RATHBONES

Investment Insights

Our monthly look at what's driving global markets

Back to school: market lessons
Strong earnings offset worries over bonds, AI, and geopolitics

Picks and shovels
The AI boom's supporting actors can shine as brightly as the stars

Artificial inflation
AI investment may push up prices before productivity brings relief

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Quick take
In this month's issue

Back to school: market lessons
Strong earnings offset worries over bonds, AI, and geopolitics

Despite persistent worries over geopolitics, AI, interest rates, and government debt, markets and balanced portfolios made further progress in August.

Strong corporate earnings and resilient economic data continue to provide support, with no obvious catalyst for a major downturn in growth or profits.

Recent AI-related volatility highlights the risks of leverage, but has also created opportunities for long-term investors to buy quality assets at lower prices.

Government bond markets are becoming a greater concern, as investors focus on large fiscal deficits in the US, UK, Japan, and France.

In an unsettled environment, diversification and the principle of 'time in the market, not timing the market' remain central to navigating short-term volatility.

Read the full story on page 3.

Artificial inflation
AI investment may push up prices before productivity brings relief

AI could eventually boost productivity and ease inflation, but its huge infrastructure requirements are pushing prices higher in the near term.

Rising demand for chips, electricity, construction, and other inputs is already creating bottlenecks and feeding through to inflation.

Longer term, productivity gains could reduce some price pressures, but they may also increase the level of interest rates consistent with a healthy economy.

Unlike the 1990s, today's backdrop includes looser fiscal policy, less globalisation, and greater geopolitical and climate-related risks.

While AI's economic impact is uncertain, the balance of risks points towards rates staying higher than in the 2010s, with implications for both bonds and equities.

Read the full story on page 7.

Picks and shovels
The AI boom's supporting actors can shine as brightly as the stars

AI's rapid development is creating many investment opportunities far beyond the companies building the models, with a vast supporting infrastructure needed to power the ongoing boom.

These 'picks and shovels' span semiconductors, memory chips, networking, power generation, cooling, construction, and raw materials such as copper and steel.

Many are established, profitable businesses that can benefit significantly from AI investment without depending too heavily on the success of a single model or provider.

Risks remain, including technological disruption and the possibility that hyperscalers rein in spending if returns disappoint.

For now, the scale of investment and growing demand for computing power suggest the AI gold rush remains in its early stages, with opportunities across the supply chain.

Read the full story on page 5.

Snapshot
The global economy and markets

Key facts and figures from around the world, including the golden ratio, improving UK productivity, rising US fuel prices, and long-term Treasury yields reaching a 25-year high. Also features longer-term trends across global equities, bonds, currencies, and gold.

Find out more on page 9.

Back to school: market lessons
Strong earnings offset worries over bonds, AI, and geopolitics

John Wyn-Evans, Head of Market Analysis

The cacophony seems louder than ever. Behaviour is getting unruly, and it's time for the headmaster to call the class to order: a brief look back at summer, then it's time to lay out the curriculum for the term ahead.

Despite scary headlines, August was very respectable for markets and balanced portfolios. Concerns persist – from geopolitics to interest rates. But companies continue to deliver strong earnings, leaving investors to balance resilient fundamentals against persistent risks.

In last month's piece, Waiting for God(ot), we covered four unresolved themes: the Iran War, AI, central bank policy, and the UK's public finances. If anything, the waters have become murkier. Even so, investors have taken solace from an encouraging second-quarter company results season. They're encouraged, too, by purchasing manager surveys suggesting the global economy is navigating these challenges.

(Lack of) situational awareness

At the beginning of August, markets were digesting the rapid loss of value of the hedge fund Situational Awareness. We read this as an isolated incident involving a relatively inexperienced fund manager with extreme views on AI who became overextended and was forced to liquidate his positions. That assessment proved correct.

There was some contagion into the more speculative corners of Asian markets, but it was contained, helped by Citadel (a much bigger hedge fund), which mopped up the spillage. Citadel has already booked its multi-billion-dollar profits on the trade and moved on.

