

Uncommon truths

Global debt review 2022

Global debt ratios declined in 2021 on the back of the rebound in GDP. Falling bond yields dampened the rise in debt service ratios over recent years but that is now changing. We fear the corporate debt burden could become a problem in some countries.

The man from Mars may question whether planet Earth has a debt problem (if so, to whom is it owed?). However, the global financial crisis (GFC) showed that, even if net debt is zero, it is difficult to unwind that debt when there are so many interlinkages. We therefore assume that more debt brings more risk. Hence, our annual review of global debt. Now that the Bank for International Settlements (BIS) has published its 2021 data, we are able to deliver the next instalment.

After a record jump in global debt-to-GDP ratios in 2020, relief came in 2021 with the reversal of around a half of the 2020 gain (depending on how it is measured). The sharp jump in debt-to-GDP in 2020 was the result of a combination of rising debt (especially in the public sector) and falling GDP (both of which were due to the effects of the Covid pandemic). However, the decline in the debt ratio in 2021 was entirely due to the jump in GDP, as debt continued to rise.

The global debt-to-GDP ratio fell from 257.7% in 2020 to 248.9% in 2021 (based on the BIS "All-Country" non-financial sector debt-to-GDP ratio, using

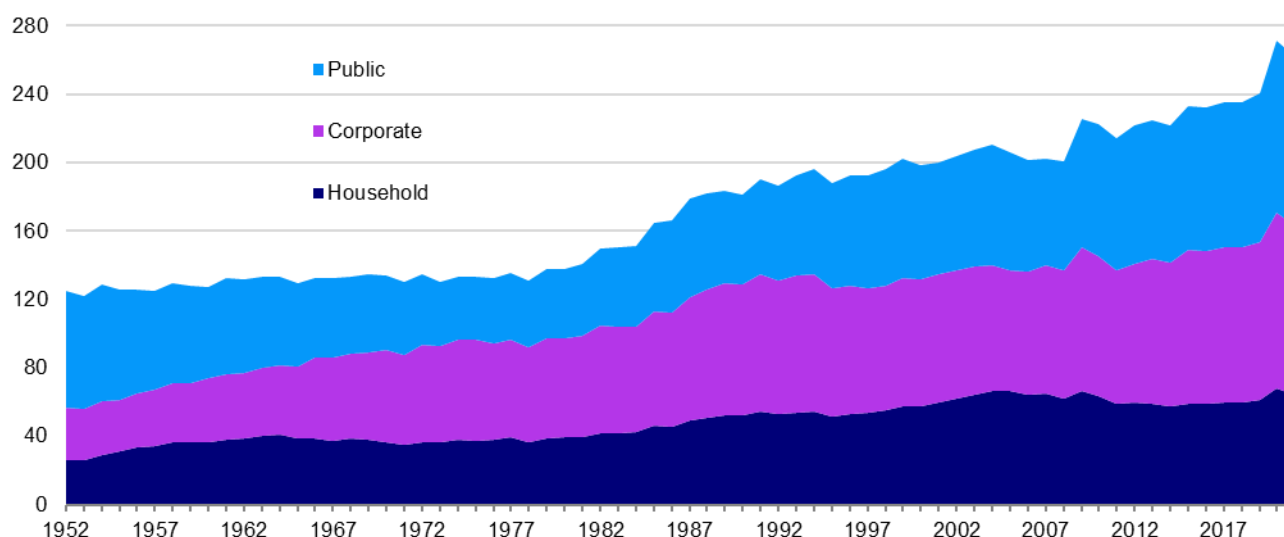
purchasing power parity (PPP) exchange rates to convert all data to US dollars). Though welcome, this decline still leaves the debt-to-GDP ratio above the pre-pandemic level of 227.4%, as reported in 2019.

We believe that using PPP exchange rates is the best way to calculate such aggregates, since the use of market exchange rates causes too much volatility in the global series. For example, using market exchange rates, the BIS All-Country aggregate debt-to-GDP ratio would have fallen even more (from 290.8% in 2020 to 264.4% in 2021), having risen by nearly 45-percentage points in 2020.

