Janus Henderson INVESTORS

JANUS HENDERSON SOVEREIGN DEBT INDEX

Edition 2

APRIL 2022

CONTENTS

All dollar figures are in US dollars (USD) unless otherwise stated.

INTRODUCTION

FORMED IN 2017 FROM THE MERGER BETWEEN JANUS CAPITAL GROUP AND HENDERSON GLOBAL INVESTORS, WE ARE COMMITTED TO ADDING VALUE THROUGH ACTIVE MANAGEMENT.

For us, active is more than our investment approach – it is the way we translate ideas into action, how we communicate our views and the partnerships we build in order to create the best outcomes for clients.

We take pride in what we do and care passionately about the quality of our products and the services we provide. Our investment managers have the flexibility to follow approaches best suited to their areas of expertise, but overall our people come together as a team. This is reflected in our Knowledge Shared ethos, which informs the dialogue across the business and drives our commitment to empowering clients to make better investment and business decisions.

We are proud to offer a highly diversified range of products, harnessing the intellectual capital of some of the industry's most innovative and formative thinkers. Our expertise encompasses the major asset classes, we have investment teams situated around the world, and we serve individual and institutional investors globally. We have US$432bn in assets under management, more than 2,000 employees and offices in 25 cities worldwide*. Headquartered in London, we are an independent asset manager that is dual-listed on the New York Stock Exchange and the Australian Securities Exchange.

What is the Janus Henderson Sovereign Debt Index?

The Sovereign Debt Index is a long-term study into trends in government indebtedness around the world, the investment opportunities this provides and the risks it presents. It measures the extent to which the world's governments are financing themselves with borrowings and how affordable and sustainable those borrowings are, comparing and contrasting trends around the world. (See methodology for further details)

The report aims to help readers better understand the world of fixed-income investment.

*As at 31 December 2021

EXECUTIVE SUMMARY

Overview

- Global government debts rose to $65.4 trillion in 2021, an increase of 7.8% on a constant-currency basis, as every country borrowed more
- Since the pandemic began, global sovereign debt has risen by a quarter
- Debt servicing costs fell to a record low of $1.01 trillion, an effective interest rate of just 1.6%
- A strong economic recovery meant the global debt / GDP ratio improved to 80.7% in 2021 from 87.5% in 2020
- Government debt has tripled in two decades
- Global government bond markets delivered a -1.9% total return in 2021, only the fourth time in 35 years to see a decline

Outlook

- Government debt will rise 9.5% in 2022, with the US, Japan and China accounting for most of the increase
- The global government interest bill will rise in 2022, up by 14.5% on a constant-currency basis
- The UK will see the biggest jump in debt-servicing costs thanks to higher inflation affecting index-linked bonds and the quantitative easing (QE) hangover

GLOBAL GOVERNMENT DEBTS ROSE TO **$65.4 TRILLION** IN 2021, AN INCREASE OF **7.8%** ON A CONSTANT-CURRENCY BASIS, AS EVERY COUNTRY BORROWED MORE

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The value of an investment and the income from it can fall as well as rise and you may not get back the amount initially invested.

EXECUTIVE SUMMARY (CONTINUED)

Portfolio manager viewpoint – highlights

- Bond markets present opportunities even when inflation and interest rates are rising
- Investors can diversify from higher risk equity markets, in which they are heavily overweight
- Sovereign debt markets can potentially offer investors lower risk – a place to hide in uncertain times – especially short-dated bonds
- Longer-dated bonds do not offer good value at present given their higher risk
- Higher inflation has been priced in, so new bond investors benefit from today's higher yields
- In the pandemic bond markets converged – now there is real divergence – this means opportunity for investors
- The end of QE programmes need not be a cause for major concern
- This is a dangerous time to be a passive investor as bond markets diverge

Quantitative easing

- Central bank holdings of government debt rose 9% in 2021 – driven by the Federal Reserve, ECB and Reserve Bank of Australia
- Bank of England is shrinking QE by allowing bonds to mature and by selling corporate bonds
- In a rising interest-rate environment, there is a large cost to taxpayers from unwinding QE

IN THE PANDEMIC BOND MARKETS CONVERGED – NOW THERE IS REAL DIVERGENCE – THIS MEANS OPPORTUNITY FOR INVESTORS

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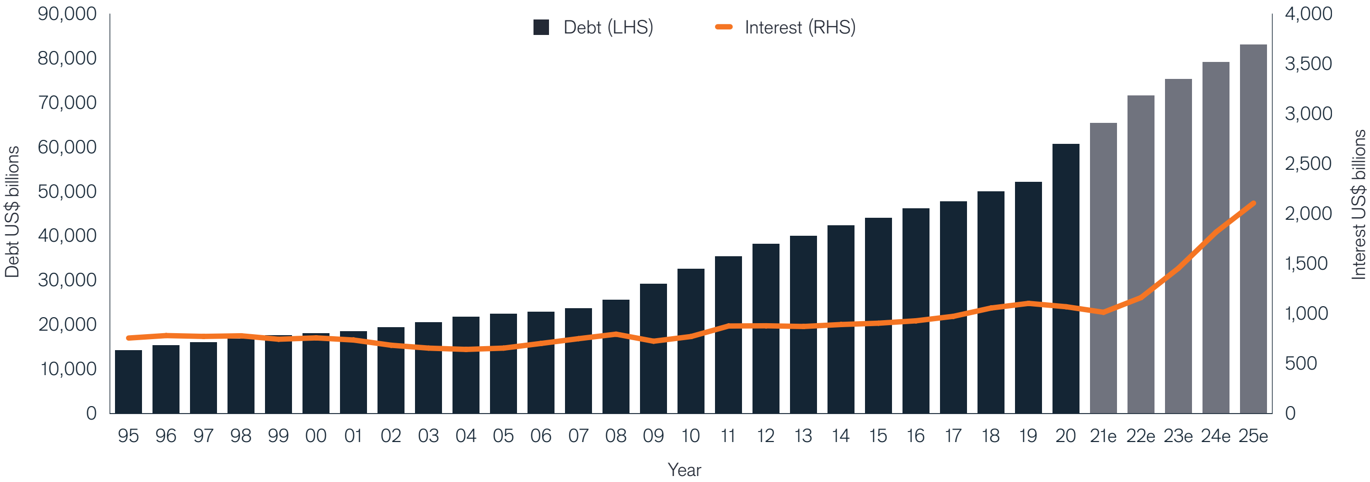
OVERVIEW

GLOBAL GOVERNMENT DEBTS V INTEREST PAYMENTS



Governments around the world continued to borrow freely as the second year of the pandemic wore on. A strong economic recovery supported stretched government finances, but now accelerating inflation has pushed up market interest rates and this will raise the cost of servicing the Covid-19 debt burden.

By the end of 2021, the world's governments owed a collective $65.4 trillion, an increase of 3.3% year-on-year. Changes in exchange rates concealed the true extent of the jump, however. On a constant-currency basis, the rise was 7.8% as governments added a net $4.7 trillion to their tab. Since the pandemic began, global sovereign debt has soared by over a quarter, up from $52.2 trillion to today's record level.

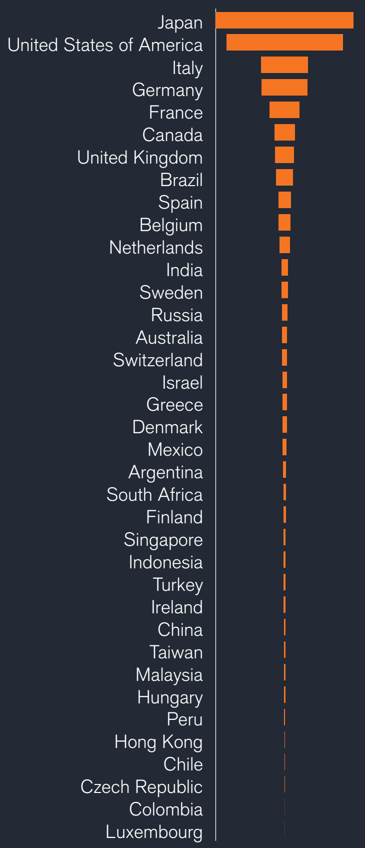
GOVERNMENTS AROUND THE WORLD CONTINUED TO BORROW FREELY AS THE SECOND YEAR OF THE PANDEMIC WORE ON.

Every country we have looked at saw borrowing rise in 2021. China's debts rose fastest and by the most in cash terms, up by a fifth or $650bn. Among large, developed economies, Germany saw the biggest increase in percentage, however. The country's borrowings rose by one seventh, almost twice the pace of the global average (see Spotlight section for country detail).

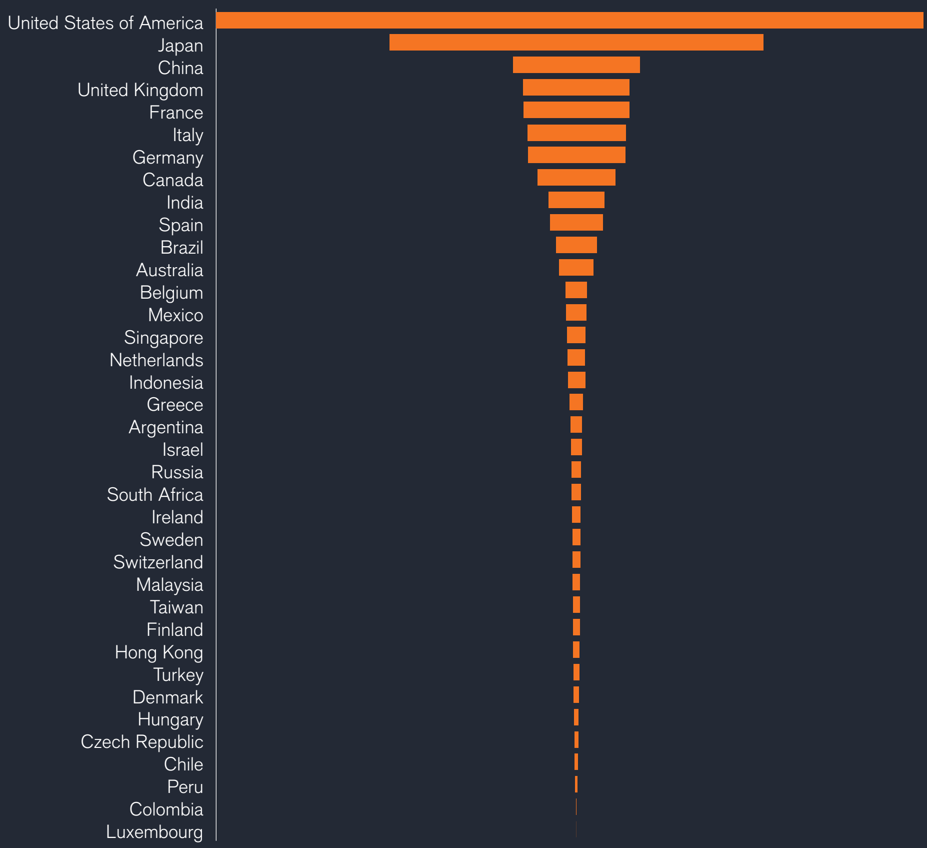
Despite the surging level of borrowing, governments still enjoyed extremely low interest bills in 2021. Last year, the effective interest rate on all debt was just 1.6%, down from 1.8% in 2020. This brought the total cost of servicing all that debt down to $1.01 trillion, compared to $1.07 trillion in 2020.