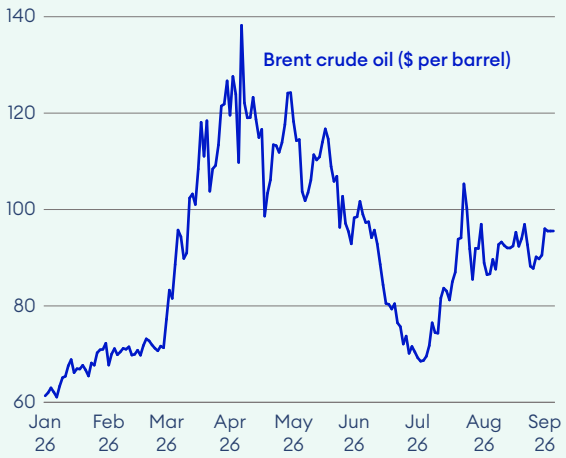
> "Companies can blend more expensive equity capital with debt to maximise returns for shareholders"

These types of incidents are keeping investors on edge. Bank of England Governor Andrew Bailey recently warned that a sharp fall in the value of AI-related companies could trigger a market sell-off – an easy line for alarming headlines.

But context matters. Bailey chairs the Bank's Financial Stability Board, whose job is to flag market risks, not predict imminent crises. After missing many warning signs ahead of the global financial crisis in 2008, regulators are understandably determined not to be caught out again.

It's worth repeating the warning by Charlie Munger, the late business partner of famed investor Warren Buffett, that (financial) leverage is one reason why "a smart person can go broke" (the others are "liquor" and "ladies"). That's not to say that debt should be avoided at all costs. Indeed, the world would be a less developed place if savers were unwilling to lend to innovators and entrepreneurs who could then create new productive assets. Looking at their balance sheets, companies can blend more expensive equity capital with debt to maximise returns for shareholders.

Figure 1.1: Crudely speaking
The oil price has fallen sharply from its wartime highs in April, but is still well above its pre-war level.



Source: LSEG, Rathbones

> We may be approaching the point where investors force politicians to address structural fiscal deficits

But when investing, we avoid highly leveraged instruments. The potential upside is outweighed by the risk that volatility forces untimely selling or, worse, a total loss of capital.

A welcome dip

This extraordinarily hot summer has made any dip in cool waters a welcome relief. The latest AI-related sell-off gave investors another chance to 'buy the dip', sending global equity indices to new all-time highs. We recognise that, at some point, there will be a dip not worth buying. Even so, there's no imminent catalyst for a major setback in economic growth or profits.

If trouble arises, it will probably result from a geopolitical mistake or a bond market riot. In geopolitics, developments involving the US, Iran, and Russia make for difficult analysis, but game theory still suggests severe escalation is a lower-probability outcome, even if the impact could be high.

Persistently high oil prices from Middle East supply disruption are not fully baked into expectations (figure 1.1). Bank of America's August Fund Manager Survey found only 1% of respondents expect the price of a barrel of oil to be over $100 by the end of the year (versus $95 for the Brent crude international benchmark at the time of writing).

The consensus is that US President Donald Trump wants to declare a victory before the 3 November mid-term congressional elections, using escalation to pressure Iran to agree to acceptable terms. However, Iran knows this and will also seek to extract the best possible terms for itself.

The Streisand effect

In 2003, the singer and actor Barbara Streisand tried to remove an aerial image of her Malibu home from the internet. Captured for a documentary about Californian coastal erosion, it had been seen by only a handful of people interested in the subject. Her high-profile lawsuit counterintuitively drew attention to it, and viewership rocketed.

The US Treasury Secretary, Scott Bessent, seems to have made a similar blunder, albeit in the rather more important US bond market. Yields had been rising, but panic only began when the US joined Japan to support the yen. In theory, there was nothing untoward in that; in practice, there was. US yen purchases were funded from euro reserves, while Japan was offered dollar liquidity through the US's central bank, the Federal Reserve (Fed). This allowed Japan's Ministry of Finance to access dollars (to buy yen) without having to sell any of its US Treasuries.

Bessent then went further, announcing buybacks of longer-dated bonds funded by issuing short-term government debt. The purpose was to stop the rot in Treasuries, but the effect was to highlight the precarious state of US public finances. Interest payments and entitlements already absorb all US government revenue, leaving discretionary spending to be funded through extremely high deficits (figure 1.2).

Restless traders, with most of the results season behind them and no new AI themes to chase, alighted on bonds, and a fresh round of selling began. The US was not alone. Four countries with fiscal problems are in investors' sights: the US, Japan, the UK and France.