The problem with BIS All-Country aggregates is that they only go back to 2001, so we have constructed our own version by aggregating the data for the world's 25 largest economies (as of 2019, measured by GDP). **Figure 1** shows the results and suggests that, after reaching a new high of 271.1% in 2020, the global debt-to-GDP ratio fell back to 262.4% in 2021 (it was 240.2% in 2019). Unfortunately, our measure is based upon market exchange rates, so we use a smoothing process to dampen the effect of exchange rate movements (see the note to **Figure 1**).

Casual inspection of **Figure 1** suggests that global debt-to-GDP declined in all three sectors (households, corporates and governments), though the dollar amount of debt increased in all categories.

Figure 1 – Global non-financial sector debt-to-GDP from 1952 to 2021 using market exchange rates (%)



Note: Based on annual data for the 25 largest economies in the world (as of 2019). Data was not available for all 25 countries over the full period considered. Starting with only the US in 1952, the data set was based on a successively larger number of countries until in 2008 all 25 were included in all categories. The data for all countries is converted into US dollars using market exchange rates. Unfortunately, debt is a stock measured at the end of each calendar year, whereas GDP is a flow measured during the year so that when the dollar trends in one direction it can distort the comparison between debt and GDP. To minimise this problem, we use a smoothed measure of debt which takes the average over two years (for example, debt for 2021 is the average of debt at end-2020 and at end-2021).

Source: BIS, IMF, OECD, Oxford Economics, Refinitiv Datastream and Invesco



Figure 2 shows the detail of last year's fall in debt by country and sector (in terms of changes to debt-to-GDP ratios). Total debt ratios declined in 20 of the 25 countries that we follow, with the biggest reductions in Argentina, Canada and Belgium. Among those three, the only one to see a decline in the dollar amount of debt was Belgium (due to a decline in both public and private sector debt). At the other end of the spectrum, Thailand and South Korea had the largest jump in debt ratios, with the rise in private and public sector debt sufficiently large to outweigh the rise in GDP.

Belgium was not alone in seeing a decline in debt when measured in US dollars but this was always due to exchange rate movements (strengthening dollar), with total debt rising in all 25 countries when expressed in local currency. In fact, Denmark was the only country in the BIS universe that experienced a decline in total debt in local currency.

Looking to longer term trends, total debt ratios have risen substantially in the last 10 years. The global debt-to-GDP ratio increased by 46 percentage points in the 10 years to 2021 (whether using market or PPP exchange rates), with 18-21 percentage points of that coming since 2019 (depending on which exchange rates are used). The 10-year change is largely due to the rise in corporate and public sector debt.

Only four countries experienced a decline in their total debt-to-GDP ratio over the last 10 years: the Netherlands (-37.5 percentage points), Germany (-3.5), Poland (-3.5) and India (-3.1). Though the Dutch debt-to-GDP ratio declined in all three sectors,

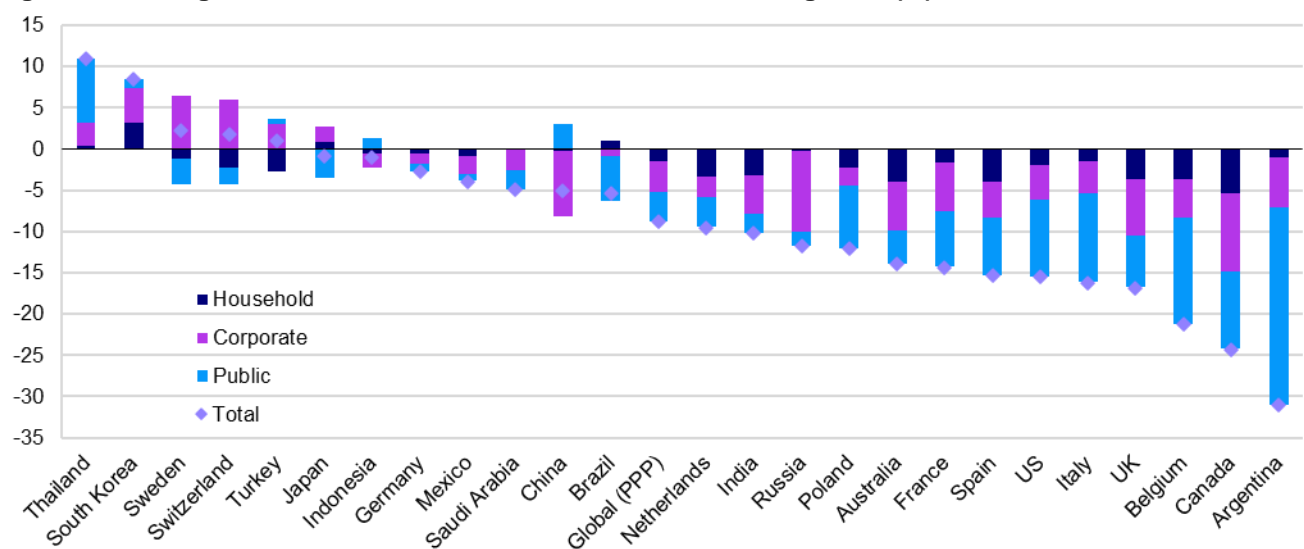
the decline in the corporate sector debt ratio was the most impressive, followed by the household sector.