OVERVIEW (CONTINUED)

WORLD PUBLIC DEBT
USD – 1995



WORLD PUBLIC DEBT
USD – 2021



EVERY COUNTRY WE HAVE LOOKED AT SAW BORROWING RISE IN 2021. CHINA'S DEBTS ROSE FASTEST AND BY THE MOST IN CASH TERMS, UP BY A FIFTH OR $650 BILLION. AMONG LARGE, DEVELOPED ECONOMIES, GERMANY SAW THE BIGGEST INCREASE IN PERCENTAGE, HOWEVER.

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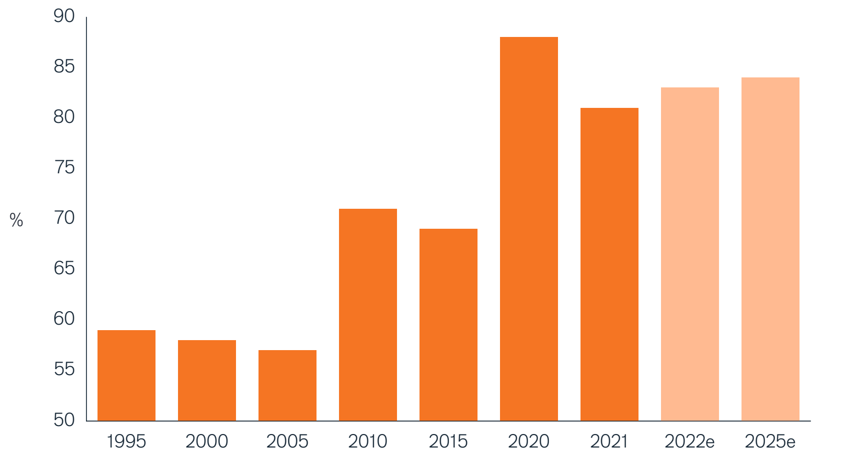
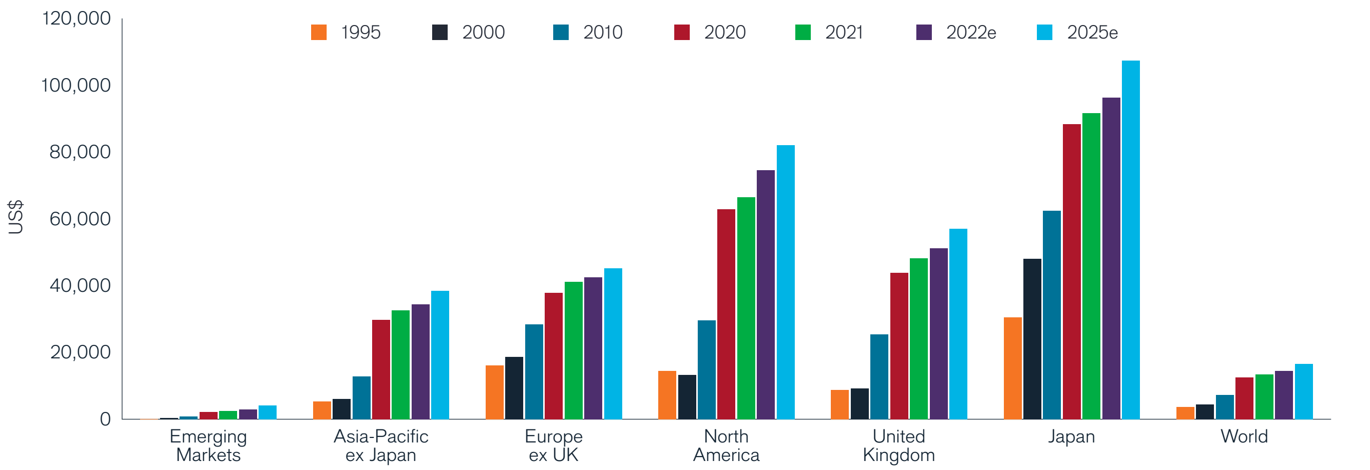
Moreover, the world economy has bounced back strongly, expanding by 9.5% in 2021[1], faster than the 7.8% increase in debt. This shows that the higher debt burden is shouldered by a significantly stronger global economy. The world's ratio of total sovereign debt to GDP fell from a record 87.5% in 2020 to 80.7% in 2021 as the rebound in economic activity outpaced the increase in borrowing.

The longer-term picture shows dramatic change. Global government debt has almost tripled in the last two decades, but the reduction in interest rates that accompanied first the global financial crisis and then the pandemic mean that the interest cost has only risen by a third.

GLOBAL PUBLIC DEBT AS % OF GDP



GOVERNMENT DEBT PER PERSON



Source: EIU, Janus Henderson, March 2022

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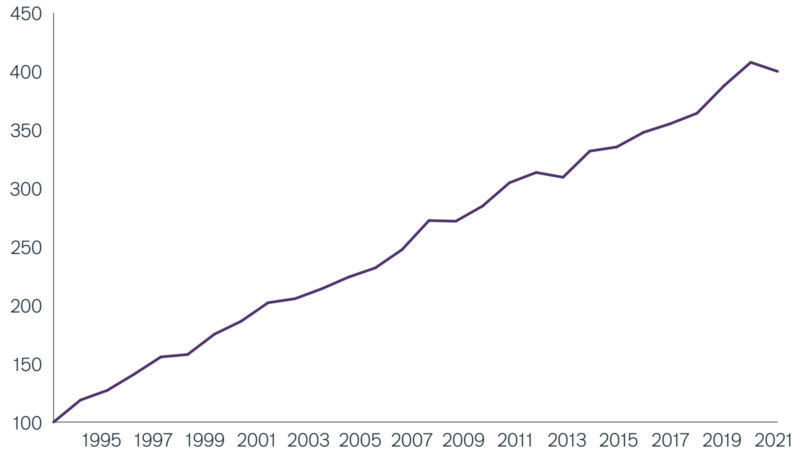
[1] Nominal GDP, constant currency

BOND MARKETS HAD A TOUGH 2021

Government bonds have delivered impressive returns for investors over the long term. Between 1995 and the end of 2020, returns totalled 308% in a combination of capital gains driven by the secular decline in interest rates over the period and the income paid by way of interest. 2021 was a different story. The global government bonds index[2] fell during the year, delivering a loss of 1.9%, its worst year since 1994 and one of only four years in at least the last 35 years to see negative total returns.

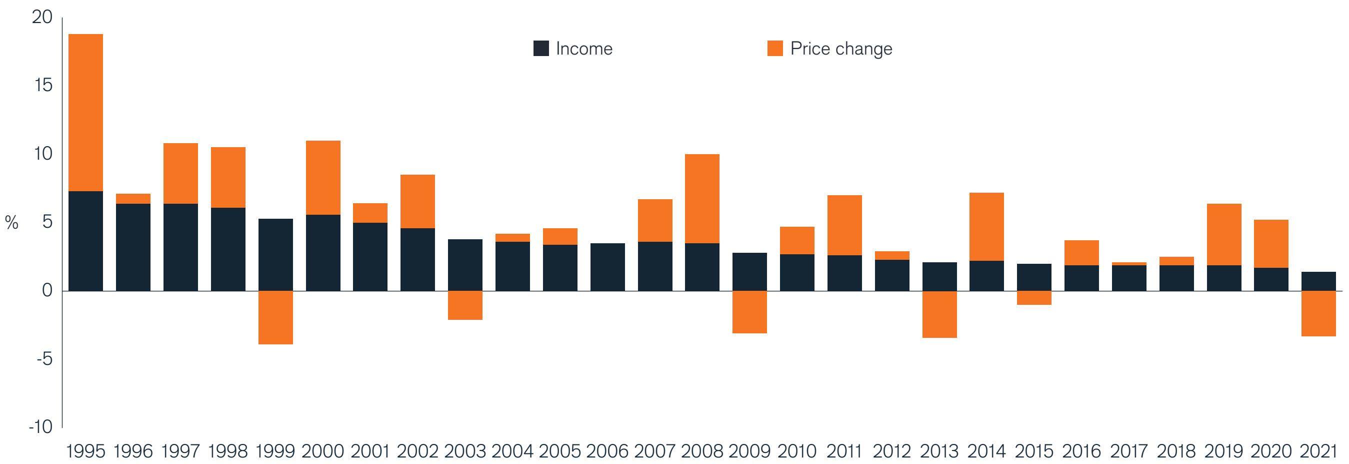
The income component of investor returns shrank to 1.4% in 2021, its lowest on record. This of course reflects the lower interest expense governments have shouldered that we discussed above. At the same time, bond prices fell 3.3% as rising inflation took its toll. Investors demand a higher yield on their capital if they fear more inflation and this pushes bond prices down (see Explainer in the appendices).

GLOBAL GOVERNMENT BONDS INDEX – TOTAL RETURN (CUMULATIVE USD HEDGED)



Not all bonds behave the same. Bonds with lower coupons[3] and long maturities are riskier than short-dated ones with higher coupons. As the interest rate environment changes, the price of the latter moves much less than the former. This presents opportunities for investors (see Viewpoint).

BOND RETURNS ARE A COMBINATION OF CAPITAL AND INCOME (GLOBAL BONDS, USD)



Source: Bloomberg, Janus Henderson, March 2022.

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2. Bloomberg: W0G0, Total return, USD.

