Uncommon truths

How will we know AI is delivering?

AI is a frequent topic of investor questions, usually concerning the price of AI related stocks. But it may also be interesting to consider how we will know it is delivering broader gains. We are watching productivity, inflation, jobs and margins.

Events of the last week in France have been instructive. The collapse of the government was accompanied by much hand wringing but also by narrowing spreads on French debt (versus German yields), outperformance of French equities (versus European counterparts) and a gradual rise in EURUSD. This all suggests that a lot of bad news was already in the price of French assets.

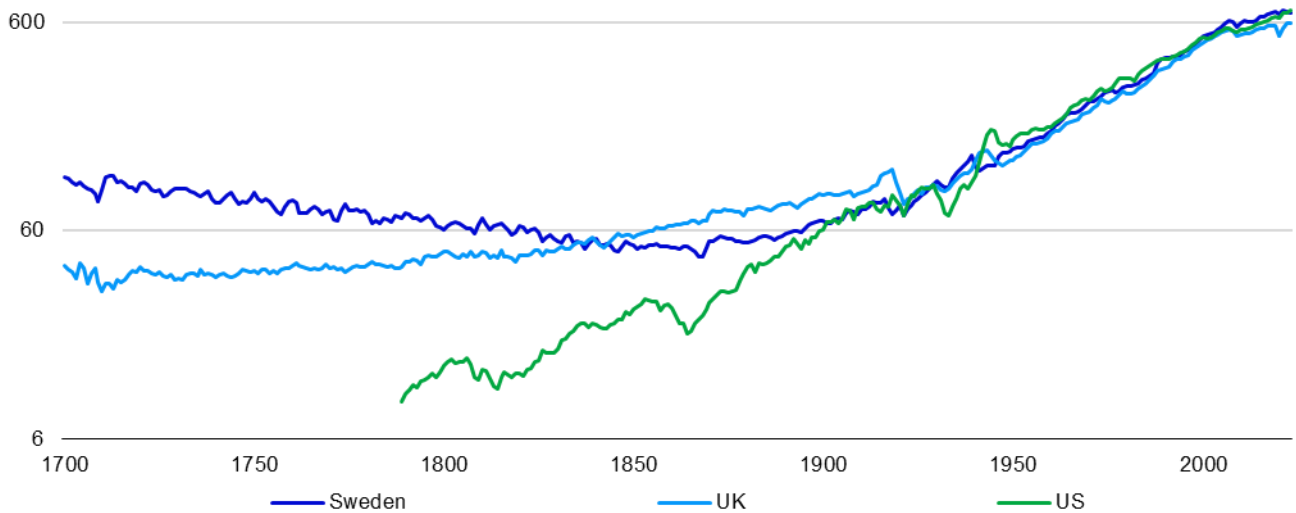
Meanwhile, in the US the enthusiasm that surrounded the election victory of Donald Trump seems to have faded, with US equities taking a breather versus other markets (see **Figure 3**) and within the US market, energy stocks and banks underperformed (though consumer discretionary and technology continued to perform well). Also, the dollar is no longer advancing, a fact reinforced by an employment report that seemed to convince markets that the Fed will ease at the upcoming policy meeting.

The implications of a second Trump term in the White House have been at the forefront of investor minds during recent 2025 Outlook meetings. Adding to the mix over the weekend was the departure of President Assad from Syria after a rapid takeover of the country by rebel forces (he was previously supported by Russia and Iran). It is not obvious how the US will react to this, either before or after the handover at the White House, especially since some of the rebel forces have previously been labelled as terrorist groups. This could complicate the geopolitics of a region that was already unstable and which, I believe, has been responsible for much of the rise in gold this year.

Those same client meetings have also revealed a lot of questions about the role of cryptocurrencies in portfolios, which is not surprising given the post-election rally. However, very revealing was a client question for the rest of the audience in London, that showed that none of the participants held such assets on behalf of their clients, suggesting they are an interesting talking point but not yet considered viable for client portfolios. Personally, I cannot include them in my asset allocation framework due to a lack of historical data over numerous cycles and, more importantly, a lack of any framework that would allow me to forecast returns.

More interesting, I believe, is the flow of questions about artificial intelligence (AI). These are usually aimed at understanding whether the extreme concentration in the US market in AI related stocks can continue? I believe it would be foolish to say it couldn't but history suggests that such concentration peaks don't last forever. Ironically, perhaps one factor that could reduce the concentration in AI enablers could be a broadening of the benefits of AI to the rest of stock market. I think this would require AI to prove its worth as a boon to productivity, which, judging by the flattening of GDP per capita in recent decades (see **Figure 1**), would be welcome. So, what would we need to see to believe AI was bringing such benefits?

