

## Uncommon truths

### The German tortoise and the US hare

**Why has the German economy been struggling, while that of the US steams ahead? This was not always the case but since the start of the pandemic the US economy has performed on the back of rising government debt and falling savings rates. Will the tortoise have the last (and longest) laugh?**

My return flight from Milan this week was cancelled due to the incoming aircraft having to land on one engine. Conversations with investors in Italy and elsewhere give the impression that the German economy is also flying on one engine, while the US continues at full throttle. Is this a fair representation of the facts and, if so, why the difference between the two economies?

GDP data support the notion that Germany is struggling (-0.2% year-on-year in 2023 Q4 and -0.1% for 2023 as a whole). Meanwhile, US GDP grew by 2.5% in the year to 2023 Q4 and 3.1% in 2023 versus 2022. No wonder the German 10-year government yield (2.40%) is 2% below that of the US (4.40%, as of 5 April 2024).

It may also help to explain why German stocks (+15.9% in 2023, according to MSCI) underperformed US stocks (+25.0%). However, a lot of that difference may have been due to the impact of AI enabling stocks on US indices, while the difference is less obvious so far this year (+7.5% for Germany versus +9.0% for the US, as of 5 April 2024).

Data released over the last week suggests the gap persists. For example, the US March employment report was again stronger than expected, with a 303k gain in non-farm payrolls (giving a monthly average of 276k in 2024 Q1, up from 212k in 2023 Q4). Also, the ISM Manufacturing survey improved in March to 50.3 (up from 47.8). Meanwhile, German factory orders

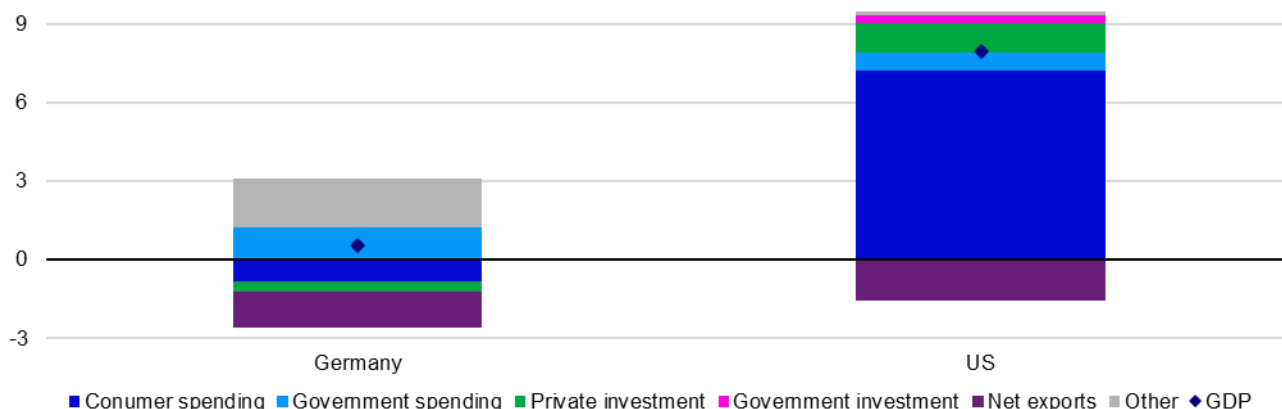
were 10.6% below the year-ago level in February and the Manufacturing PMI fell to a lowly 41.9 in March.

However, other data muddies the water. The German Services PMI was reported to have improved to 50.1 in March (from a recent low of 47.7 in January), while the US ISM Services index fell to 51.4 (it was 53.4 in January). Also, US Wards vehicle sales data was weaker than expected in March (ask Elon Musk!).

Nevertheless, it is hard to argue with the general notion that the US is outperforming Germany, though this was not always the case. US real GDP growth may have massively outstripped that of Germany in the twenty years to 2019 (52.8% versus 31.0%), but there was virtually no difference on a per capita basis (29.1% versus 28.4%). Hence, over the long term, US economic strength versus Germany was largely a function of demographics (population growth over those two decades added around 0.9% to annualised US GDP growth but only 0.1% to that of Germany).