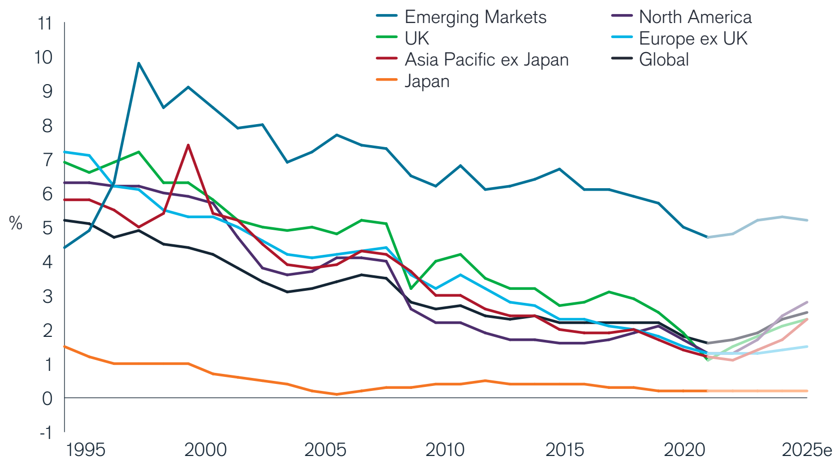
3. See Explainer.

OUTLOOK

Even though the beginning of the end of the pandemic is well underway, 2022 will see global government debts climb further. The US, Japan and China will account for around three quarters of the expected $6.2 trillion global increase (+9.5%) – between them they were only responsible for half the rise in 2021 – but almost every country we track is likely to borrow more. Total government borrowing will reach $71.6 trillion. Economic growth will support the extra borrowing, but indebtedness is likely to rise a little faster than economies can grow.

The big change for 2022 and beyond will be in the cost for governments of servicing this debt. The interest burden is set to rise by around one seventh (14.5%) on a constant-currency basis. The biggest impact set to be felt in the UK, which has a large share of its debt issued in index-linked gilts (see UK section). As inflation rises, so too do the interest payments. Moreover, the Bank of England has begun the interest-rate tightening process ahead of other nations. This means it will have to pay substantially more interest to its depositors than it receives on the portfolio of bonds it has amassed as part of the quantitative easing programme. The shortfall will have to be funded by the British taxpayer.

EFFECTIVE INTEREST RATE (DEBT-WEIGHTED) BY REGION



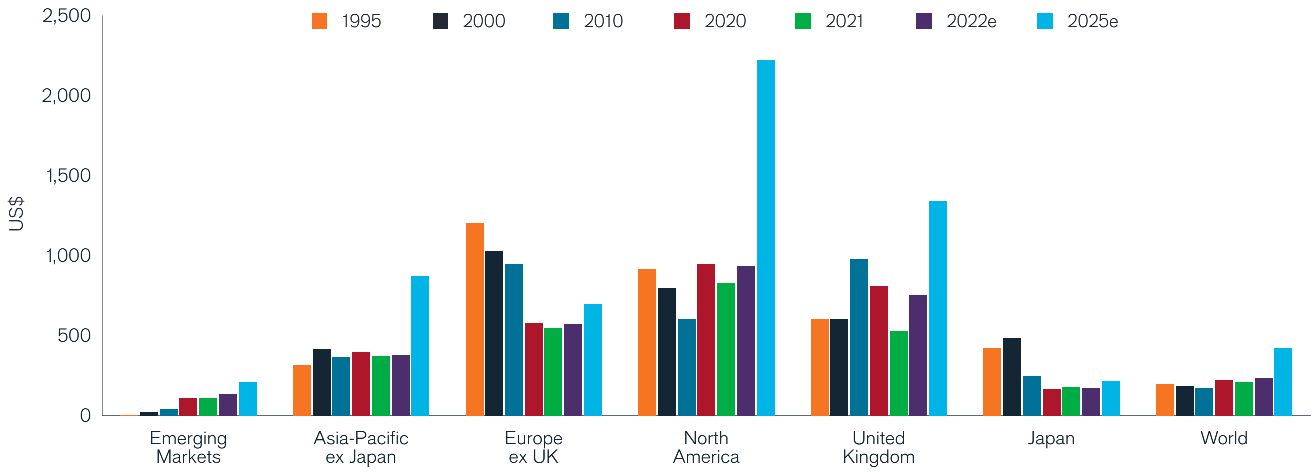
EVEN THOUGH THE BEGINNING OF THE END OF THE PANDEMIC IS WELL UNDERWAY, 2022 WILL SEE GLOBAL GOVERNMENT DEBTS CLIMB FURTHER.

The US, Canada, France, Germany and Australia also have relatively large amounts of inflation-linked bonds in issue. Along with the UK, these governments are incentivised to bear down on inflation more than those countries with little or no inflation-linked debt, who will be content to allow their debt burdens shrink in relative terms as inflation erodes their value – so-called financial repression. Action to squeeze out inflation is of course supportive of bond prices.

At present the inflation figures reflect both actual price increases happening today and simple base effects of previous price increases that are compared to the 'old' price level until their anniversary passes. The former is more concerning

OUTLOOK (CONTINUED)

GOVERNMENT INTEREST BILL PER PERSON



Source: EIU, Janus Henderson, March 2022

for bond investors than the latter. We expect inflation to be much less of a problem by the end of the year, as by then these less serious base effects will be the main determinant, rather than live cost pressures. The risk, however, is that inflation expectations become embedded in how companies and consumers behave. If this happens, the policy response will have to be harder and more painful.

The bond markets present particular challenges for investors at present. In our viewpoint section below, our portfolio managers explain what these challenges are, how to overcome them, and why the bond markets also offer real opportunity at a time of significantly increased risk in global financial markets.

WE EXPECT INFLATION TO BE MUCH LESS OF A PROBLEM BY THE END OF THE YEAR, AS BY THEN THESE LESS SERIOUS BASE EFFECTS WILL BE THE MAIN DETERMINANT, RATHER THAN LIVE COST PRESSURES. THE RISK, HOWEVER, IS THAT INFLATION EXPECTATIONS BECOME EMBEDDED IN HOW COMPANIES AND CONSUMERS BEHAVE.

VIEWPOINT

BY **BETHANY PAYNE** AND **JIM CIELINSKI**

When inflation and interest rates are rising, it is easy to dismiss fixed income as an asset class, particularly since bond valuations are relatively high by long-term historical standards.

But this view neglects the wider context. First, the valuations of assets of all kinds are very high – and equities especially so – think of tech stocks. In such circumstances, selling the riskier asset (shares) and switching to a lower risk alternative (bonds) is the best way to diversify. Cash, incidentally, might seem safe, but it is guaranteed to lose value in real terms, and with inflation where it is today, cash is dwindling at its fasted pace in two decades.

Secondly, investors have become very overweight in equities in recent years, both through inertia as share prices have climbed so far and because they had actively opted to avoid fixed income when bond prices had been boosted by the world's ultra-low interest rates. Simply rebalancing portfolios requires a shift back towards more bond investments.

BETHANY PAYNE, PORTFOLIO MANAGER, GLOBAL BONDS AND **JIM CIELINSKI**, GLOBAL HEAD OF FIXED INCOME

Finally, higher inflation and expectations of rising interest rates have now been largely priced in by bond markets: bond yields have risen in recent months, meaning that new investors receive more interest income for each dollar they invest. And since yields move in the opposite direction to prices, that means prices are lower and bonds are now much better value.

There are real opportunities for investors in bonds markets right now. During the first couple of years of the pandemic, the big theme was how bond markets around the world converged. Governments and central banks everywhere provided huge, coordinated levels of support to their economies. Now, the theme is divergence. Regime change is underway in the US, UK, Europe, Canada and Australia, which are now focused on how to tighten monetary policy to squeeze out inflation – both through higher interest rates and with tentative steps towards unwinding their QE programmes. The end of QE is less of a concern for bond markets than is commonly perceived, because the reduction in central-bank demand for bonds is coming at a time of much less new borrowing by governments as economies recover – so supply of bonds is falling too, helping offset the drop in demand. In Japan, the central bank is more cautious and has yet to commit to either higher rates or quantitative tightening – bond purchases continue here. Meanwhile, the Chinese central bank is doing the opposite – stimulating the economy with looser policy. This all means that bond markets are behaving differently from one part of the world to another.

WHEN INFLATION AND INTEREST RATES ARE RISING, IT IS EASY TO DISMISS FIXED INCOME AS AN ASSET CLASS, PARTICULARLY SINCE BOND VALUATIONS ARE RELATIVELY HIGH BY LONG-TERM HISTORICAL STANDARDS.

As well as geographical considerations, there are opportunities in what sort of bonds to buy. In particular investors must think about longer-dated bonds versus those set to mature in the short term i.e., over the next five years. Firstly, with interest rates rising, investors can protect against losses by buying shorter-dated bonds – their prices are less volatile because they are certain to repay their capital quite soon, making them less susceptible to changing market conditions. The so-called 'short-end' of the yield curve is a good place to hide. We also believe that the markets are expecting more interest rate hikes than are likely to materialise. This means shorter-dated bonds will benefit if the tightening cycle ends sooner.

Secondly, the yield curve has flattened. That means there is very little difference between market interest rates for bonds that have only a couple of years left to run and those with ten years or more. Long-dated bonds are much riskier, but the compensation for that extra risk (i.e. a better yield) is low at the moment, so there is little incentive to take it.

Thirdly, though it remains true that sovereign bonds still offer very little income for a given level of capital and therefore income investors may prefer higher-yielding corporate bonds, they are the right place for those wanting to minimise risk in uncertain times.

Finally, the terrible human cost of the conflict in Ukraine is first on everyone's minds but it is changing the fiscal outlook for governments too. Germany, for example, has abruptly changed its policy on defence spending, committing to increase it by over 0.6% of GDP and has abandoned its debt brake too. The question of energy security will have to be answered with significant investment too. These fiscal pressures will confront all Western governments to varying degrees in the years ahead too. It is conceivable that another round of QE may even become necessary.

This is a dangerous time to be a passive investor. The theme of divergence between markets, including fundamental regime change in developed economies, is a cue for more volatile markets. This is a time to be selective, picking the geographies and maturities that either offer opportunity for capital gains or a place to hide from losses. Simply holding the index cannot offer these advantages. The bond markets are very large and very deep and they are complex to navigate, so whether the investor is a big institution or a private individual, active funds offer a convenient, diversified access point to this vital asset class.