Figure 1 – Real GDP per capita 1700-2023 (logarithmic scale, indexed to 100 in 1929)



Note: Annual data from 1700 to 2023, based on GDP in local currency. Population data is interpolated in early periods when not available annually. Source: Global Financial Data and Invesco Global Market Strategy Office

The obvious answer is an upturn in productivity, with each worker becoming more efficient. However, productivity is cyclical, with a tendency to fall during recessions and rise during upswings, as output reacts faster than employment. Hence, it may be difficult to disentangle short term cyclical effects from more fundamental shifts.

Figure 2 shows annualised 10-year changes in productivity to minimise short term cyclical influences. There are some clear swings over the period since 1960 and it would be nice to think they reflect underlying changes in productivity but I suspect the downdraft after the early 1970s was related to the deep recessions that followed the oil price hikes of 1973 and 1979. Likewise, the climb in productivity throughout the 1980s, 1990s and 2000s may have simply reflected the long recovery after those recessions.

However, it is tempting to also conclude that the rise in productivity after the mid-1990s was in part caused by the roll out and adoption of technology (software, world wide web, email, internet, mobile phones, laptops etc.). Importantly, those gains in productivity and long economic upswings were not accompanied by higher inflation, despite the rise in commodity prices in the first decade of this century. And that brings us onto what could be another sign that AI is delivering broader benefits: falling (or stable) inflation, while economies are accelerating.

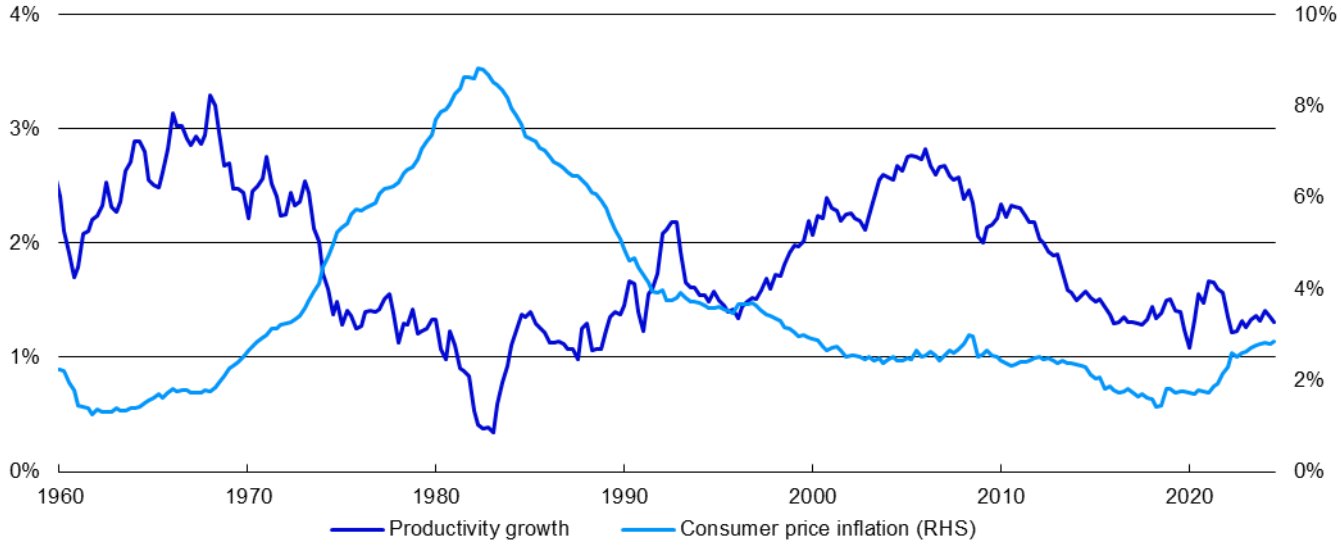
Of course, there could also be a negative sign, that by definition goes with productivity gains, that of job losses and rising unemployment. If AI really is a labour saving tool, then job losses are likely to follow. Indeed, it is hard to think of too many spheres in which jobs would not be lost. Hence, we should be on the lookout for confusing employment reports with job gains not matching the growth of the economy. At best, under such a scenario job gains would be disappointing in upswings (prepare for jobless recoveries) and at worst recessionary job losses would be accentuated.