China is the country with the largest rise in the debt-to-GDP ratio over the last 10 years, with a 108 percentage point increase (from 178.4% to 286.6%), with roughly equivalent gains in the debt ratios of households, corporates and the government. Next in line is France (+88 ppts over 10 years) and Canada (+73 ppts). France is the country with the largest three year increase (+45 ppts), with the corporate and public sectors accounting for most of the rise in debt.

So where does this leave accumulated debt across countries? **Figure 3** shows debt-to-GDP ratios for the 25 countries that we follow. As has been the case for some time, the countries with the biggest debt burdens are to be found in the developed world, with Japan once again leading the way, though its debt-to-GDP ratio edged down from 420.8% in 2020 to 419.9% in 2021, according to BIS data. The next three countries (France, Canada and Belgium) are the same as last year. The first change in ranking occurs at #5, with Sweden moving up from #7 and replacing the Netherlands, which falls to #6.

Other countries on the move in 2021 in **Figure 3** include: Switzerland (from 10th to 7th), Spain (6th to 8th), UK (8th to 9th), China (12th to 10th), Italy (9th to 11th), US (11th to 12th), Brazil (18th to 17th), India (17th to 18th), Turkey (22nd to 19th), Poland (19th to 20th), Saudi Arabia (23rd to 22nd), Argentina (20th to 23rd), Indonesia (25th to 24th) and Mexico (24th to 25th).

Figure 2 – Change in non-financial sector debt/GDP ratios during 2021 (%)



Note: Based on year-end local currency non-financial sector debt-to-GDP ratios. "Global (PPP)" uses BIS "All reporting countries" data, using PPP exchange rates (it is based on a larger sample of countries than is shown in the chart). The change is calculated as the end-2021 debt to GDP ratios minus those of end-2020. The countries shown are the 25 largest in the world by GDP, as of 2019.

Source: BIS, Refinitiv Datastream, and Invesco



So, after a sharp rise in debt ratios in 2020, there was a decline in 2021 due almost entirely to the recovery in GDP, with debt continuing to rise in almost all cases (not unusual in the early stages of economic recovery). Normally, we would expect a further decline in debt ratios as economies continue to expand and debt levels decline as public sector expenditure declines and public and private revenues increase. However, this time appears to be different, with the inflation and cost of living crises likely to require more government expenditure, while imposing an income shock on the private sector.

That may push debt levels up but higher inflation could boost nominal GDP growth, thus depressing debt ratios, even if real GDP growth slips (perhaps into recession). However, we doubt that is a recipe for driving debt ratios lower over the medium term.

Of course, debt only becomes a problem when debt service ratios increase. The rise in debt-to-GDP ratios over the last 10 years was not as big a problem as it might have been because bond yields fell to historical lows in the developed world. However, the sharp rise in bond yields during 2022 may change the picture.