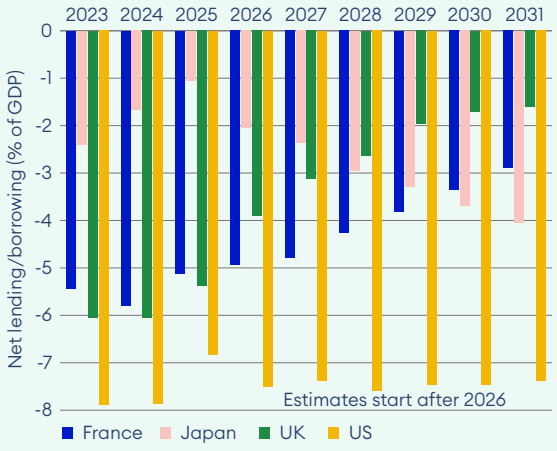
We've avoided longer-dated government bonds for precisely these reasons, but we may finally be approaching the point where investors force politicians to address structural fiscal deficits. While bonds offered no shelter from weaker equities in 2022, it's worth remembering that the UK 10-year Gilt bottomed at just 0.07%, compared with 5.2% today. (See page 9 for a graph showing bond yields in the US, UK, and Germany.)

Time in the market, not timing the market

The current market environment remains challenging. The old mantra of 'time in the market' is better than 'timing the market' has again proved helpful. So too has diversification, which has mitigated some of this year's volatility. We hope the 'time in the market' mantra has encouraged investors to stay the course.

Figure 1.2: Always a borrower be

The US fiscal deficit stands out even among other heavily indebted major economies.



Source: IMF, Rathbones

Picks and shovels
The AI boom's supporting actors can shine as brightly as the stars

Sanjiv Tumkur, Head of Equities Research

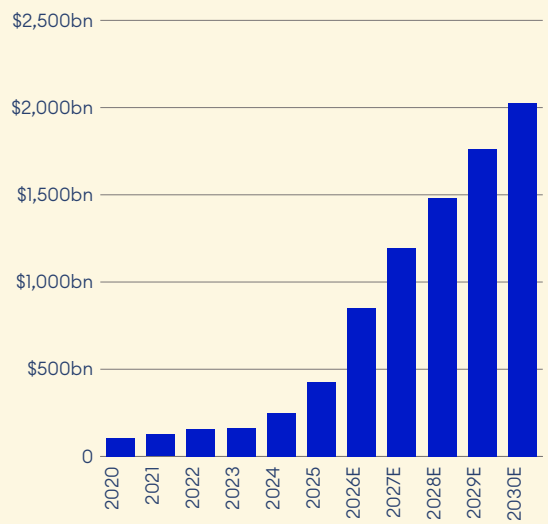
Pretty much as soon as investors started growing excited about the launch of ChatGPT, back in 2022, talk turned to the picks and shovels needed to lay the groundwork for future breakthroughs in generative artificial intelligence (Gen AI). By this, we mean AI that can generate content in response to prompts from a user.

The term 'picks and shovels' stems from the California Gold Rush of the 1840s and 1850s. Most of the miners made little or nothing, while others built fortunes selling them equipment. Meanwhile, San Francisco, where the miners congregated and kitted up, grew from an obscure port with a population about the same as today's Norfolk village of Little Snoring into a small city.

Since then, picks and shovels has served as shorthand for companies making money supporting an investment boom without taking the primary risk experienced by those on the front line.

As investors, we see promise in the picks-and-shovels companies. They're usually long-established businesses with many years of profitability. Some have become extremely expensive. But others may trade at attractive valuations, particularly before the extent to which they benefit from the theme is widely appreciated. They often have other revenue streams not linked to the theme. This can help mitigate their underperformance, should the AI theme fall out of favour.

Figure 2.1: A data centre coming somewhere near you
Projected growth in annual global capital spending on data centres.



Source: Redburn, Rathbones

Frontier labs at the front

At the front of the line stand the frontier labs with their own large language models – the soup from which chatbots generate their answers. These include Anthropic with Claude, OpenAI with GPT, and Alphabet with Gemini. Companies such as DeepSeek and Meta, with Llama, also have open-weight models, allowing users to download and host the models themselves.