Finally, that brings us to the equity market interest. Economy wide productivity gains should boost profit margins and accelerate profit growth, in my opinion. As for the bond market, the outcome may not be obvious. If lower inflation is the outcome, then yields may fall, but if trend growth is raised, the effect could be to raise real yields. I suspect there will be a bit of both, with nominal yields rising a bit. Then, the effect on general equity prices may not be so positive, if the higher future profits are discounted at a higher rate. In any case, I suspect the broadening of the benefits to the wider economy would see a reduced value placed upon AI enablers, as we would then be able to access the AI theme in a number of different ways and at more reasonable prices.

So, I think we should keep an eye on trends in productivity, employment, inflation and profit margins but it may be hard to separate the underlying wheat from the cyclical chaff. **Figure 1** shows that even at the time of the industrial revolution, the effect on GDP per capita was not immediately obvious in Sweden and the UK (the US benefitted from a process of catch up). The effects of AI may be too subtle to overcome cyclical effects and it may require a lot of hindsight to identify the moment of take-off.

Unless stated otherwise, all data as of 6 December 2024.

Figure 2 – US productivity growth and consumer price inflation (annualised 10-year changes)



Note: Quarterly data from 1960 Q1 to 2024 Q3. Productivity growth is based on real output per worker in the non-farm business sector.
Source: Global Financial Data, Federal Reserve Bank of St. Louis and Invesco Global Market Strategy Office

Figure 3 – Asset class total returns (%)