THIS IS A DANGEROUS TIME TO BE A PASSIVE INVESTOR. THE THEME OF DIVERGENCE BETWEEN MARKETS, INCLUDING FUNDAMENTAL REGIME CHANGE IN DEVELOPED ECONOMIES, IS A CUE FOR MORE VOLATILE MARKETS. THIS IS A TIME TO BE SELECTIVE, PICKING THE GEOGRAPHIES AND MATURITIES THAT EITHER OFFER OPPORTUNITY FOR CAPITAL GAINS OR A PLACE TO HIDE FROM LOSSES.

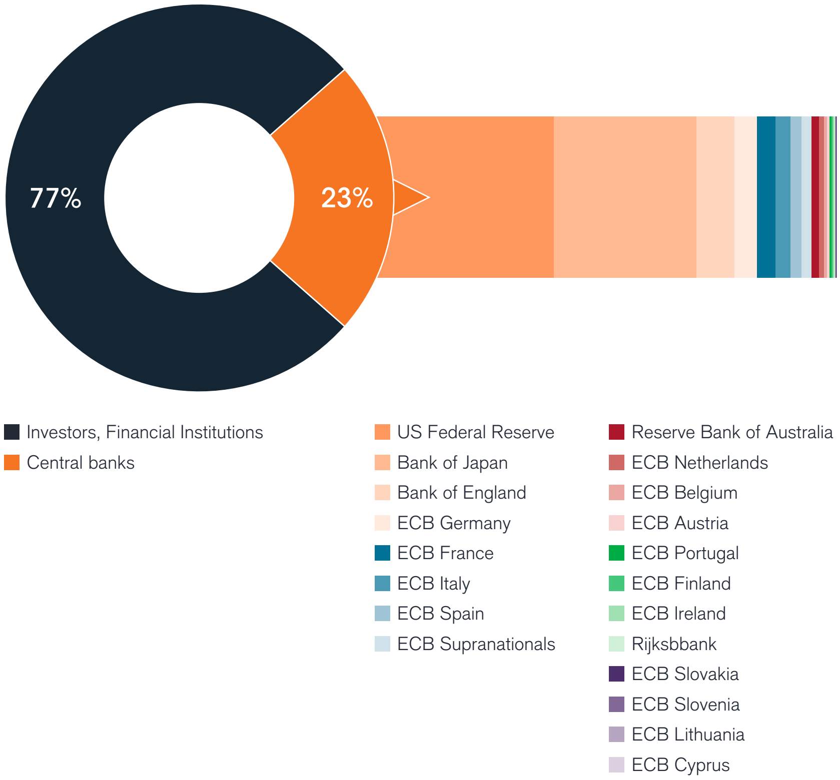
QUANTITATIVE EASING TURNS TO QUANTITATIVE TIGHTENING

At the beginning of 2022, central banks held 23% of the debts issued by the world's governments, roughly the same share as a year before. One of the biggest questions facing financial markets is how central banks will unwind their money-printing programmes that have helped keep interest rates low and credit flowing, and how quickly. On a constant-currency basis, central bank holdings of government bonds grew by 9% or \$1.3 trillion to \$14.8 trillion in 2021, driven by the Federal Reserve, ECB and Reserve Bank of Australia. The Australian authorities in particular aggressively expanded their QE programme in 2021 to combat the extreme disruption caused by the country's zero-Covid policy.

In the US, the Federal Reserve's balance sheet expanded by almost a quarter to \$5.7 trillion in 2021, having doubled in 2020. The increase ensured the Fed's QE programme easily overtook the Bank of Japan's to become the largest in the world. The ECB added another 6% to its tally, much less than the Fed but still an increase. Both are now entering tapering mode, with more announcements due in coming weeks.

Elsewhere, changes in the Bank of Japan's holdings reflect a policy of yield curve control – an explicit target of the price of debt, not the quantity of purchases. Meanwhile, the Bank of England stopped expanding its QE programme at the end of 2021 and will begin to reduce its holdings of government bonds in the coming weeks by allowing them to mature and roll off.

HOLDERS OF GOVERNMENT DEBT 2022



Source: EIU, US Federal Reserve, ECB, Bank of England, Bank of Japan, Rijksbank.

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QUANTITATIVE EASING TURNS TO QUANTITATIVE TIGHTENING (CONTINUED)

Initially at least, central banks can reduce their holdings of government debt simply by letting the bonds mature. It would take about four years for the Federal Reserve's holdings to subside back to pre-pandemic levels under this approach. If central banks need to become more aggressive on monetary policy, they can start to actively sell bonds back to investors, something that no central bank has yet tried. The Bank of England, for example, will consider beginning the process of actively selling UK government bonds once the Bank Rate has risen to at least 1%, but the decision to do so will depend on economic circumstances at the time. Meanwhile, New Zealand has announced that it will actively begin to reduce its bond holdings to the tune of N$5bn of NZGBs per year from July onwards.

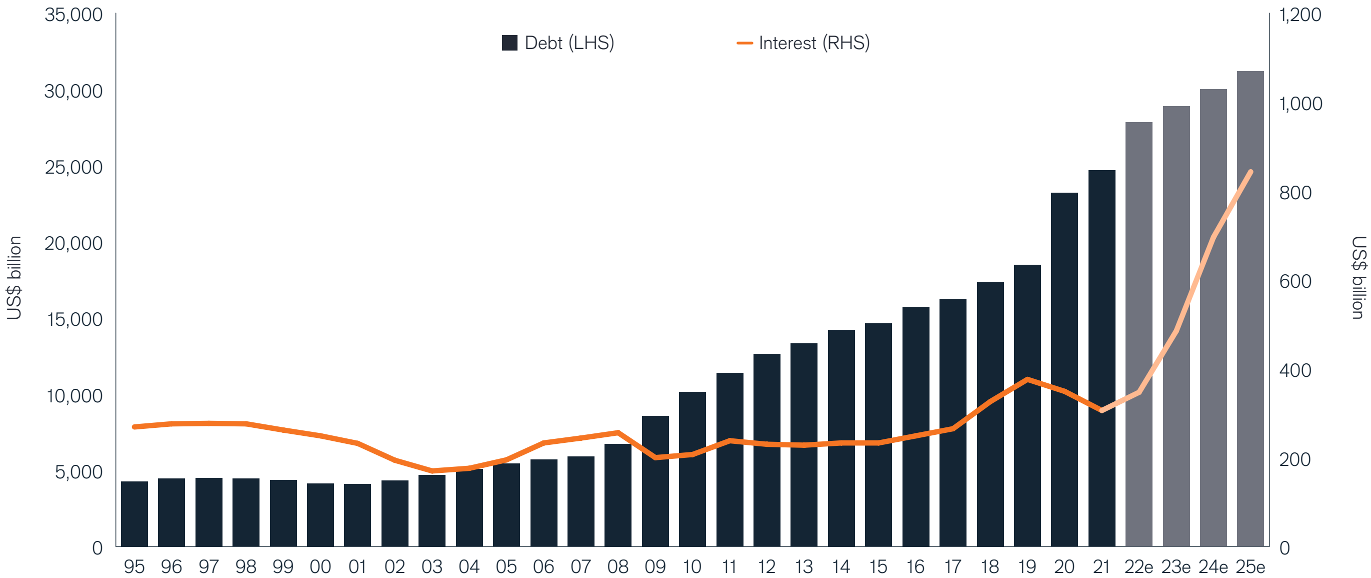
As interest rates rise, there is a significant fiscal cost associated with unwinding QE. Central banks will crystallize losses on their bond holdings which have to be paid for by taxpayers because government treasury departments have indemnified central banks against losses. These losses arise because bonds were bought at high prices (on low yields) well above face value but mature at their face value. In the UK, for example, the Treasury will need to finance the QE unwinding with cash transfers within the next 3 years.

One big uncertainty is the impact of the conflict in Ukraine. It is likely to knock economic confidence and add pressure to government budgets as they respond with higher defence spending and this may make another round of QE necessary, just when we all thought these programmes were coming to an end.

ONE BIG UNCERTAINTY IS THE IMPACT OF THE CONFLICT IN UKRAINE. IT IS LIKELY TO KNOCK ECONOMIC CONFIDENCE AND ADD PRESSURE TO GOVERNMENT BUDGETS AS THEY RESPOND WITH HIGHER DEFENCE SPENDING AND THIS MAY MAKE ANOTHER ROUND OF QE NECESSARY, JUST WHEN WE ALL THOUGHT THESE PROGRAMMES WERE COMING TO AN END.

SPOTLIGHT ON REGIONS AND COUNTRIES

NORTH AMERICA



7.8%

DESPITE THE CONTINUED CLIMB IN THE US DEBT BURDEN, THE INCREASE IN 2021 WAS SIGNIFICANTLY LESS THAN THE GLOBAL AVERAGE, RISING BY JUST 6.0% COMPARED TO 7.8%.

DEBT PER PERSON – USD

Country	2019	2021	2025e
Canada	$44,829	$63,106	$74,001
US	$51,056	$66,936	$83,069

North America

By the end of 2021, US government borrowing had soared to $22.3 trillion, up $1.3 trillion year-on-year. During 2021, the US government borrowed an extra $3,434 on behalf of each of its citizens. US government debt is now a third larger than its pre-pandemic level, compared to an increase of just over one fifth for the rest of the world[4].

Despite the continued climb in the US debt burden, the increase in 2021 was significantly less than the global average, rising by just 6.0% compared to 7.8%. Moreover, the US economy performed very strongly, expanding 9.0%[5] in 2021, significantly faster than the rise in borrowing for the year. The US government also saved $51bn in interest costs compared to 2020 as older more expensive debt was replaced by cheaper new borrowing.

4. +21.8% on a constant-currency basis.