Governments have the luxury of being able to use the tax system to increase income if debt service ratios increase. The private sector has no such ability (raising prices may damage sales), so it is perhaps more important to focus on the affordability of private sector debt. Comparing BIS derived private sector debt service ratios (interest payments plus amortisations divided by income) at the end of 2019 and the end of 2021 gives a mixed picture. There

were notable declines in Australia (from 19.4% to 17.3%), Canada (24.4% to 22.7%), India (11.2% to 9.7%), Netherlands (25.6% to 23.8%), South Africa (8.9% to 7.0%) and the US (14.5% to 13.4%). Some of those countries may have benefitted from the rise in commodity prices that started in mid-2020.

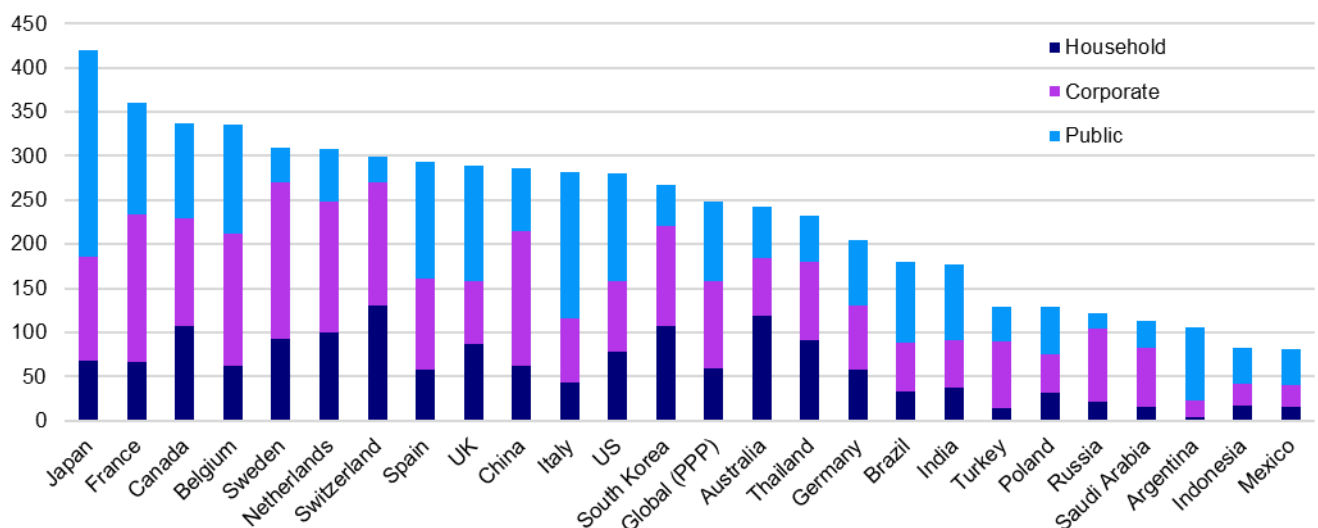
However, there were also some notable increases in private sector debt service ratios between end-2019 and end-2021, with the biggest in Turkey (13.7% to 19.7%), Brazil (18.1% to 21.3%), Sweden (23.7% to 26.6%) and France (19.4% to 20.8%). In all cases where data is available, the major contributor to the rise in debt service ratios was the corporate sector, with notable gains in Sweden (+8.9 percentage points to 56.0%), Spain (+7.3 ppt to 39.4%), Japan (+6.7 ppt to 40.0%) and France (+6.5 ppt to 61.1%).

Of course, countries such as Brazil and Turkey had already seen a big rise in bond yields in 2021 which may explain some of the rise in their debt service ratios. However, the rise in yields in much of the developed world has been concentrated in 2022 and may only just be starting to impact debt service ratios.

If corporate debt is to become a risk, we suppose the biggest threat would be in countries where service ratios are the highest. As of end-2021 this list of countries would be France (non-financial corporations debt service ratio of 61.1%), Sweden (56.0%), Canada (51.3%), Belgium (43.6%), Netherlands (43.2%), South Korea (40.7%) and the US (40.1%). For the most part, those are the countries in which corporate sector debt is the most elevated.

Unless stated otherwise, all data as of 08 July 2022.

Figure 3 – Non-financial sector debt/GDP in 2021 (%)



Note: "Global" uses BIS "All reporting countries" data and is calculated using PPP exchange rates (it is based on a larger sample of countries than is shown in the chart). The countries shown were the 25 largest in the world by GDP, as of 2019.