Data as at 06/12/2024		Current	Total Return (USD, %)					Total Return (Local Currency, %)				
	Index	Level/RY	1w	1m	QTD	YTD	12m	1w	1m	QTD	YTD	12m
Equities												
World	MSCI	874	1.3	2.4	2.8	22.4	28.6	1.4	2.6	4.4	24.4	29.5
Emerging Markets	MSCI	1105	2.5	-2.3	-5.5	10.8	16.6	2.6	-1.6	-2.9	15.3	20.1
China	MSCI	64	2.6	-3.8	-7.7	19.6	21.3	2.7	-3.6	-7.0	19.7	21.2
US	MSCI	5834	1.1	3.3	6.7	29.8	36.4	1.1	3.3	6.7	29.8	36.4
Europe	MSCI	2095	2.0	1.2	-5.5	7.1	11.7	1.9	2.5	-0.4	11.1	13.1
Europe ex-UK	MSCI	2586	2.5	1.3	-6.1	6.0	10.5	2.4	2.6	-1.0	11.0	12.7
UK	MSCI	1258	0.4	0.9	-3.8	11.1	15.8	0.2	2.1	1.3	11.1	14.5
Japan	MSCI	4033	2.1	3.2	-1.2	11.4	15.2	1.9	0.2	3.5	18.4	17.3
Government Bonds												
World	BofA-ML	3.15	0.3	1.7	-3.3	-1.1	2.0	0.3	1.8	-0.5	1.6	3.1
Emerging Markets	BBloom	6.77	0.9	3.8	0.9	12.7	17.6	0.9	3.8	0.9	12.7	17.6
China	BofA-ML	1.71	0.1	-0.2	-1.6	4.9	7.0	0.5	1.1	1.8	7.4	8.6
US (10y)	Datastream	4.15	0.5	2.7	-2.1	1.5	3.8	0.5	2.7	-2.1	1.5	3.8
Europe	Bofa-ML	2.52	0.3	1.0	-3.9	-1.0	3.0	0.3	2.7	1.5	3.5	5.3
Europe ex-UK (EMU, 10y)	Datastream	2.11	-0.2	1.0	-4.8	-2.6	1.3	-0.2	2.6	0.6	1.8	3.5
UK (10y)	Datastream	4.28	0.1	1.5	-6.2	-1.4	3.6	-0.2	2.6	-1.3	-1.3	2.4
Japan (10y)	Datastream	1.05	0.2	2.4	-5.7	-7.9	-3.5	0.0	-0.5	-1.2	-2.1	-1.8
IG Corporate Bonds												
Global	BofA-ML	4.51	0.4	1.4	-1.7	3.7	6.7	0.4	1.9	0.1	5.2	7.4
Emerging Markets	BBloom	6.33	0.6	2.0	-0.4	12.9	16.9	0.6	2.0	-0.4	12.9	16.9
China	BofA-ML	2.42	0.0	-0.5	-2.3	2.6	4.4	0.3	0.9	1.1	5.1	5.8
US	BofA-ML	5.06	0.5	2.1	-0.6	5.2	7.6	0.5	2.1	-0.6	5.2	7.6
Europe	BofA-ML	3.11	0.3	-0.2	-3.9	0.8	4.7	0.3	1.4	1.5	5.4	7.0
UK	BofA-ML	5.44	0.4	1.0	-4.7	2.6	7.4	0.1	2.1	0.3	2.6	6.1
Japan	BofA-ML	1.22	0.3	2.8	-5.2	-6.4	-2.1	0.1	-0.2	-0.7	-0.5	-0.3
HY Corporate Bonds												
Global	BofA-ML	7.09	0.5	0.9	-0.1	8.7	12.2	0.5	1.2	1.1	9.7	12.6
US	BofA-ML	7.28	0.5	1.3	1.0	9.2	12.3	0.5	1.3	1.0	9.2	12.3
Europe	BofA-ML	5.75	0.6	-0.7	-3.7	3.8	8.4	0.6	0.9	1.7	8.5	10.8
Cash (Overnight LIBOR)												
US		4.57	0.1	0.4	0.8	4.9	5.4	0.1	0.4	0.8	4.9	5.4
Euro Area		3.16	1.6	-2.0	-4.5	-0.9	0.1	0.1	0.3	0.6	3.5	3.8
UK		4.70	1.7	-1.7	-4.0	4.9	5.6	0.1	0.4	0.8	4.8	5.3
Japan		0.23	3.3	2.4	-4.1	-5.7	-1.6	0.0	0.0	0.0	0.1	0.1
Real Estate (REITs)												
Global	FTSE	1685	-1.8	0.5	-5.0	6.8	14.2	-1.8	2.2	0.4	11.7	16.6
Emerging Markets	FTSE	1224	2.1	-3.9	-8.8	0.0	4.9	2.1	-2.4	-3.7	4.6	7.1
US	FTSE	3375	-2.5	1.9	-1.2	13.7	22.0	-2.5	1.9	-1.2	13.7	22.0
Europe ex-UK	FTSE	2455	-0.3	2.3	-11.7	-0.8	7.1	-0.3	4.0	-6.7	3.7	9.4
UK	FTSE	829	-1.5	-1.1	-14.9	-7.3	-1.2	-1.8	0.0	-10.5	-7.3	-2.3
Japan	FTSE	1994	-0.4	-1.0	-8.6	-5.1	-2.6	-0.6	-3.8	-4.3	0.9	-0.8
Commodities												
All	GSCI	3516	-0.7	-2.0	-0.2	5.1	7.4	-	-	-	-	-
Energy	GSCI	590	-1.8	-4.7	-0.3	1.9	4.8	-	-	-	-	-
Industrial Metals	GSCI	1702	0.4	-0.9	-4.3	6.3	12.9	-	-	-	-	-
Precious Metals	GSCI	2951	-0.5	-1.1	-0.1	27.4	29.1	-	-	-	-	-
Agricultural Goods	GSCI	510	2.0	3.7	0.6	-0.6	-2.4	-	-	-	-	-
Currencies (vs USD)*												
EUR		1.06	-0.1	-1.5	-5.1	-4.2	-1.8	-	-	-	-	-
JPY		150.04	-0.2	3.1	-4.3	-6.0	-1.8	-	-	-	-	-
GBP		1.27	0.3	-1.1	-5.0	0.0	1.2	-	-	-	-	-
CHF		1.14	0.3	-0.2	-3.8	-4.2	-0.4	-	-	-	-	-
CNY		7.27	-0.4	-1.3	-3.5	-2.4	-1.5	-	-	-	-	-

