>Healthcare</b>	<b>-0.7</b>	<b>-0.3</b>	<b>-4.3</b>	<b>-13.8</b>	<b>-13.8</b>
<b>Financials</b>	<b>0.2</b>	<b>1.2</b>	<b>0.7</b>	<b>-3.8</b>	<b>-1.7</b>
Banks	0.5	1.7	0.6	-4.9	-1.8
Financial Services	1.5	2.6	2.5	-0.3	0.3
Insurance	-2.7	-2.2	-1.9	-6.8	-4.5
<b>Real Estate</b>	<b>2.1</b>	<b>3.2</b>	<b>3.6</b>	<b>-10.2</b>	<b>-11.3</b>
<b>Technology</b>	<b>0.1</b>	<b>0.0</b>	<b>5.7</b>	<b>28.4</b>	<b>25.1</b>
<b>Telecommunications</b>	<b>-1.4</b>	<b>-2.3</b>	<b>-2.7</b>	<b>-6.7</b>	<b>-5.6</b>
<b>Utilities</b>	<b>-1.2</b>	<b>0.8</b>	<b>1.0</b>	<b>-12.3</b>	<b>-12.3</b>

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

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

Data as at 15/12/2023	Absolute					Relative to Market				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
<b>Growth</b>	5.1	8.2	12.3	28.8	26.6	2.5	3.1	1.6	3.1	2.8
<b>Low volatility</b>	1.2	3.6	7.3	2.4	2.4	-1.3	-1.3	-2.9	-18.0	-16.9
<b>Price momentum</b>	2.7	5.9	10.9	10.7	11.0	0.2	0.8	0.4	-11.3	-9.9
<b>Quality</b>	4.5	7.0	7.4	18.5	17.1	1.9	1.9	-2.8	-5.1	-4.9
<b>Size</b>	6.1	12.0	13.1	13.6	12.2	3.4	6.7	2.4	-9.0	-8.9
<b>Value</b>	4.6	10.2	13.6	10.8	10.6	2.0	4.9	2.8	-11.2	-10.2
<b>Market</b>	2.5	5.0	10.5	24.9	23.2					
<b>Market - Equal-Weighted</b>	3.9	7.7	10.4	12.4	11.5					

Notes: **Past performance is no guarantee of future results.** 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. Source: Refinitiv Datastream and Invesco

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

Data as at 15/12/2023	Absolute					Relative to Market				
	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
<b>Growth</b>	3.9	9.0	12.7	15.7	13.2	2.9	3.8	6.1	-0.2	-1.2
<b>Low volatility</b>	0.0	4.0	4.5	11.7	10.7	-0.9	-1.0	-1.6	-3.6	-3.3
<b>Price momentum</b>	1.0	5.0	7.8	11.6	11.8	0.1	0.0	1.5	-3.7	-2.5
<b>Quality</b>	2.3	4.5	5.9	13.9	12.2	1.4	-0.5	-0.3	-1.7	-2.0
<b>Size</b>	3.1	6.5	9.8	10.9	8.5	2.2	1.4	3.4	-4.3	-5.3
<b>Value</b>	2.1	6.4	8.7	17.1	16.9	1.2	1.3	2.4	1.1	2.0
<b>Market</b>	0.9	5.0	6.2	15.9	14.6					
<b>Market - Equal-Weighted</b>	2.0	6.1	8.4	14.7	13.2					

Notes: **Past performance is no guarantee of future results.** 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. Source: Refinitiv Datastream and Invesco