Source: BIS, Refinitiv Datastream and Invesco

Figure 4 – Asset class total returns (%)

Data as at 08/07/2022	Index	Current Level/Ry	Total Return (USD, %)					Total Return (Local Currency, %)				
			1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Equities												
World	MSCI	609	1.7	-6.3	2.1	-18.3	-13.3	1.9	-5.1	2.5	-15.5	-9.5
Emerging Markets	MSCI	1000	1.0	-6.1	0.2	-17.3	-21.7	1.2	-4.2	0.6	-13.0	-16.7
China	MSCI	73	0.3	1.2	0.3	-10.9	-25.6	0.3	1.2	0.3	-9.7	-24.7
US	MSCI	3711	2.1	-5.1	3.2	-18.6	-10.4	2.1	-5.1	3.2	-18.6	-10.4
Europe	MSCI	1622	0.4	-9.8	-0.2	-20.6	-17.0	1.8	-5.7	2.0	-11.4	-4.7
Europe ex-UK	MSCI	1961	0.3	-10.1	-0.1	-23.7	-20.5	2.3	-6.0	2.5	-15.2	-8.7
UK	MSCI	1041	0.5	-8.9	-0.6	-9.4	-4.3	0.4	-4.9	0.4	2.0	9.5
Japan	MSCI	3063	1.8	-6.0	0.9	-19.4	-19.1	2.5	-4.4	1.0	-4.7	0.5
Government Bonds												
World	BofA-ML	2.17	-1.5	-2.5	-1.1	-15.7	-18.4	-0.9	-0.5	-0.3	-9.2	-9.9
Emerging Markets	BBloom	7.84	-1.3	-6.8	0.0	-26.6	-27.7	-1.3	-6.8	0.0	-26.6	-27.7
China	BofA-ML	2.72	-0.1	-0.4	-0.2	-3.5	1.2	0.0	-0.1	0.0	1.6	4.6
US (10y)	Datastream	3.10	-1.6	-0.3	-1.0	-13.0	-13.6	-1.6	-0.3	-1.0	-13.0	-13.6
Europe	BofA-ML	1.69	-2.8	-5.0	-2.3	-21.2	-25.4	-0.7	0.2	0.4	-12.0	-13.0
Europe ex-UK (EMU, 10y)	Datastream	1.30	-2.7	-4.6	-2.0	-21.6	-25.9	-0.6	0.7	0.7	-12.4	-13.7
UK (10y)	Datastream	2.23	-1.0	-3.9	-0.9	-20.1	-23.1	-1.2	0.3	0.1	-10.0	-12.0
Japan (10y)	Datastream	0.21	-0.6	-1.3	0.0	-16.4	-20.7	0.1	0.3	0.2	-1.2	-1.5
IG Corporate Bonds												
Global	BofA-ML	4.27	-0.9	-3.2	-0.7	-16.0	-17.6	-0.4	-1.7	0.0	-13.0	-13.7
Emerging Markets	BBloom	7.88	-1.7	-6.6	-1.4	-25.1	-29.1	-1.7	-6.6	-1.4	-25.1	-29.1
China	BofA-ML	3.49	0.0	-0.1	-0.1	-3.3	0.5	0.0	0.2	0.0	1.8	4.0
US	BofA-ML	4.79	-0.7	-1.9	-0.5	-14.3	-15.0	-0.7	-1.9	-0.5	-14.3	-15.0
Europe	BofA-ML	2.88	-1.6	-6.4	-1.5	-20.5	-24.5	0.5	-1.3	1.3	-11.1	-12.0
UK	BofA-ML	4.21	-0.8	-6.5	-0.8	-23.6	-26.0	-1.0	-2.4	0.2	-14.0	-15.3
Japan	BofA-ML	0.59	-0.7	-1.9	-0.1	-16.3	-20.3	0.0	-0.3	0.0	-1.1	-1.1
HY Corporate Bonds												
Global	BofA-ML	8.88	0.4	-6.1	0.5	-16.3	-17.4	0.8	-5.0	1.0	-14.2	-14.5
US	BofA-ML	8.62	1.4	-4.2	1.6	-12.7	-11.5	1.4	-4.2	1.6	-12.7	-11.5
Europe	BofA-ML	7.28	-1.2	-10.7	-1.7	-23.3	-26.2	0.9	-5.8	1.0	-14.2	-14.0
Cash (Overnight LIBOR)												
US		1.57	0.0	0.1	0.0	0.3	0.3	0.0	0.1	0.0	0.3	0.3
Euro Area		-0.65	-2.4	-5.0	-2.9	-10.7	-14.5	0.0	-0.1	0.0	-0.3	-0.6
UK		0.18	-0.6	-4.1	-1.2	-11.0	-12.6	0.0	0.0	0.0	0.1	0.1
Japan		-0.09	-0.7	-1.4	-0.3	-15.5	-19.4	0.0	0.0	0.0	0.0	-0.1
Real Estate (REITs)												
Global	FTSE	1675	-0.3	-5.6	0.5	-19.2	-14.1	1.8	-0.4	3.3	-9.7	0.0
Emerging Markets	FTSE	1427	-0.1	-1.9	-0.4	-9.7	-19.5	2.0	3.5	2.3	0.9	-6.1
US	FTSE	3073	-0.9	-4.1	0.9	-19.8	-7.5	-0.9	-4.1	0.9	-19.8	-7.5
Europe ex-UK	FTSE	2319	-1.1	-18.5	-0.9	-36.7	-39.3	1.0	-14.0	1.8	-29.2	-29.2
UK	FTSE	838	4.1	-10.7	1.6	-26.3	-18.4	3.9	-6.8	2.6	-17.0	-6.6
Japan	FTSE	2224	-1.2	-4.6	-1.6	-13.5	-22.3	-0.5	-3.0	-1.4	2.2	-3.5
Commodities												
All	GSCI	3724	-2.6	-13.1	-1.2	34.2	46.2	-	-	-	-	-
Energy	GSCI	693	-4.2	-13.7	-1.2	61.5	75.7	-	-	-	-	-
Industrial Metals	GSCI	1547	-1.3	-17.7	-3.0	-14.7	-6.1	-	-	-	-	-
Precious Metals	GSCI	1954	-3.2	-6.7	-3.7	-6.3	-6.4	-	-	-	-	-
Agricultural Goods	GSCI	556	2.3	-13.1	-0.7	11.4	26.0	-	-	-	-	-
Currencies (vs USD)*												
EUR		1.02	-2.3	-5.0	-2.8	-10.4	-14.0	-	-	-	-	-
JPY		136.09	-0.6	-1.3	-0.3	-15.4	-19.3	-	-	-	-	-
GBP		1.20	0.2	-4.2	-1.0	-11.2	-12.6	-	-	-	-	-
CHF		1.02	-1.7	0.2	-2.2	-6.6	-6.2	-	-	-	-	-
CNY		6.70	0.1	-0.2	0.1	-5.1	-3.1	-	-	-	-	-