However, **Figure 1** suggests there has been a dramatic change since 2019 (i.e. since just before the start of the pandemic). Over that period, German GDP grew by a measly 0.5% (0.1% annualised), while US GDP grew by 7.9% (1.9% annualised), all based on OECD estimates. On a per capita basis, German GDP fell by 0.8% (0.2% annualised), while US GDP grew by 6.5% (1.6% annualised). Germany has started to look like the tortoise to the US hare. **Figure 1** suggests the big difference between the two countries was consumer spending. This detracted 0.8% from GDP in Germany, while adding 7.2% in the US. Indeed, the consumer contributed 91% of the GDP growth in the US since 2019, which is amazing given that it only accounted for around 68% of GDP over that period.

**Figure 1 – Contribution to accumulated growth in real GDP from 2019 to 2023 (%)**



Note: Based on annual data from 2019 to 2023. Based on OECD estimates of real spending in local currency terms. Investment items are based on gross fixed capital formation. "Consumer spending" is private final consumption expenditure, while "government spending" is government final consumption expenditure. "Other" is the residual between GDP growth and the growth provided by the GDP components shown in the chart (it includes inventory accumulation). Source: OECD, LSEG Datastream and Invesco Global Market Strategy Office

Other negative contributors in Germany were investment (private and public) and net exports. The latter was the only component to have made a negative contribution to the US economy. The fact that net exports made a negative contribution to both economies is curious but is corroborated by the common deterioration in current account balances. This seems easier to understand in the case of the US, given the strength of both its economy and currency.

It is less easy to explain for Germany. Perhaps the global shift to spending on services and away from goods has penalised an industrial economy such as Germany, as may have the lacklustre growth in China. Then again, the same could be said for Japan but it has seen no deterioration in its current account balance. However, other big European economies (France, Italy and UK) have all seen a worsening of their external balances, especially in 2022, which suggests a link to Russia's invasion of Ukraine (higher energy costs in Europe and the loss of exports to Russia).

Coming back to consumer spending, what could explain the difference between the two countries in the period since 2019 (real consumer spending fell by 2.0% in Germany but increased by 6.7% in the US)? In one sense, the answer is simple: real net household disposable income fell by 0.8% in Germany (between 2019 and 2023) but increased by 6.5% in the US. Further, the household (and non-profit institutions) savings rate increased in Germany (from 10.8% to 11.7%), while falling in the US (from 7.6% to 4.4%). Not only did US household incomes grow more but an increasingly large portion of US incomes was spent.

More difficult to explain are those divergences in household disposable income and in savings behaviour. I suspect it had something to do with differing government approaches to supporting economies. The German government did a good job of

protecting household cash flows in 2020 (real household disposable income grew by 0.8%, similar to 2019) but that was reversed in 2021. However, the US government went much further, with tax rebates enabling an outsized 7.0% increase in real disposable incomes in 2020, followed by 3.3% in 2021 (in line with pre-2019 growth). **Figure 2a** suggests there was a bigger accumulation of government debt in the US at the time of the pandemic, with debt/GDP now higher than in 2019 (the reverse is true in Germany).

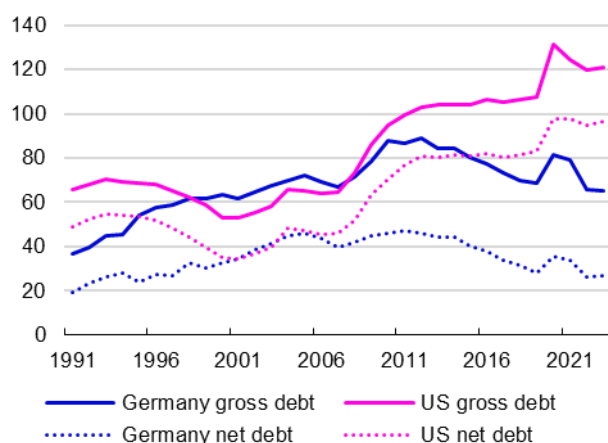
Savings rates naturally increased in both countries in 2020 due to the inability to spend during lockdown but the change was more noticeable in the US (the German household savings rate went from 10.8% in 2019 to 16.7% in the 2020, while that of the US went from 7.6% to 15.9%). The build-up of excess savings was thus greater in the US and their subsequent depletion helps explain why US consumer spending growth has been stronger in recent years.