However, frontier labs are difficult to invest in. Sometimes they're part of much larger entities – for example, investors in Alphabet are exposed to the fortunes of a number of other themes as well as Gemini. As with the picks-and-shovels companies, this can make them more resilient.

Some investors may prize purity, but Anthropic and OpenAI are unlisted, though both aim to go public soon. Most of these labs also require greater scale to reach meaningful profitability. Some investors may also baulk at the lack of a track record of profitability.

Also close to the front line are hyperscalers, named for the vast scale of their data centre infrastructure, which can encompass hundreds of thousands of servers – roughly the footprint of several football pitches. These include Amazon, Microsoft, Alphabet (once more), and a few others. They provide the gargantuan computing power needed for AI. But if investors focus just on the tiny number of hyperscalers, they may be concentrating their portfolios too much.

Picking picks and shovels

Picks-and-shovels plays tend to be less exposed to the success of one particular AI model. One area is semiconductors. Graphics processing units (GPUs), developed by Nvidia and Advanced Micro Devices, enable the parallel processing required for Gen AI: splitting a task into multiple components that can be handled simultaneously.

Another type is application-specific integrated circuits (ASICs), as created by Broadcom and Marvell.

Increasingly important for 'inference' work – the stage where a trained model is run to produce an output, such as a prediction, answer, or classification – they support the ongoing use of trained models.

The chips themselves are produced by semiconductor foundries – chiefly Taiwan Semiconductor, but also Samsung, Intel, and others. The need to expand production capacity has, in turn, raised demand for the wafer fabrication equipment required to make them.

Beneficiaries include ASML, which produces lithography equipment, as well as Lam Research, Tokyo Electron, and Applied Materials, which make deposition and etch equipment. Deposition applies ultra-thin layers of material to chips, while etching removes selected material according to the lithographic pattern.

However, the data centres that supply AI services require far more than GPU and ASIC chips. A data centre contains thousands of racks, filled with servers. As well as GPUs, these house central processing units (CPUs) and memory chips.

CPUs, produced by companies such as Intel and Advanced Micro Devices, schedule jobs, provide storage, and orchestrate AI agents. Memory has emerged as a vital component for Gen AI. The ability to store, access, and move large volumes of data is central to the performance, speed, and cost of AI models.

Memory has become a bottleneck to AI infrastructure growth – there's a shortage of memory chips. We identify three reasons. First, there are only three main global memory producers: Micron, SK Hynix, and Samsung. Second, companies are cautious about adding extra capacity, given the memory market's historical cyclicality. Lastly, building new capacity takes significant time and many billions of dollars.

Figure 2.2: No longer cheap as chips
High demand and short supplies for semiconductors and other electronic components have reversed years of declining prices. Data centre growth is also helping to push up the price of copper. (January 1996 = 100)

Source: Federal Reserve Bank of St Louis, Rathbones

AI is only as fast as its networking. Copper connects chips and moves data within servers; optical interconnects link servers and racks; the emerging technology of co-packaged optics helps thousands of GPUs communicate fast enough to function like a unified computing system. Companies such as Amphenol, Lumentum, and Coherent offer solutions.

Powering the boom

Another obstacle is the enormous amount of power that data centres require. Data centre operators are increasingly resorting to on-site generation. Renewable energy can supply some of this power. Data centres also use gas turbines, fuel cells, or even, in the future, small modular nuclear reactors. This creates opportunities for manufacturers of power-generation equipment.

Data centres also emit huge amounts of heat. Standard fans and ventilators can't dissipate this fast enough. Liquid cooling systems from companies such as Vertiv and Schneider can solve this problem.

Providers of construction and maintenance services for data centres also benefit from the unprecedented levels of capital investment in this sector. Companies supplying building materials should benefit too. That includes suppliers of steel, concrete, and raw materials such as copper, provided by companies such as Anglo American and Freeport McMoRan.

A better pick or shovel?

As with any exciting new investment theme, alongside the opportunities come risks. One is that a new pick or shovel proves better than an old one. For example, co-packaged optics could displace many copper solutions within networking.

Another risk is a pause in spending. This might emerge from scepticism about whether the hyperscalers can demonstrate attractive returns on their investment in data centres.