**Figure 6 – Model asset allocation**

	Neutral	Policy Range	Allocation	Position vs Neutral	Hedged	Currency
<b>Cash Equivalents</b>	<b>5%</b>	<b>0-10%</b>				
Cash	2.5%			↓ 0%		
Gold	2.5%			↓ 0%		
<b>Bonds</b>	<b>40%</b>	<b>10-70%</b>				
Government	25%	10-40%				
US	8%		13%			
Europe ex-UK (Eurozone)	7%		2%			
UK	1%		1%			
Japan	7%		2%			
Emerging Markets	2%		4%			
China**	0.2%		0%			
Corporate IG	10%	0-20%				
US Dollar	5%		10%			40% JPY
Euro	2%		4%			
Sterling	1%		2%			
Japanese Yen	1%		1%			
Emerging Markets	1%		3%			
China**	0.1%		0%			
Corporate HY	5%	0-10%				
US Dollar	4%		6%			
Euro	1%		2%			
<b>Bank Loans</b>	<b>4%</b>	<b>0-10%</b>				
US	3%		5%			
Europe	1%		2%			
<b>Equities</b>	<b>45%</b>	<b>25-65%</b>				
US	25%		12%			
Europe ex-UK	7%		10%			
UK	4%		5%			
Japan	4%		2%			
Emerging Markets	5%		8%			
China**	2%		4%			
<b>Real Estate</b>	<b>4%</b>	<b>0-16%</b>				
US	1%		2%			
Europe ex-UK	1%		1%			
UK	1%		2%			
Japan	1%		1%			
Emerging Markets	1%		0%			
<b>Commodities</b>	<b>2%</b>	<b>0-4%</b>				
Energy	1%		0%			
Industrial Metals	0.3%		0%			
Precious Metals	0.3%		0%			
Agriculture	0.3%		0%			
<b>Total</b>	<b>100%</b>		<b>100%</b>			
<b>Currency Exposure (including effect of hedging)</b>						
USD	52%		44%			
EUR	19%		21%			
GBP	7%		10%			
JPY	13%		10%			
EM	9%		15%			
<b>Total</b>	<b>100%</b>		<b>100%</b>			

Notes: \*\*China is included in Emerging Markets allocations. 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 Global Market Strategy Office

**Figure 7 – Model allocations for global sectors**

	<b>Neutral</b>	<b>Invesco</b>		<b>Preferred Region</b>
<b>Energy</b>	<b>8.1%</b>	<b>Neutral</b>	↑	<b>EM</b>
<b>Basic Materials</b>	<b>4.2%</b>	<b>Neutral</b>		<b>Europe</b>
Basic Resources	2.4%	Neutral		Europe
Chemicals	1.8%	Neutral		US
<b>Industrials</b>	<b>12.8%</b>	<b>Overweight</b>	↑	<b>US</b>
Construction & Materials	1.6%	Underweight		US
Industrial Goods & Services	11.2%	Overweight	↑	US
<b>Consumer Discretionary</b>	<b>14.5%</b>	<b>Underweight</b>	↓	<b>Europe</b>
Automobiles & Parts	2.9%	Underweight		Japan
Media	1.0%	Underweight		Japan
Retailers	4.8%	Neutral	↓	US
Travel & Leisure	2.1%	Underweight		EM
Consumer Products & Services	3.7%	Neutral		Europe
<b>Consumer Staples</b>	<b>6.0%</b>	<b>Overweight</b>		<b>Europe</b>
Food, Beverage & Tobacco	3.9%	Overweight		Europe
Personal Care, Drug & Grocery Stores	2.1%	Overweight		US
<b>Healthcare</b>	<b>9.7%</b>	<b>Overweight</b>		<b>US</b>
<b>Financials</b>	<b>15.3%</b>	<b>Neutral</b>		<b>Europe</b>
Banks	7.3%	Neutral		Europe
Financial Services	4.9%	Underweight		US
Insurance	3.0%	Neutral		Europe
<b>Real Estate</b>	<b>2.8%</b>	<b>Overweight</b>		<b>US</b>
<b>Technology</b>	<b>19.7%</b>	<b>Neutral</b>		<b>US</b>
<b>Telecommunications</b>	<b>3.6%</b>	<b>Overweight</b>		<b>Europe</b>
<b>Utilities</b>	<b>3.3%</b>	<b>Underweight</b>		<b>Europe</b>

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 Global Market Strategy Office

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## Appendix

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### 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), bank loans, 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, high-yield and bank loan spreads are based upon our view of the economic cycle (as are forecasts of credit losses). Coupon/interest 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 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 Refinitiv 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). From 1<sup>st</sup> January 2022, we use the Refinitiv overnight deposit rate for the euro, the British pound and the Japanese yen. The global rate is the average of the euro, British pound, US dollar and Japanese yen rates. The series started on 1 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 ICE BofA 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:** ICE BofA 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:** ICE BofA 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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