Then, the final mystery is why the US savings rate has fallen so much. **Figure 2b** shows that the savings rate tends to be lower than in Germany but that gap is now wider than usual (the US savings rate is close to historical lows). This is perhaps linked to the feelgood factor that comes from US personal net worth reaching 761.2% of disposable income in 2023 Q4 (it had only ever been higher in 2021 and higher net worth is associated with lower savings rates). However, the same can largely be said for Germany (the net worth to disposable income ratio was around 900% in 2023 Q3).

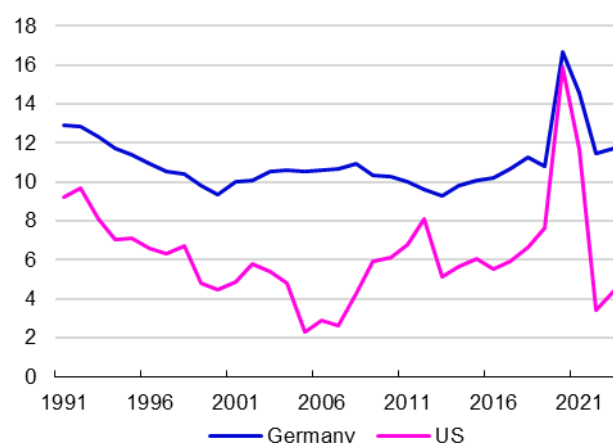
In conclusion, the US has outperformed Germany to an unusual degree since 2019, largely on the back of government debt and falling savings rates. Neither the US government nor US households seem well positioned to spur future growth nor to deal with shocks. I think, the tortoise may have the last laugh.

*Unless stated otherwise, all data as of 05 April 2024*

**Figure 2a – Government debt (% of GDP)**



**Figure 2b – Household savings rate (%)**



Notes: Annual from 1991 to 2023 as estimated by the OECD. Figure 2a refers to general government financial liabilities. Figure 2b shows the net savings ratio of households and non-profit institutions. Source: OECD, LSEG Datastream and Invesco Global Market Strategy Office