Naturally, we're monitoring the AI market carefully. But at present, we think the risks are outweighed by the opportunities from an unprecedented capital investment boom. This means rapidly growing revenues for hyperscalers and frontier labs – and picks-and-shovels opportunities.

As we survey today's AI gold rush, we might see a lesson from history. The original rush eventually came to an end. But humanity's appetite for finding and buying gold did not – a new gold rush had already begun in Australia, enabled by more picks and shovels. We believe we're still in the early innings of the development of Gen AI.

Artificial inflation
AI investment may push up prices before productivity brings relief

Adam Hoyes, Senior Asset Allocation Analyst

So much ink has been spilt debating potential stock market winners and losers from recent AI advances that there's a danger of not enough ink being left to debate another issue that's vital but sometimes overlooked. This is the question of what AI means for inflation and interest rates. It's a question that will directly affect the performance of bonds in clients' portfolios, with knock-on effects on stocks too.

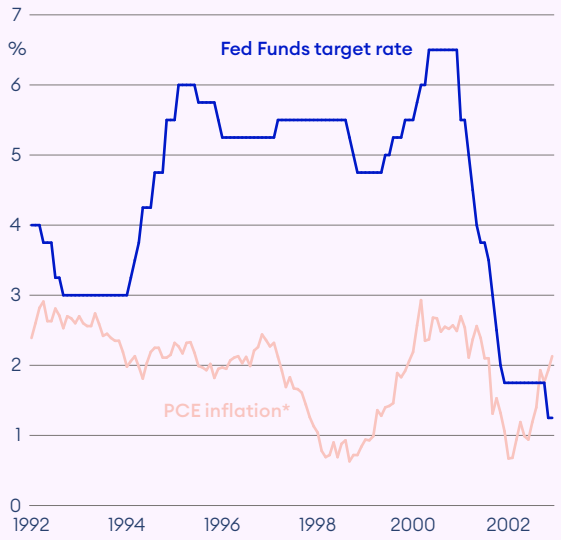
In the US, this item has accelerated up the agenda following May's confirmation of Kevin Warsh as the US Federal Reserve's Chair. Before selection as President Donald Trump's nominee, Warsh argued that AI would reduce inflation, opening the door to lower interest rates. This may have been to boost his chances of landing the job, given Trump's repeated calls for big interest rate cuts. Since taking over at the Fed, Warsh has made the same argument, albeit less dogmatically.

The argument rests partly on history. One of Warsh's predecessors, Alan Greenspan, resisted calls to hike interest rates in 1996 in response to strong growth. Greenspan thought widespread adoption of IT was driving up growth in productivity: how much each worker can produce in a given period. This would increase the rate at which the economy could grow without generating inflation. If each worker can produce more, they can also earn more and consume more without the extra demand just bidding up prices.

There was no evidence of this in the official aggregate data at the time. But Greenspan had a hunch it was the case based on developments elsewhere, and knew that measuring productivity (especially in real time) is tricky. His suspicion ultimately proved correct: inflation held steady and revised data eventually showed productivity growth had, in fact, been accelerating.

It's easy to see the appeal of returning to the economic conditions of the late 1990s. The US economy boomed, with growth above 4% per year. The unemployment rate was falling to lows not seen since the 1960s, while inflation stayed under control. This allowed the Fed to lower interest rates from 6% in early 1995 to 4.75% by 1998 (figure 3.1).

Figure 3.1: The Greenspan gamble
Strong growth and falling unemployment didn't stop the Fed cutting rates as inflation remained under control.



* Personal Consumption Expenditures inflation, the Fed's preferred measure of changes in consumer prices.
Source: LSEG, Rathbones

Inflation in the short term

However, we're sceptical that Warsh will be as fortunate as Greenspan. In the near term, the evidence suggests that AI will be inflationary, largely due to the demand being created by the enormous scale of AI investments. After all, part of the reason that many stocks perceived to benefit from AI investment have performed so well lately is because demand-supply imbalances have driven up prices for their goods and services.

This pressure is feeding through into measures of inflation that shape the Fed's interest rate decisions. Higher prices for memory chips and other electronic components (figure 3.2) are already leading to price hikes for some consumer goods, such as MacBooks and iPads. Meanwhile, power-hungry data centres are putting upward pressure on electricity prices. Building those data centres is causing bottlenecks in other areas, too. Wage growth for construction workers has rebounded, unlike in other sectors. This rebound is increasing construction costs throughout the economy.