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 5 – Global equity sector total returns relative to market (%)

Data as at 08/07/2022	Global				
	1w	1m	QTD	YTD	12m
Energy	-2.9	-8.6	-3.7	39.3	45.7
Basic Materials	-1.9	-11.0	-3.1	2.0	-4.4
Basic Resources	-1.3	-13.4	-3.1	4.8	-5.0
Chemicals	-2.5	-7.8	-3.1	-1.5	-3.2
Industrials	-0.2	-2.0	-0.2	-4.8	-8.0
Construction & Materials	-0.1	-1.1	-0.2	-8.1	-8.5
Industrial Goods & Services	-0.2	-2.2	-0.2	-4.3	-7.9
Consumer Discretionary	1.5	1.5	2.0	-10.8	-12.8
Automobiles & Parts	3.5	2.5	3.2	-10.7	-1.6
Media	0.4	-2.1	0.9	-25.3	-27.7
Retailers	2.3	4.1	3.7	-7.2	-12.1
Travel & Leisure	-1.3	-2.7	-0.4	-5.2	-10.8
Consumer Products & Services	0.6	0.3	0.2	-13.5	-17.3
Consumer Staples	-1.2	5.9	-0.7	12.7	12.2
Food, Beverage & Tobacco	-1.6	5.2	-1.2	14.5	13.7
Personal Care, Drug & Grocery Stores	-0.3	7.3	0.3	9.4	9.3
Healthcare	0.1	6.7	0.6	6.9	5.0
Financials	-1.2	-0.8	-1.2	3.3	5.5
Banks	-1.5	-2.1	-1.8	5.4	8.3
Financial Services	-0.1	-0.2	0.2	-3.9	-2.4
Insurance	-2.1	2.1	-1.9	11.6	13.0
Real Estate	-1.6	1.5	-1.2	-0.7	-1.5
Technology	3.3	1.0	2.8	-12.3	-8.4
Telecommunications	-1.5	3.3	-1.2	9.3	3.0
Utilities	-2.7	0.9	-1.6	13.5	16.4