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 06/12/2024	Global				
	1w	1m	QTD	YTD	12m
Energy	**-2.6**	**-2.4**	**-1.4**	**-14.8**	**-16.6**
Basic Materials	**-1.2**	**-5.2**	**-9.8**	**-16.7**	**-15.4**
Basic Resources	-1.4	-6.2	-9.5	-15.4	-12.6
Chemicals	-0.8	-3.8	-10.2	-18.6	-19.2
Industrials	**-1.3**	**-1.6**	**-0.9**	**-1.8**	**-0.6**
Construction & Materials	-0.6	-0.2	-2.0	-1.3	0.8
Industrial Goods & Services	-1.4	-1.8	-0.8	-1.9	-0.8
Consumer Discretionary	**2.7**	**5.5**	**5.2**	**2.1**	**1.6**
Automobiles & Parts	5.2	11.3	10.7	-2.7	-4.8
Media	1.6	9.3	13.5	17.2	16.9
Retailers	3.2	5.7	8.4	15.5	16.0
Travel & Leisure	0.4	2.6	6.4	-0.9	-0.1
Consumer Products & Services	1.5	1.1	-7.1	-15.0	-15.9
Consumer Staples	**-2.1**	**-1.7**	**-7.6**	**-13.3**	**-15.0**
Food, Beverage & Tobacco	-1.9	-2.6	-8.6	-15.6	-17.4
Personal Care, Drug & Grocery Stores	-2.5	0.0	-5.8	-9.3	-10.7
Healthcare	**-2.2**	**-4.1**	**-8.7**	**-9.9**	**-10.4**
Financials	**-0.9**	**-0.2**	**2.7**	**5.7**	**6.2**
Banks	-0.3	-0.4	3.2	4.9	6.3
Financial Services	-1.5	-0.1	4.2	5.8	7.2
Insurance	-1.4	0.0	-1.0	7.4	4.2
Real Estate	**-2.4**	**-1.5**	**-6.5**	**-10.3**	**-9.2**
Technology	**2.6**	**1.6**	**4.7**	**14.9**	**15.8**
Telecommunications	**-0.6**	**-0.5**	**-0.8**	**-4.4**	**-5.4**
Utilities	**-2.5**	**-1.5**	**-6.5**	**-4.4**	**-6.6**

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
Cash Equivalents	**5%**	**0-10%**	↓	**0%**			
Cash	2.5%		↓	0%			
Gold	2.5%			0%			
Bonds	**40%**	**10-70%**	↑	**47%**			
Government	25%	10-40%	↓	25%			
US	8%		↓	12%		25%	JPY
Europe ex-UK (Eurozone)	7%		↑	7%			
UK	1%			2%			
Japan	7%		↓	0%			
Emerging Markets	2%			4%			
China**	0.2%			0%			
Corporate IG	10%	0-20%	↑	18%			
US Dollar	5%		↑	10%		50%	JPY
Euro	2%		↑	4%			
Sterling	1%			2%			
Japanese Yen	1%		↓	0%			
Emerging Markets	1%			2%			
China**	0.1%			0%			
Corporate HY	5%	0-10%	↑	4%			
US Dollar	4%		↑	3%			
Euro	1%		↑	1%			
Bank Loans	**4%**	**0-8%**		**8%**			
US	3%			6%			
Europe	1%			2%			
Equities	**45%**	**25-65%**		**35%**			
US	25%			10%			
Europe ex-UK	7%		↑	10%			
UK	4%		↑	6%			
Japan	4%			3%			
Emerging Markets	5%		↓	6%			
China**	2%			4%			
Real Estate	**4%**	**0-8%**	↑	**6%**			
US	1%			0%			
Europe ex-UK	1%		↑	2%			
UK	1%			2%			
Japan	1%		↑	2%			
Emerging Markets	1%			0%			
Commodities	**2%**	**0-4%**	↑	**4%**			
Energy	1%		↑	1%			
Industrial Metals	0.3%		↑	2%			
Precious Metals	0.3%			0%			
Agriculture	0.3%			1%			
Total	**100%**			**100%**			

Currency Exposure (including effect of hedging)							
USD	52%		↑	37%			
EUR	19%		↑	26%			
GBP	7%		↓	12%			
JPY	13%		↓	13%			
EM	9%		↓	12%			
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 Global Market Strategy Office

Figure 6 – Model allocations for global sectors

	Neutral	Invesco	Preferred Region
Energy	**6.1%**	**Neutral**	**EM**
Basic Materials	**3.8%**	**Underweight ↓**	**Japan**
Basic Resources	2.3%	Underweight ↓	Japan
Chemicals	1.5%	Neutral	US
Industrials	**13.2%**	**Underweight**	**US**
Construction & Materials	1.7%	Underweight	US
Industrial Goods & Services	11.4%	Underweight	US
Consumer Discretionary	**14.0%**	**Underweight**	**US**
Automobiles & Parts	2.4%	Underweight	Europe
Media	1.1%	Neutral	Japan
Retailers	5.3%	Overweight	US
Travel & Leisure	1.9%	Underweight	EM
Consumer Products & Services	3.4%	Underweight	Japan
Consumer Staples	**5.4%**	**Overweight**	**US**
Food, Beverage & Tobacco	3.4%	Overweight	US
Personal Care, Drug & Grocery Stores	2.0%	Overweight	Europe
Healthcare	**9.3%**	**Overweight**	**US**
Financials	**15.7%**	**Overweight**	**US**
Banks	7.4%	Overweight	Europe
Financial Services	5.3%	Overweight	US
Insurance	3.1%	Overweight ↑	US
Real Estate	**2.8%**	**Neutral**	**Japan**
Technology	**23.0%**	**Neutral**	**EM**
Telecommunications	**3.4%**	**Underweight**	**US**
Utilities	**3.4%**	**Neutral**	**US**