Inflation in the long term

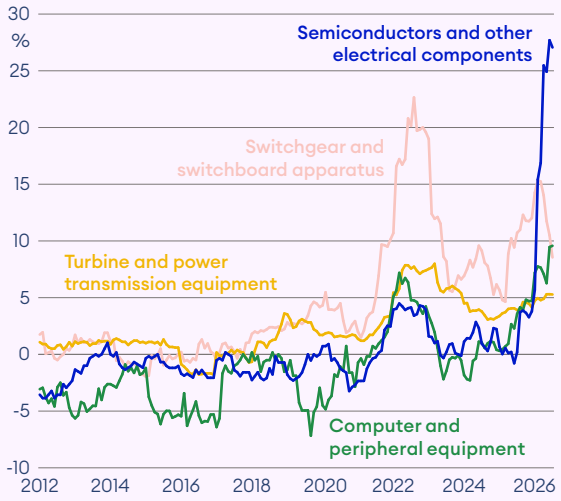
Looking further ahead, what matters is whether AI can deliver stronger productivity growth. It's not clear yet whether such gains are occurring, for economies as a whole, given the real-time measurement issues. However, in the long-term assumptions underpinning our portfolios, we're now including some conservative forecasts, grounded in the latest academic literature, for how much AI could boost productivity across various economies.

If we're correct, there would be some potential for AI to bear down on inflation – temporarily. Producing more with less creates savings that can be passed on (at least in part) to households. There are two channels through which this happens: lower prices and higher wages. But firms tend to be able to drop prices faster than workers can bargain for the savings to be directed towards their pay packets. That means we tend to see some downward pressure on inflation.

Will that allow Warsh to cut rates? We don't think it will be that simple. One reason: economic theory tells us that higher productivity growth should lead to a higher real neutral interest rate. The real interest rate is the headline or 'nominal' rate, minus expected inflation. The real *neutral* rate is what's consistent with an economy operating at full capacity, with stable inflation. It's 'neutral' in the sense that it doesn't either stoke or reduce demand.

Figure 3.2: AI comes at a price

Investment in AI infrastructure is contributing to higher prices across a range of manufactured goods, shown here as factory gate inflation.



Source: LSEG, Rathbones

> "Looking further ahead, what matters is whether AI can deliver stronger productivity growth"

Why is faster productivity growth apt to do this? First, it increases companies' expected *returns* on capital. That boosts their *demand* for capital. Second, households could save less if they expect stronger future wage growth, enabled by productivity improvements. That reduces the *supply* of capital. More demand and less supply means a higher price – the price in question here is the rate of interest.

This raises the question of how the Fed avoided hiking rates for most of the late 1990s. First, it's important to recognise that here we're talking about *nominal* interest rates. Because inflation expectations were falling, the *real* policy stance wasn't becoming quite as accommodative. Second, there were several other factors pushing in a disinflationary direction. Rapid globalisation was putting downward pressure on inflation as cheaper goods from Asia and elsewhere became available.

At the same time, the US federal government was reducing inflationary pressure by tightening fiscal policy and taking demand out of the economy. The benign geopolitical backdrop and limited effects of climate change also helped prevent major supply shocks from stoking inflation. That world is very different from today's.

A lesson from the dotcom boom

As a side note, we have some sympathy for the argument that it was a mistake to keep rates lower in any case, because this allowed the stock market bubble to keep inflating. The Fed eventually responded by raising rates sharply from 1999.

Ultimately, there is still considerable uncertainty about how AI will develop and its likely impact on economies. But unlike Warsh, we think the balance of risks is tilted towards interest rates remaining higher over the long run. This suggests no return to the halcyon days of the 2010s. That, in turn, would mean higher (though not necessarily falling) yields for fixed income. It may also prove a headwind to equity markets. Though there are potential tailwinds, such as stronger earnings growth, that could prove more powerful.

Snapshot
The global economy and markets

Figure of the month

1.618

The golden ratio is found throughout nature. Sunflower seeds fill the head efficiently, creating spirals that follow this ratio, a pattern echoed in pinecones, shells, and branches. Stock markets have their own ratios, such as price-to-earnings and price-to-book. When these ratios deviate far from their averages, the pressure to return towards them builds up over the long term.