5. Nominal GDP.

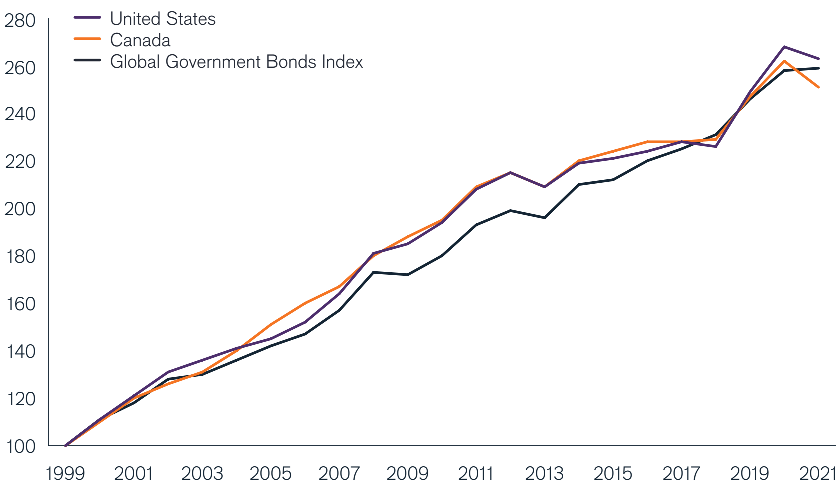
The increase in US debt is set to continue and the cost of servicing is now on the up too as ultra-low interest rates recede into the rear-view mirror. Debt interest costs are likely to reach record levels in 2023.

In July 2020, the effective yield on US bonds which represents the interest cost for new borrowing fell to a record low of 0.4%. By the end of January 2022, this had risen to 1.6%, having jumped especially quickly after the summer of 2021. US bonds delivered a -3.1% total return between the end of January 2021 and the end of January 2022.

-3.1%

US BONDS DELIVERED A -3.1% TOTAL RETURN BETWEEN THE END OF JANUARY 2021 AND THE END OF JANUARY 2022.

SOVEREIGN BONDS TOTAL RETURN (INDEXED, USD HEDGED) – NORTH AMERICA



Europe ex UK

Borrowing among European nations rose to $14.0 trillion in 2021, up 8.7% year-on-year on a constant-currency basis, but the cost to taxpayers of servicing that debt fell to just $186 billion, its lowest in at least 25 years, thanks to very low interest rates. European government debt has grown much more slowly than the US over the longer term, reflecting treaties aimed at protecting the euro and also slower economic growth.

For the year ahead, Europe's debts are set to rise more slowly than the rest of the world as it begins to exit from the pandemic. Debt servicing costs are also under control and unlikely to rise significantly.

The broad trends across the region are similar, but there are important differences between countries too.

France

The French government borrowed an additional $267bn in 2021, an increase of 8.9% on a constant-currency basis, a little more than the rest of the world. It took the total owed by the French state to $3.3 trillion, equivalent to $52,692 per citizen. Unlike many other parts of the world, France spent a touch more servicing its debts in 2021 than in 2020. It's $34bn interest bill was still the second lowest in at least two decades, however.

For the year ahead, French debts will rise again, but more slowly, while the cost of servicing this debt stays broadly flat.

In October 2020, the effective yield on French bonds fell to -0.4%, close to the mid-2019 record low. By the end of January 2022, this had risen to 0.16%, having jumped especially quickly since the summer of 2021. French bonds delivered a -4.7% total return between the end of January 2021 and the end of January 2022.

Germany

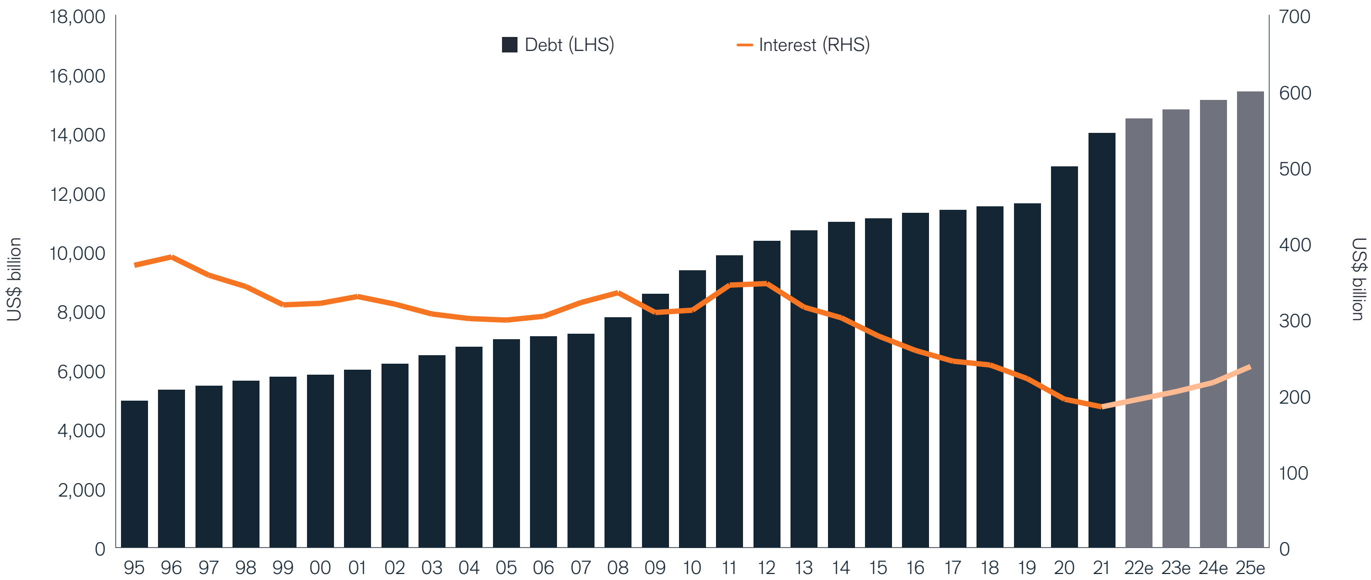
Most countries borrowed less in 2021 than in 2020, but this was not the case in Germany. The country's debt burden rose by 14.7%, almost twice the global average, taking it to a record $3.0 trillion. Despite the sharp increase, Germany still owes a tenth less than France, despite having a population more than a quarter larger, and an economy two fifths bigger. Moreover, Germany benefited from much lower interest rates too, so its debt servicing bill was just $21bn, well below that of its neighbour.

DEBT PER PERSON – USD

Country	2019	2021	2025e
Belgium	$45,953	$56,181	$63,184
Denmark	$21,408	$27,371	$26,443
Finland	$29,954	$36,735	$40,380
France	$41,399	$50,043	$57,758
Germany	$28,042	$36,335	$35,632
Greece	$35,880	$39,105	$41,607
Ireland	$47,320	$52,256	$55,889
Israel	$29,296	$36,007	$35,872
Italy	$45,079	$50,490	$57,160
Netherlands	$25,943	$31,062	$37,651
Spain	$28,810	$35,040	$40,705
Sweden	$19,895	$23,030	$23,478
Switzerland	$22,888	$26,788	$25,510
Europe ex UK	**$34,307**	**$41,166**	**$45,135**

Germany has now embarked on a programme of significant new defence spending and has abandoned its debt brake. Its interest bill will increase as the negative yields that have enabled the German government to issue bonds and receive money for doing so, are increasingly a thing of the past.

EUROPE EX UK



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In October 2020, the effective yield on German bonds fell to a record low of -0.7%. By the end of January 2022, this had risen to -0.2%, like yields elsewhere having jumped especially quickly since the summer of 2021. German bonds delivered a -3.3% total return between the end of January 2021 and the end of January 2022.

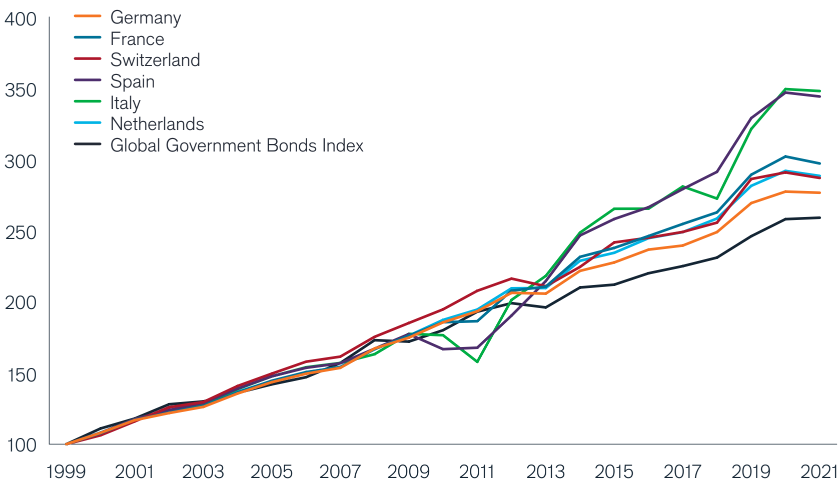
Spain

The increase in Spain's public debt slowed sharply in 2021 to 7.5% on a constant-currency basis, just a touch less than the global average, taking it to a record $1.64 trillion, four times larger than at the beginning of the century. Its interest bill last year of $20bn was its lowest since 2007, but is similar in size to Germany's despite Spain having a much smaller economy and population.

For 2022, Spanish borrowing will rise modestly, but its debt interest bill will begin to increase substantially, reflecting changed conditions in the bond markets.

In December 2020, the effective yield on Spanish bonds fell to a record low of -0.1%, completing a three-month run of negative yields. By the end of January 2022, this had risen to 0.4%. Higher yields meant a -3.8% total return between the end of January 2021 and the end of January 2022.

SOVEREIGN BONDS TOTAL RETURN (INDEXED, USD HEDGED) – EUROPE EX UK



Italy

Italy's debts rose much more slowly than the global average in 2021, up just $133bn or 4.6% on a constant-currency basis, but they reached a new record high. Since the beginning of the pandemic, Italian borrowing has risen by one eighth. It was, however, very high to begin with, entering the pandemic with debt levels a third larger than the size of the Italian economy.

In 2022, Italian debts will rise again, albeit slowly, but its interest bill will jump more significantly.

In December 2020, the effective yield on Italian bonds fell to a record low of 0.3%. By the end of January 2022, this had risen to 0.8%. Higher yields meant a -3.0% total return between the end of January 2021 and the end of January 2022.

Switzerland

Switzerland was the only country in our index whose debts are not at record levels in cash terms. On a constant-currency basis they rose by one seventh in 2021 (13.8%), much faster than the global average. They climbed to $234bn, not quite breaching the $240bn peak they touched in 2004. Switzerland's ultra-low interest rates meant that it cost just $880m to service this borrowing in 2021, less than one fifth of the interest bill when borrowing was last at similar levels in 2004.

Switzerland is unlikely to borrow more in 2022, but its interest expense will begin to rise as the negative bond yields have begun to disappear. Servicing costs do not look set to rise significantly, however.