**Figure 3 – Asset class total returns (%)**

Data as at 05/04/2024	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	777	-0.9	2.3	-0.9	7.4	23.0	-0.9	2.5	-0.9	8.7	24.5
Emerging Markets	MSCI	1046	0.3	2.7	0.3	2.7	9.1	0.3	3.4	0.3	4.9	11.5
China	MSCI	55	0.7	3.7	0.7	-1.5	-15.1	0.7	3.9	0.7	-1.0	-14.6
US	MSCI	4961	-0.9	2.6	-0.9	9.4	29.8	-0.9	2.6	-0.9	9.4	29.8
Europe	MSCI	2091	-1.0	2.0	-1.0	4.3	13.3	-1.1	3.0	-1.1	7.3	13.7
Europe ex-UK	MSCI	2621	-1.1	1.7	-1.1	4.9	14.7	-1.3	2.7	-1.3	8.3	15.6
UK	MSCI	1192	-0.6	3.0	-0.6	2.5	8.7	-0.4	4.0	-0.4	3.6	7.3
Japan	MSCI	3967	-2.6	-1.4	-2.6	8.2	22.0	-2.5	-0.3	-2.5	16.4	41.2
<b>Government Bonds</b>												
World	BofA-ML	3.37	-0.8	-1.2	-0.8	-3.8	-4.3	-0.8	-0.8	-0.8	-1.6	-1.0
Emerging Markets	BBloom	7.66	-0.5	1.8	-0.5	1.8	13.3	-0.5	1.8	-0.5	1.8	13.3
China	BofA-ML	2.24	0.0	-0.3	0.0	0.2	1.4	0.1	0.2	0.1	2.3	6.6
US (10y)	Datastream	4.40	-1.4	-1.7	-1.4	-3.1	-5.2	-1.4	-1.7	-1.4	-3.1	-5.2
Europe	BofA-ML	3.02	-0.5	-0.9	-0.5	-3.4	1.4	-0.6	-0.4	-0.6	-1.4	2.3
Europe ex-UK (EMU, 10y)	Datastream	2.38	-0.6	-0.9	-0.6	-4.3	-0.1	-0.8	-0.4	-0.8	-2.3	0.8
UK (10y)	Datastream	4.07	-1.1	-1.0	-1.1	-3.7	1.0	-0.9	-0.1	-0.9	-2.6	-0.3
Japan (10y)	Datastream	0.74	-0.3	-1.4	-0.3	-7.6	-14.9	-0.2	-0.3	-0.2	-0.7	-1.4
<b>IG Corporate Bonds</b>												
Global	BofA-ML	5.02	-0.7	-0.4	-0.7	-1.4	3.2	-0.7	-0.2	-0.7	-0.6	3.6
Emerging Markets	BBloom	6.88	-0.8	0.4	-0.8	2.6	8.9	-0.8	0.4	-0.8	2.6	8.9
China	BofA-ML	2.98	0.0	-0.3	0.0	-0.4	0.1	0.1	0.2	0.1	1.6	5.3
US	BofA-ML	5.54	-1.0	-0.6	-1.0	-1.1	2.5	-1.0	-0.6	-1.0	-1.1	2.5
Europe	BofA-ML	3.77	0.1	0.2	0.1	-1.8	4.8	-0.1	0.7	-0.1	0.3	5.8
UK	BofA-ML	5.50	-0.9	-0.6	-0.9	-1.7	6.8	-0.8	0.3	-0.8	-0.6	5.4
Japan	BofA-ML	0.94	-0.3	-1.1	-0.3	-7.0	-13.1	-0.1	-0.1	-0.1	0.0	0.6
<b>HY Corporate Bonds</b>												
Global	BofA-ML	7.91	-0.3	0.4	-0.3	1.2	10.6	-0.3	0.5	-0.3	1.6	10.8
US	BofA-ML	8.04	-0.5	0.3	-0.5	1.0	10.5	-0.5	0.3	-0.5	1.0	10.5
Europe	BofA-ML	6.68	0.3	-0.1	0.3	-0.4	9.9	0.1	0.4	0.1	1.7	10.8
<b>Cash (Overnight LIBOR)</b>												
US		5.31	0.1	0.4	1.3	1.3	5.4	0.1	0.4	1.3	1.3	5.4
Euro Area		3.91	-0.2	0.2	-0.9	-0.9	4.4	0.1	0.3	0.9	0.9	3.7
UK		5.19	-0.6	0.0	0.4	0.4	8.5	0.1	0.4	1.2	1.2	5.1
Japan		0.08	-0.5	-0.6	-6.9	-6.9	-13.8	0.0	0.0	0.0	0.0	0.0
<b>Real Estate (REITs)</b>												
Global	FTSE	1555	-2.6	0.2	-2.6	-3.9	5.3	-2.8	0.7	-2.8	-1.9	6.2
Emerging Markets	FTSE	1199	-0.8	0.1	-0.8	-5.0	-5.1	-1.0	0.6	-1.0	-3.0	-4.3
US	FTSE	2929	-3.0	-1.7	-3.0	-3.6	8.1	-3.0	-1.7	-3.0	-3.6	8.1
Europe ex-UK	FTSE	2328	-3.3	4.3	-3.3	-8.7	20.5	-3.5	4.8	-3.5	-6.7	21.6
UK	FTSE	804	-3.4	1.7	-3.4	-6.6	8.3	-3.2	2.6	-3.2	-5.6	6.9
Japan	FTSE	2232	-2.6	7.3	-2.6	3.9	8.3	-2.5	8.4	-2.5	11.7	25.4
<b>Commodities</b>												
All	GSCI	3822	3.5	8.4	3.5	14.2	11.8	-	-	-	-	-
Energy	GSCI	702	4.7	10.8	4.7	21.2	19.0	-	-	-	-	-
Industrial Metals	GSCI	1690	5.3	8.6	5.3	5.6	3.3	-	-	-	-	-
Precious Metals	GSCI	2613	5.4	9.5	5.4	12.8	14.1	-	-	-	-	-
Agricultural Goods	GSCI	516	-0.2	5.7	-0.2	0.6	-7.2	-	-	-	-	-
<b>Currencies (vs USD)*</b>												
EUR		1.08	0.4	-0.2	0.4	-1.8	-0.6	-	-	-	-	-
JPY		151.62	-0.2	-1.0	-0.2	-7.0	-13.4	-	-	-	-	-
GBP		1.26	-0.2	-0.9	-0.2	-1.1	1.3	-	-	-	-	-
CHF		1.11	0.1	-2.0	0.1	-6.6	0.6	-	-	-	-	-
CNY		7.23	-0.2	-0.5	-0.2	-1.9	-4.9	-	-	-	-	-