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 6 – Model asset allocation

	Neutral	Policy Range	Allocation	Position vs Neutral
Cash Equivalents	5%	0-10%	↓	5%
Cash	2.5%		↓	5%
Gold	2.5%			0%
Bonds	40%	10-70%	↑	45%
Government	25%	10-40%	↑	30%
US	8%		↑	10%
Europe ex-UK (Eurozone)	7%		↑	9%
UK	1%		↑	2%
Japan	7%		↑	5%
Emerging Markets	2%		↑	4%
China**	0.2%		↓	0%
Corporate IG	10%	0-20%	↓	15%
US Dollar	5%		↓	7%
Euro	2%			4%
Sterling	1%			2%
Japanese Yen	1%		↓	0%
Emerging Markets	1%			2%
China**	0.1%		↓	0%
Corporate HY	5%	0-10%	↓	0%
US Dollar	4%		↓	0%
Euro	1%			0%
Equities	45%	25-65%	↓	40%
US	25%			16%
Europe ex-UK	7%		↓	4%
UK	4%		↓	5%
Japan	4%		↓	5%
Emerging Markets	5%			10%
China**	2%		↑	4%
Real Estate	8%	0-16%	↑	10%
US	2%		↑	2%
Europe ex-UK	2%		↓	0%
UK	1%		↑	2%
Japan	2%			2%
Emerging Markets	1%			4%
Commodities	2%	0-4%		0%
Energy	1%			0%
Industrial Metals	0.3%			0%
Precious Metals	0.3%			0%
Agriculture	0.3%			0%
Total	100%			100%
Currency Exposure (including effect of hedging)				
USD	48%		↑	38%
EUR	20%		↓	18%
GBP	7%		↑	12%
JPY	15%			13%
EM	9%			20%
Total	100%			100%

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

Figure 7 – Model allocations for global sectors

	Neutral	Invesco	Preferred Region
Energy	7.1%	Underweight ↓	US
Basic Materials	4.7%	Overweight	Europe
Basic Resources	2.8%	Overweight	Europe
Chemicals	1.9%	Neutral	US
Industrials	12.4%	Overweight	US
Construction & Materials	1.5%	Neutral	EM
Industrial Goods & Services	10.9%	Overweight	US
Consumer Discretionary	14.9%	Neutral	US
Automobiles & Parts	3.1%	Underweight	Japan
Media	1.1%	Neutral	EM
Retailers	5.1%	Overweight	US
Travel & Leisure	1.9%	Overweight	US
Consumer Products & Services	3.7%	Neutral	Japan
Consumer Staples	6.0%	Neutral	US
Food, Beverage & Tobacco	4.0%	Neutral	US
Personal Care, Drug & Grocery Stores	2.0%	Neutral	US
Healthcare	9.8%	Overweight ↑	US
Financials	15.2%	Underweight	Japan
Banks	7.5%	Underweight	Japan
Financial Services	5.0%	Overweight	Japan
Insurance	2.7%	Underweight	US
Real Estate	3.4%	Neutral ↓	EM
Technology	19.4%	Overweight	US
Telecommunications	3.6%	Underweight	Japan
Utilities	3.3%	Underweight	Europe

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.

Definitions of data and benchmarks for Figure 4

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 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

Important information**Your capital is at risk. You may not get back the amount you invested.**

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