In October 2020, the effective yield on Swiss bonds fell back to -0.5%, higher than the record low reached in 2019. By the end of January 2022, this had risen to 0.0%. Higher yields meant a -4.7% total return between the end of January 2021 and the end of January 2022, in line with France and among the worst in Europe.

Belgium

Belgian sovereign debt jumped by 11.7% in 2021 on a constant-currency basis, much faster than the global and European average rising to $653bn. Belgians are Europe's most indebted citizens with their government owing $56,181 per person on their behalf, well ahead of Ireland in the number two spot.

Belgium will follow its neighbours with modest debt increases in 2022 and a small uptick in interest costs.

In December 2020, the effective yield on Belgian bonds fell back to a record low of -0.3%. By the end of January 2022, this had risen to 0.3%. Higher yields meant a -5.2% total return between the end of January 2021 and the end of January 2022, the worst in Europe.

Netherlands

In the Netherlands, government borrowing rose by 9.5% on a constant-currency basis, similar to the 2020 jump. Debt-interest payments fell to a record low of $5.4bn, however. This is set to change. Dutch debts will rise a little faster than other European countries and interest payments are set to accelerate in 2022 and beyond.

In October 2020, the effective yield on Dutch bonds reached a record low of -0.3%. By the end of January 2022, this had risen to 0.0%. Higher yields meant a -4.0% total return between the end of January 2021 and the end of January 2022.

Sweden

Sweden's debt servicing also fell to a record low of $1.5bn. This reflects low rates, but also the very small increase in public debt in 2021. Total borrowing only rose 4.6% on a constant-currency basis to $235bn, around half the pace of the rest of Europe. Since the beginning of the pandemic, Swedish borrowing has risen by one sixth, much less than the global total (up by one quarter) and less than most of its European peers. Debt levels and interest costs are unlikely to rise significantly in 2022.

In October 2020, the effective yield on Swedish bonds fell back to -0.2%, though this was higher than the record lows reached in 2019. By the end of January 2022, this had risen to 0.0%. Higher yields meant a -1.9% total return between the end of January 2021 and the end of January 2022, better than the European average.

United Kingdom

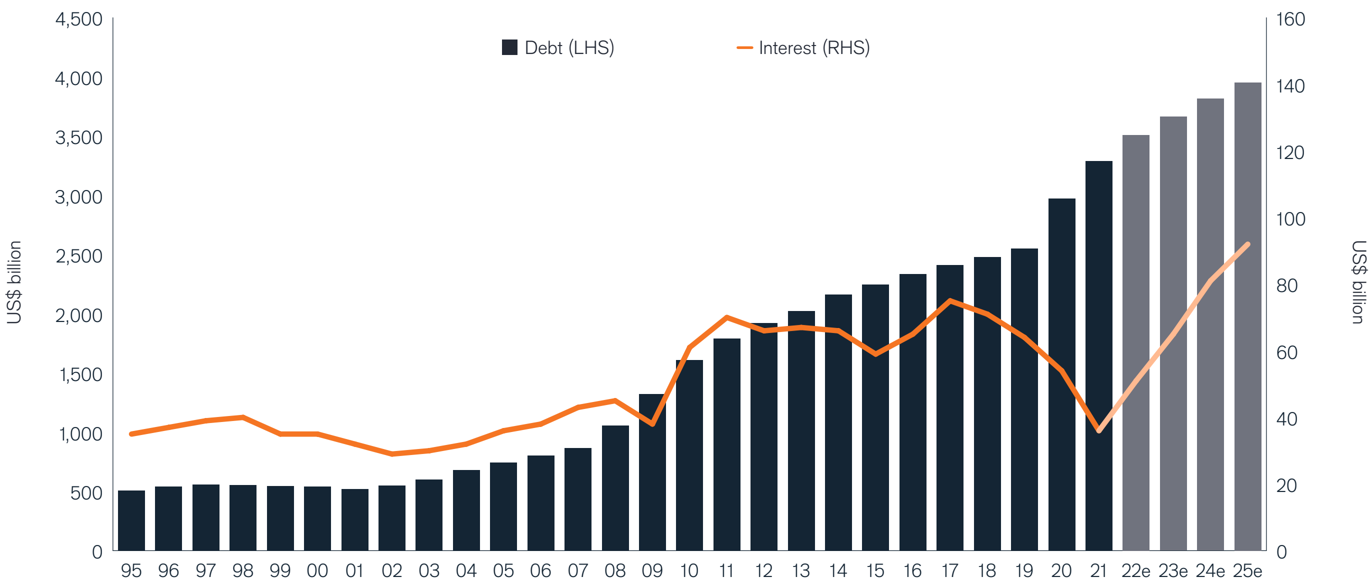
UK sovereign debt has risen very sharply over the course of the pandemic, up by 29%, compared to the 25% global average. The additional borrowing is equal to a fifth of the size of the UK economy, in line with US, but ahead of many similar countries. The UK now owes a record $3.3 trillion, three times more than before the global financial crisis. Nevertheless, the UK paid less in interest costs in 2021 than in 2005 thanks to the decline in interest rates. At $36.2bn, the UK's interest bill was the lowest on record. This is set to change, however.

DEBT PER PERSON – USD

Country	2019	2021	2025e
United Kingdom	$37,768	$48,210	$57,058

UK SOVEREIGN DEBT HAS RISEN VERY SHARPLY OVER THE COURSE OF THE PANDEMIC, UP BY 29%, COMPARED TO THE 25% GLOBAL AVERAGE.

UNITED KINGDOM



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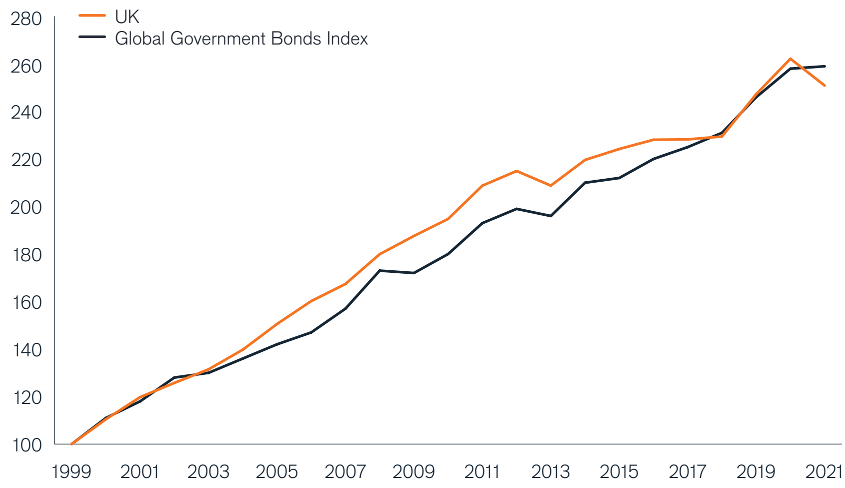
SPOTLIGHT ON REGIONS AND COUNTRIES (CONTINUED)

The UK's interest burden will rise sharply in 2022 and 2023 for two reasons. First, the Bank of England will have to pay more in interest on the money it has created as part of the QE programme than it receives on the bonds it has bought. Each 1 percentage point increase in bank rate will add £25billion ($35bn) to the Treasury's bill, equivalent to 1.1% of GDP. The UK Treasury will need to finance the QE unwinding with cash transfers within the next three years – an unwelcome burden to be shouldered by the taxpayers. Secondly, inflation-linked bonds make up a relatively large share in the UK's debt mix – worth around a quarter of the total outstanding, and more than any other developed country. Higher inflation is raising the cost of servicing this borrowing.

The rate of increase in the UK's outstanding debts will tail off, but this will not prevent the spiral of higher interest expenses, creating a significant burden on the UK's public finances.

In May 2020, the effective yield on UK bonds reached a record low of 0.3%. By the end of January 2022, this had risen to 1.3%. Higher yields and rising inflation meant a -7.5% total return between the end of January 2021 and the end of January 2022, well behind global peers.

SOVEREIGN BONDS TOTAL RETURN (INDEXED, USD HEDGED) – UK



THE RATE OF INCREASE IN THE UK'S OUTSTANDING DEBTS WILL TAIL OFF, BUT THIS WILL NOT PREVENT THE SPIRAL OF HIGHER INTEREST EXPENSES, CREATING A SIGNIFICANT BURDEN ON THE UK'S PUBLIC FINANCES.

DEBT PER PERSON – USD

Country	2019	2021	2025e
Australia	$27,178	$41,202	$50,021
Hong Kong	$21,428	$25,318	$28,011
Singapore	$82,225	$102,781	$111,624
Taiwan	$8,152	$9,217	$10,168

Asia Pacific ex Japan

Australia

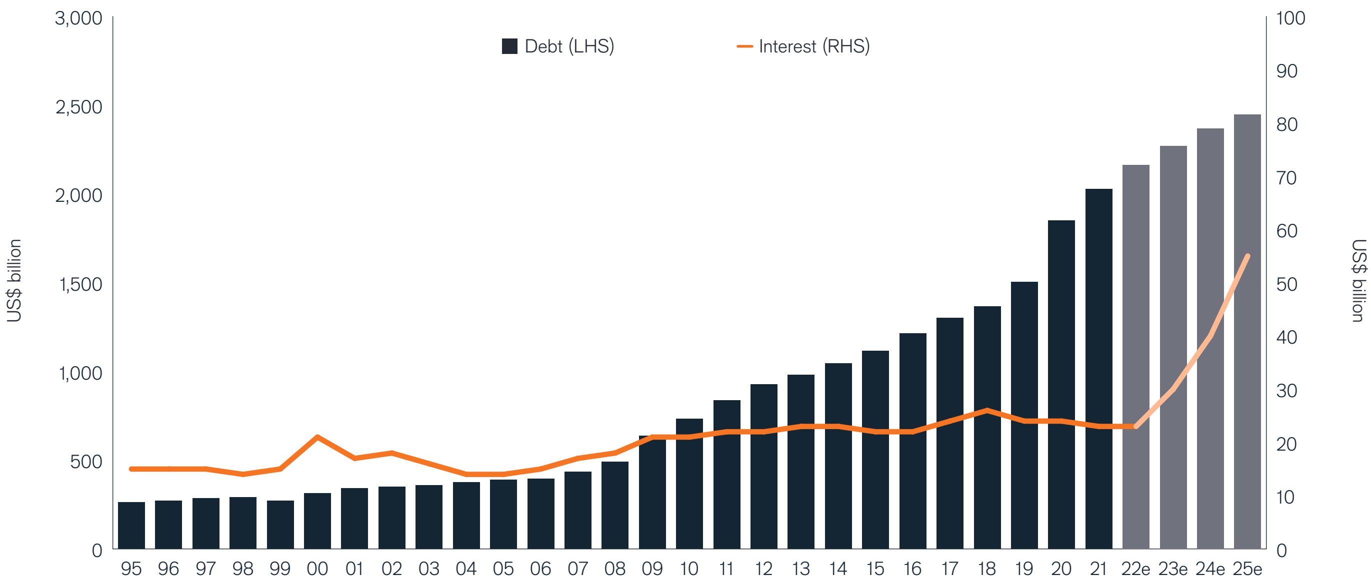
Australia entered the pandemic with an exceptionally low debt/GDP ratio by comparison to its international peers – 47%. In pursuit of its zero-Covid policy, the government has borrowed very significantly to support the economy, amounting to additional debt worth over a fifth (22%) of its GDP. This puts Australia at the top end of the global response in the last two years, taking on a larger additional debt burden than the UK and US (20%) and France and Germany (18% and 17% respectively). Australia's debt burden rose by 11.2% in 2021, well ahead of the wider world.