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: LSEG Datastream and Invesco Global Market Strategy Office

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

Data as at 05/04/2024	Global				
	1w	1m	QTD	YTD	12m
<b>Energy</b>	<b>2.4</b>	<b>3.0</b>	<b>2.4</b>	<b>-0.2</b>	<b>-4.7</b>
<b>Basic Materials</b>	<b>2.5</b>	<b>4.5</b>	<b>2.5</b>	<b>-3.9</b>	<b>-9.5</b>
Basic Resources	3.5	6.7	3.5	-4.2	-7.8
Chemicals	1.3	1.6	1.3	-3.4	-11.8
<b>Industrials</b>	<b>0.0</b>	<b>0.3</b>	<b>0.0</b>	<b>0.7</b>	<b>2.1</b>
Construction & Materials	0.0	0.8	0.0	1.5	11.2
Industrial Goods & Services	0.0	0.2	0.0	0.5	0.8
<b>Consumer Discretionary</b>	<b>-1.0</b>	<b>-1.6</b>	<b>-1.0</b>	<b>-0.6</b>	<b>-1.3</b>
Automobiles & Parts	-2.1	-3.6	-2.1	-7.8	-4.5
Media	1.2	1.8	1.2	9.3	5.2
Retailers	-0.2	0.2	-0.2	5.1	10.5
Travel & Leisure	-0.9	-1.5	-0.9	-3.6	-6.8
Consumer Products & Services	-2.1	-3.7	-2.1	-3.8	-11.5
<b>Consumer Staples</b>	<b>-1.5</b>	<b>-1.6</b>	<b>-1.5</b>	<b>-6.8</b>	<b>-19.2</b>
Food, Beverage & Tobacco	-1.3	-1.1	-1.3	-7.3	-20.2
Personal Care, Drug & Grocery Stores	-1.9	-2.6	-1.9	-5.9	-17.1
<b>Healthcare</b>	<b>-1.9</b>	<b>-3.1</b>	<b>-1.9</b>	<b>-2.1</b>	<b>-10.3</b>
<b>Financials</b>	<b>0.2</b>	<b>0.5</b>	<b>0.2</b>	<b>1.2</b>	<b>5.3</b>
Banks	0.7	0.8	0.7	1.2	5.7
Financial Services	-0.3	0.2	-0.3	-0.1	5.9
Insurance	-0.2	0.2	-0.2	3.4	3.5
<b>Real Estate</b>	<b>-1.3</b>	<b>-2.1</b>	<b>-1.3</b>	<b>-8.7</b>	<b>-13.0</b>
<b>Technology</b>	<b>0.6</b>	<b>0.8</b>	<b>0.6</b>	<b>5.6</b>	<b>19.3</b>
<b>Telecommunications</b>	<b>-0.4</b>	<b>-1.0</b>	<b>-0.4</b>	<b>-5.3</b>	<b>-13.2</b>
<b>Utilities</b>	<b>0.9</b>	<b>0.8</b>	<b>0.9</b>	<b>-4.2</b>	<b>-12.6</b>