At a glance

1.8%
Q2 rise in UK private-sector productivity over the past year

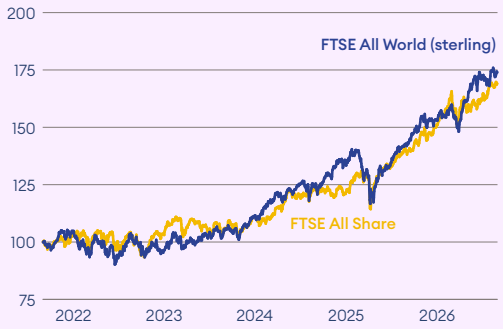
5.22%
US 30-year Treasury yield at August auction – a 25-year high

52%
Rise in US Midwest diesel prices over the past year

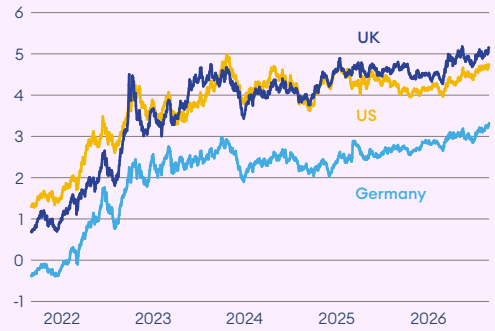
13%
Rise in Nigeria's currency, the naira, over the past year

Key market indicators

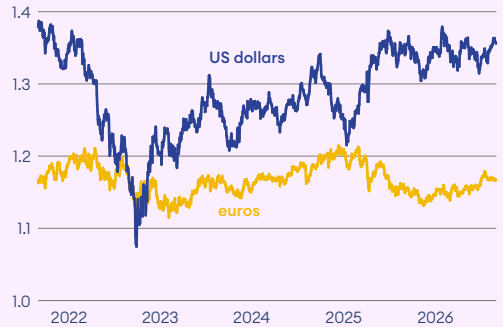
Equities
Total return (1 September 2021 = 100)



Government bonds
10-year yields (%)



Sterling
Value of £1 in dollars and euros



Gold
US dollars per troy ounce

Sources: FactSet, LSEG, Rathbones. Past performance is not a reliable indicator of future performance.

Find out more
Knowledge and insight

Alongside this monthly *Investment Insights* publication, we share a wide range of updates and analysis, from regular strategy commentary and video briefings to in-depth reports, all designed to help you understand what's driving the global economy, financial markets, and the outlook for investment returns. To explore more, visit www.rathbones.com/en-gb/wealth-management/knowledge-and-insight

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Video updates
Stay informed with regular update videos from Robert Sears, our Chief Investment Officer, that explain how geopolitical tensions, market movements, and global economic trends could affect your portfolio.

Weekly and monthly digest
Keep up to date with regular insights from John Wyn-Evans, our Head of Market Analysis, as he explores the key themes shaping the global economy and investment environment.

Research reports and special updates
In line with our focus on long-term investing, we produce in-depth reports. These publications reflect the thinking behind our portfolio decisions and explore how structural trends, risks, and opportunities could affect investors over the long term. We also respond to big events with pieces that explain the implications for markets and your wealth.

Burnham is Prime Minister, Healey Chancellor. What does this mean for investors? We look at what the two new most powerful men in Britain might do for the economy and public finances in office – and what they should do.

The world is growing older. *The longevity economy* looks at the wider economic challenges, and the risks and opportunities in four sectors in which we invest: property, healthcare, must-have consumer goods, and nice-to-have consumer goods. Please also see our slideshow.

Experience and expertise
Rathbones has a large and experienced in-house research team covering global equities, fixed income, multi-asset strategies, and responsible investing. With specialists dedicated to analysing market trends, sectors, and individual securities, our team brings deep insight and rigorous discipline to every portfolio. This depth of knowledge allows us to uncover opportunities, manage risk effectively, and respond quickly to changing conditions, helping you to invest with greater confidence.

You can access this expertise in a range of ways, from fully bespoke discretionary portfolios to ready-made multi-asset funds, tax-efficient investment strategies, and specialist services for complex needs. To find out more and for details of your local office, visit www.rathbones.com/en-gb/wealth-management/contact-us

Information valid as at 1 September 2026, unless otherwise indicated.

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