Because Australia started from a much lower base, however, it remains one of the least indebted among the major industrialised nations. It's debt interest costs rose only slightly in 2021 but they are set to accelerate in the coming years as interest rates rise. Australia will see its borrowing rise faster than the UK or Europe in 2022 too.

In October 2020, the effective yield on Australian bonds reached a record low of 0.6%. By the end of January 2022, this had risen to 1.6%. Higher yields meant a -3.9% total return between the end of January 2021 and the end of January 2022, slightly worse than the global average.

AUSTRALIA ENTERED THE PANDEMIC WITH AN EXCEPTIONALLY LOW DEBT/GDP RATIO BY COMPARISON TO ITS INTERNATIONAL PEERS – 47%.

ASIA PACIFIC EX JAPAN



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Singapore

Singapore is rather highly indebted by international comparisons and has also borrowed significantly to meet the challenge of the pandemic. Its debts have risen by a fifth over the last two years. In 2021, the total increased by 8.7%, slightly ahead of the global average, but its debt interest costs remained very low. Borrowing will rise further this year.

Hong Kong

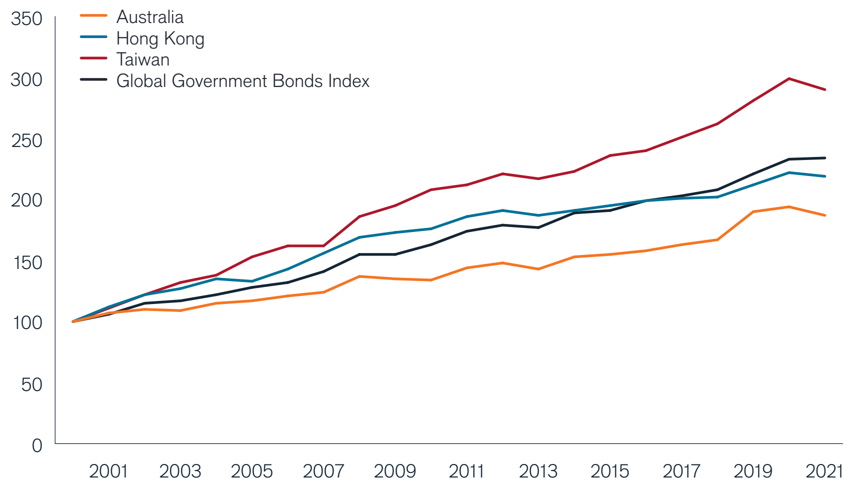
Government debt in Hong Kong rose just 6.4% in 2021, slower than the global average and will grow more slowly again in 2022. Over the two-year course of the pandemic, debt levels have also climbed more slowly than the wider world, up by less than a fifth, compared to 25% globally. Debt interest costs fell back slightly in 2021 as the effective interest rate on the mix of bonds in issue fell.

In July 2020, the effective yield on Hong Kong's bonds reached a record low of 0.2%. By the end of January 2022, this had risen to 1.3%. Higher yields meant a -2.1% total return between the end of January 2021 and the end of January 2022.

Taiwan

Debt levels in Taiwan rose in line with the global average in 2021 (+7.8%), but over the two-year course of the pandemic they have grown at half the pace of the wider world (+12.0%). This reflects the relatively benign initial impact of Covid-19 on the economy. The size of Taiwan's debts relative to its economy is far smaller than the wider world. Debt servicing costs in Taiwan have held steady since 2017.

SOVEREIGN BONDS TOTAL RETURN (INDEXED, USD HEDGED) – ASIA PACIFIC EX JAPAN



GOVERNMENT DEBT IN HONG KONG ROSE JUST 6.4% IN 2021, SLOWER THAN THE GLOBAL AVERAGE AND WILL GROW MORE SLOWLY AGAIN IN 2022

Emerging Markets

Relative to the size of their national incomes, emerging market debts are the lowest compared to other regions, at just 33%. This reflects reduced access to capital markets and less stable economies. Debt servicing costs are also three times higher per dollar borrowed than the global average, so these countries are less able to afford the high debt levels seen elsewhere. Emerging market sovereign debts rose by 14.8% in 2021 on a constant currency basis.

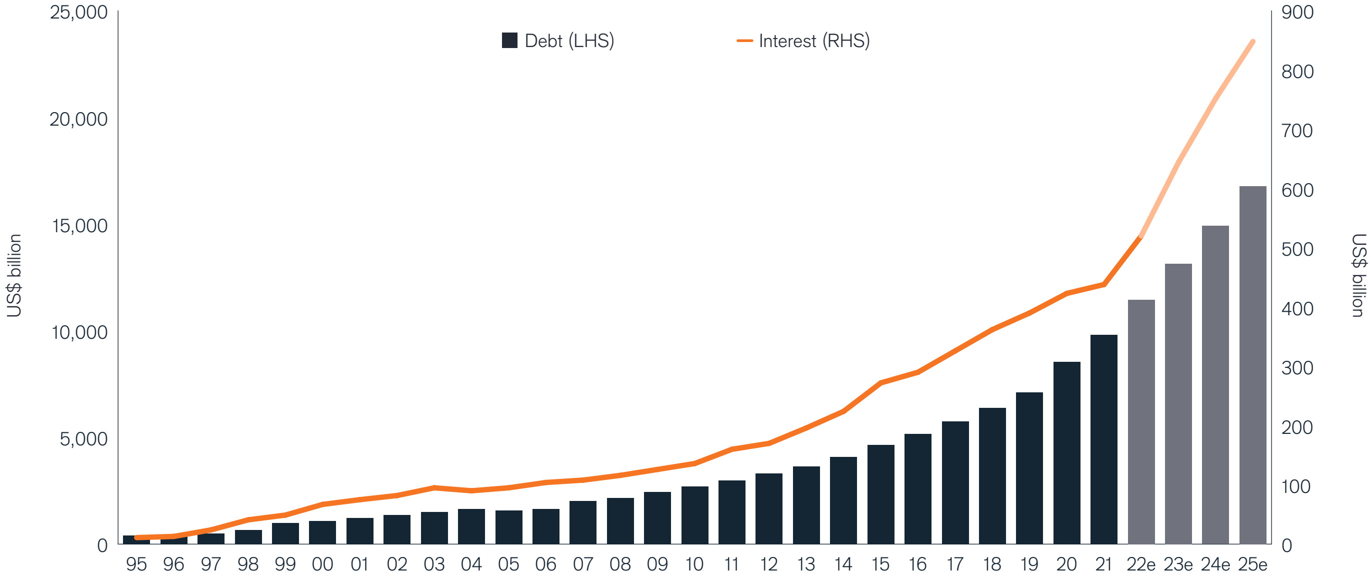
Half of the annual increase was down to China. China's borrowing rose fastest in the world among large stable economies and by the most in cash terms, up by a fifth or $650bn. It has taken on an extra $1 trillion in debt since the pandemic began. Its interest bill fell slightly in 2021, but it was three times greater than in 2015, in contrast to many other countries whose debt servicing costs have fallen.

DEBT PER PERSON – USD

Country	2019	2021	2025e
Argentina	$4,156	$7,700	$21,548
Brazil	$4,690	$5,880	$7,840
Chile	$3,438	$4,952	$6,668
China	$1,877	$2,754	$5,620
Czech Republic	$7,416	$11,088	$14,504
Hungary	$9,869	$13,426	$16,831
India	$1,010	$1,234	$1,764
Indonesia	$1,479	$1,960	$2,352
Malaysia	$5,900	$7,106	$9,534
Mexico	$4,375	$4,872	$6,087
Peru	$1,579	$2,194	$2,740
Russia	$1,245	$1,911	$2,535
South Africa	$3,516	$4,700	$6,267
Turkey	$1,333	$2,092	$3,427

China is responsible for two fifths of all emerging market debt. Even so, by the end of 2021, China's debt burden was just 22%, well below the world average (80.7%). As its borrowing continues to rise, the cost of servicing will rise too, roughly doubling over the next five years on current trends.