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

**Figure 5 – Model asset allocation**

	Neutral	Policy Range	Allocation	Position vs Neutral	Hedged	Currency
<b>Cash Equivalents</b>	<b>5%</b>	<b>0-10%</b>	<b>6%</b>	↑		
Cash	2.5%		6%	↑		
Gold	2.5%		0%			
<b>Bonds</b>	<b>40%</b>	<b>10-70%</b>	<b>41%</b>	↓		
Government	25%	10-40%	22%			
US	8%		13%			25% JPY
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%	16%	↓		
US Dollar	5%		8%	↓		50% JPY
Euro	2%		3%	↓		
Sterling	1%		2%			
Japanese Yen	1%		0%	↓		
Emerging Markets	1%		3%			
China**	0.1%		0%			
Corporate HY	5%	0-10%	3%	↓		
US Dollar	4%		2%	↓		
Euro	1%		1%	↓		
<b>Bank Loans</b>	<b>4%</b>	<b>0-10%</b>	<b>8%</b>	↑		
US	3%		6%	↑		
Europe	1%		2%			
<b>Equities</b>	<b>45%</b>	<b>25-65%</b>	<b>35%</b>	↓		
US	25%		10%	↓		
Europe ex-UK	7%		12%	↑		
UK	4%		4%	↓		
Japan	4%		1%	↓		
Emerging Markets	5%		8%			
China**	2%		4%			
<b>Real Estate</b>	<b>4%</b>	<b>0-16%</b>	<b>6%</b>			
US	1%		2%			
Europe ex-UK	1%		1%			
UK	1%		1%	↓		
Japan	1%		1%			
Emerging Markets	1%		1%	↑		
<b>Commodities</b>	<b>2%</b>	<b>0-4%</b>	<b>4%</b>	↑		
Energy	1%		1%	↑		
Industrial Metals	0.3%		2%	↑		
Precious Metals	0.3%		0%			
Agriculture	0.3%		1%	↑		
<b>Total</b>	<b>100%</b>		<b>100%</b>			
<b>Currency Exposure (including effect of hedging)</b>						
USD	52%		39%	↓		
EUR	19%		23%	↑		
GBP	7%		10%			
JPY	13%		13%	↑		
EM	9%		16%	↑		
<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 6 – Model allocations for global sectors**

	<b>Neutral</b>	<b>Invesco</b>	<b>Preferred Region</b>
<b>Energy</b>	<b>7.2%</b>	<b>Neutral</b>	<b>US</b>
<b>Basic Materials</b>	<b>4.2%</b>	<b>Neutral</b>	<b>Europe</b>
Basic Resources	2.5%	Underweight ↓	Europe
Chemicals	1.7%	Neutral	US
<b>Industrials</b>	<b>13.1%</b>	<b>Overweight</b>	<b>Europe</b>
Construction & Materials	1.7%	Underweight	US
Industrial Goods & Services	11.4%	Overweight	Europe
<b>Consumer Discretionary</b>	<b>14.5%</b>	<b>Neutral</b> ↑	<b>US</b>
Automobiles & Parts	2.7%	Underweight	Europe
Media	1.1%	Overweight ↑	US
Retailers	4.9%	Neutral	US
Travel & Leisure	2.1%	Underweight	EM
Consumer Products & Services	3.7%	Neutral	Europe
<b>Consumer Staples</b>	<b>5.7%</b>	<b>Overweight</b>	<b>US</b>
Food, Beverage & Tobacco	3.7%	Overweight	US
Personal Care, Drug & Grocery Stores	2.0%	Overweight	US
<b>Healthcare</b>	<b>9.3%</b>	<b>Overweight</b>	<b>US</b>
<b>Financials</b>	<b>15.4%</b>	<b>Neutral</b>	<b>Europe</b>
Banks	7.4%	Overweight ↑	Europe
Financial Services	5.1%	Underweight	Japan
Insurance	2.9%	Neutral	US
<b>Real Estate</b>	<b>2.9%</b>	<b>Overweight</b>	<b>Japan</b>
<b>Technology</b>	<b>20.8%</b>	<b>Neutral</b>	<b>US</b>
<b>Telecommunications</b>	<b>3.5%</b>	<b>Underweight</b> ↓	<b>Japan</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: LSEG 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 LSEG 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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