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

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), 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.

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 1st 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

Investment risks

The value of investments and any income will fluctuate (this may partly be the result of exchange rate fluctuations) and investors may not get back the full amount invested.

Important information

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

This document is intended only for professional investors in Hong Kong, for Institutional Investors and/or Accredited Investors in Singapore, for certain specific sovereign wealth funds and/or Qualified Domestic Institutional Investors approved by local regulators only in the People's Republic of China, for certain specific Qualified Institutions and/or Sophisticated Investors only in Taiwan, for Qualified Professional Investors in Korea, for certain specific institutional investors in Brunei, for Qualified Institutional Investors and/or certain specific institutional investors in Thailand, for certain specific institutional investors in Malaysia upon request , for certain specific institutional investors in Indonesia and for qualified buyers in Philippines for informational purposes only. This document is not an offering of a financial product and should not be distributed to retail clients who are resident in jurisdiction where its distribution is not authorized or is unlawful. Circulation, disclosure, or dissemination of all or any part of this document to any unauthorized person is prohibited.

This document may contain statements that are not purely historical in nature but are "forward-looking statements," which are based on certain assumptions of future events. Forward-looking statements are based on information available on the date hereof, and Invesco does not assume any duty to update any forward-looking statement. Actual events may differ from those assumed. There can be no assurance that forward-looking statements, including any projected returns, will materialize or that actual market conditions and/or performance results will not be materially different or worse than those presented.

All material presented is compiled from sources believed to be reliable and current, but accuracy cannot be guaranteed. Investment involves risk. Please review all financial material carefully before investing. The opinions expressed are based on current market conditions and are subject to change without notice. These opinions may differ from those of other Invesco investment professionals.

The distribution and offering of this document in certain jurisdictions may be restricted by law. Persons into whose possession this marketing material may come are required to inform themselves about and to comply with any relevant restrictions. This does not constitute an offer or solicitation by anyone in any jurisdiction in which such an offer is not authorised or to any person to whom it is unlawful to make such an offer or solicitation.

This document is issued in the following countries:

- in Hong Kong by Invesco Hong Kong Limited 景順投資管理有限公司, 45/F, Jardine House, 1 Connaught Place, Central, Hong Kong.
- in Singapore by Invesco Asset Management Singapore Ltd., 9 Raffles Place, #18-01 Republic Plaza, Singapore 048619.
- in Taiwan by Invesco Taiwan Limited, 22F, No.1, Songzhi Road, Taipei 11047, Taiwan (0800-045-066). **Invesco Taiwan Limited is operated and managed independently.**

Authors

Paul Jackson
Global Head of Asset Allocation Research
paul.jackson@invesco.com
London, EMEA

Global Market Strategy Office

Kristina Hooper
Chief Global Market Strategist
kristina.hooper@invesco.com
New York, Americas

Ashley Oerth
Associate Global Market Strategist
ashley.oerth@invesco.com
London, EMEA

Brian Levitt
Global Market Strategist, Americas
brian.levitt@invesco.com
New York, Americas

James Anania
Investment Strategy Analyst, Americas
james.anania@invesco.com
New York, Americas

David Chao
Global Market Strategist, Asia Pacific
david.chao@invesco.com
Hong Kong, Asia Pacific

Thomas Wu
Market Strategy Analyst, Asia Pacific
thomas.wu@invesco.com
Hong Kong, Asia Pacific

Tomo Kinoshita
Global Market Strategist, Japan
tomo.kinoshita@invesco.com
Tokyo, Asia Pacific

Arnab Das
Global Macro Strategist
arnab.das@invesco.com
London, EMEA

Paul Jackson
Global Head of Aset Allocation Research
paul.jackson@invesco.com
London, EMEA

András Vig
Multi-Asset Strategist
andras.vig@invesco.com
London, EMEA