EMERGING MARKETS



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Japan

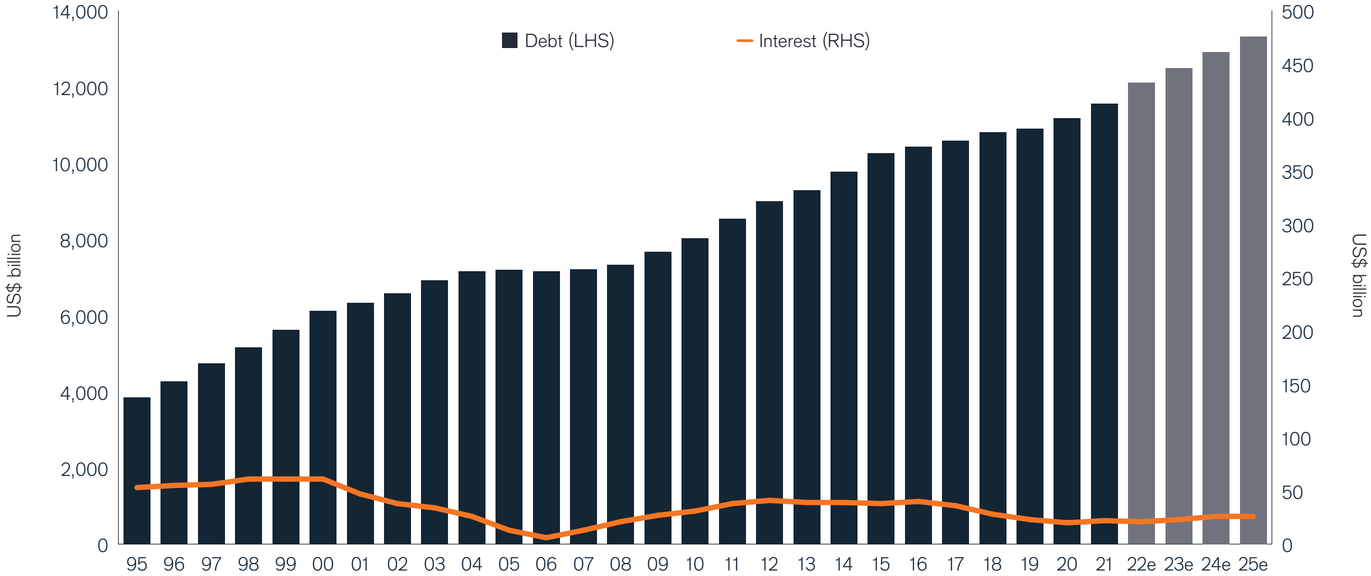
Japan's national debt was exceptionally high before the pandemic, more than twice the size of its economy. This is two to three times greater than international peers like the US and Europe. From such a high base, therefore, the increase in government borrowing needed to combat the pandemic was smaller in percentage terms, just 6.0% on a constant-currency basis, compared to the 25% global total. But it was small in absolute terms too. Per head of population, the Japanese government borrowed an additional $5,770 per person during 2020 and 2021, half as much as the UK and just one third of the total borrowed in North America. Japan's debt servicing costs remain extremely low – at $23bn in 2021, they are similar to Spain's, despite borrowing levels seven times greater.

DEBT PER PERSON – USD

Country	2019	2021	2025e
Japan	$85,920	$91,690	$107,423

JAPAN'S DEBT SERVICING COSTS REMAIN EXTREMELY LOW – AT $23BN IN 2021, THEY ARE SIMILAR TO SPAIN'S, DESPITE BORROWING LEVELS SEVEN TIMES GREATER.

JAPAN



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Government Borrowing – why it matters

Governments borrow to finance a shortfall between their spending plans and their ability to raise taxes. During economic downturns, governments increase their borrowing significantly both because tax receipts fall and borrowing is needed to keep policy programmes going, but also with the deliberate aim of sustaining demand in the economy. When a government spends borrowed money, it does so by employing public-sector workers, paying welfare, investing in infrastructure etc. This spending offsets the much-increased saving that takes place in the private sector during a recession. It helps support the economy and prevents the downturn from getting worse.

This has been the story of the pandemic in countries all around the world.

Government Bonds – the foundation stone of financial markets

To raise cash, governments issue bonds that can be freely traded on exchanges. Usually, these bonds pay a fixed amount to investors each year by way of interest – the so-called coupon – and have a set maturity – say 10 years. A 3% coupon on a $100 bond means annual interest of $3.

Even if prevailing interest rates change, the coupon remains fixed at $3, so the price of the bond adjusts. For example, if rates fall to 1.5%, then an investor will pay nearer $200 for that bond, generating a capital gain for anyone who bought the bond when it was issues. The exact price change is dependent on a few other factors, such as how long the bond has to run before it is repaid, but this dynamic is why bond markets offer such a wealth of investment options, spanning risk management, income generation, capital preservation and capital gains. There is a strategy to achieve all these differing aims.

Although central banks have the power to set interest rates for very short time periods, it is the bond markets determine the interest rates borrowers, including governments, must pay for longer periods. The so-called yield curve plots the different interest rates for overnight borrowing right out to thirty years or longer.

The yield curve does not only enable investors to value bonds accurately, but it also underpins the valuation of every other kind of asset. This is because government bonds are risk free, at least from countries with a solid credit rating. You know for sure from day one exactly how much cash you will receive in interest and how much when the bond is repaid. This risk-free rate sets a floor for asset returns. If the prospective returns from a riskier asset don't stack up against the risk-free rate, its value will fall. If you know what the lowest risk asset, a government bond, will return, then you can therefore work out how much assets with higher potential returns should cost given their higher risk. Not only that, adding government bonds to a portfolio of risky assets like shares can reduce your overall risk without diminishing your returns, thanks to the mathematically reassuring alchemy of portfolio theory.

That is obviously good for savers, but it also helps capital markets efficiently fund productive investment – which is good for everyone.

METHODOLOGY

Janus Henderson sourced data on government debt, GDP, debt interest payments and budget deficits from EIU, supplementing it with data from individual country sources where necessary. To enable full comparability between different data sets, all data is in nominal USD (i.e. not adjusted for inflation), unless stated otherwise. Bond market data was sourced from Bloomberg. Janus Henderson sourced other data from national central banks, the OECD, the IMF and World Bank.

The countries in Janus Henderson's index together account for 88% of global GDP and two thirds of the world's population. Figures are not scaled up to take account of parts of the world not in the sample.

GLOSSARY

Bond – A bond is parcel of debt. By buying a bond, investors give money to a borrower, usually for a fixed term and for a fixed rate of interest. Bonds can be bought and sold on financial markets, and the value changes over time with varying market conditions.

Counter-cyclical government spending – When the economy is weak, the government spends money to support activity. When the economy is strong the government can cut spending to slow activity and help prevent overheating.

Fiscal consolidation – When a government is reducing the budget deficit.

Fiscal surplus – When a government is raising more in tax than it spends on services.

Government budget deficit – The annual shortfall between spending and taxation (if taxes exceed spending, governments have a budget surplus).

Government debt – The total amount of outstanding borrowing.

Monetary policy – The policies of a central bank, aimed at influencing the level of inflation and growth in an economy. It includes controlling interest rates and the supply of money. Monetary stimulus refers to a central bank increasing the supply of money and lowering borrowing costs. Monetary tightening refers to central bank activity aimed at curbing inflation and slowing down growth in the economy by raising interest rates and reducing the supply of money.

Quantitative easing – Central banks buy bonds and other assets in exchange for newly created money as a means of increasing liquidity in the economy and suppressing interest rates. The objective is to support economic activity.

Running yield – The interest paid on a bond divided by its current market value.

Volatility – Rapid, unpredictable, changeability.

Yield curve – A graph that plots the yields of similar quality bonds against their maturities. In a normal/upward sloping yield curve, longer maturity bond yields are higher than short-term bond yields. A yield curve can signal market expectations about a country's economic direction.

Yield to maturity – The interest paid on a bond divided by its current market value, taking account of the capital gain or loss that will occur when the bond matures and is repaid.

APPENDICES

DEBT BY COUNTRY IN USD BILLIONS

Region	Country	Debt/GDP 2019	Debt/GDP 2021	Expected debt/GDP 2025
Asia-Pacific ex Japan	Australia	47%	69%	73%
	Hong Kong	44%	52%	48%
	Singapore	126%	149%	145%
	Taiwan	28%	28%	28%
Emerging markets	Argentina	89%	87%	79%
	Brazil	74%	82%	90%
	Chile	28%	37%	39%
	China	17%	22%	34%
	Colombia	56%	73%	73%
	Czech Republic	30%	43%	45%
	Hungary	66%	81%	69%
	India	51%	58%	59%
	Indonesia	36%	48%	44%
	Malaysia	52%	63%	71%
	Mexico	47%	52%	52%
	Peru	27%	33%	35%
	Russia	13%	17%	18%
	South Africa	57%	73%	75%
	Turkey	33%	39%	33%
Europe ex UK	Belgium	98%	107%	104%
	Luxembourg	22%	25%	22%
	Denmark	34%	40%	34%
	Finland	60%	71%	71%
	France	97%	115%	114%
	Germany	59%	75%	62%
	Greece	181%	199%	171%
	Ireland	57%	49%	46%
	Israel	59%	72%	61%
	Italy	134%	151%	144%
	Netherlands	49%	54%	56%
	Spain	96%	119%	113%
	Sweden	35%	39%	35%
	Switzerland	26%	31%	28%
Japan	Japan	223%	240%	244%
North America	Canada	93%	128%	126%
	United States of America	79%	100%	103%
UK	United Kingdom	84%	104%	105%
World		**72%**	**81%**	**84%**

APPENDICES (CONTINUED)

2021 EXCHANGE RATES BY COUNTRY (USD BILLION)

		Debt USD bn					Expected debt USD bn		Increase in Debt USD bn	Increase in Debt %
Region	Country	1995	2000	2019	2020	2021	2022	2025	2019-2022	2019-2022
Asia-Pacific ex Japan	Australia	$147	$111	$685	$956	$1,063	$1,150	$1,346	$465	68%
	Hong Kong	$13	$17	$159	$178	$189	$195	$213	$35	22%
	Singapore	$63	$98	$469	$516	$561	$594	$652	$125	27%
	Taiwan	$40	$88	$192	$200	$215	$225	$237	$32	17%
Emerging Markets	Argentina	$01	$01	$186	$272	$351	$542	$1,017	$356	191%
	Brazil	$91	$134	$986	$1,186	$1,254	$1,360	$1,717	$374	38%
	Chile	$06	$07	$65	$77	$95	$105	$128	$40	61%
	China	$60	$426	$2,627	$3,266	$3,916	$4,842	$8,082	$2,215	84%
	Colombia	$00	$00	$00	$00	$00	$00	$00	$00	58%
	Czech Republic	$10	$18	$79	$98	$119	$133	$156	$54	68%
	Hungary	$15	$23	$96	$118	$129	$139	$160	$43	45%
	India	$93	$170	$1,380	$1,507	$1,719	$1,916	$2,548	$536	39%
	Indonesia	$09	$79	$392	$467	$529	$583	$655	$191	49%
	Malaysia	$22	$30	$188	$209	$233	$257	$327	$69	36%
	Mexico	$45	$100	$558	$608	$635	$673	$824	$115	21%
	Peru	$14	$21	$51	$63	$73	$79	$94	$28	54%
	Russia	$10	$52	$185	$256	$284	$304	$375	$118	64%
	South Africa	$18	$25	$206	$248	$282	$311	$394	$105	51%
	Turkey	$00	$05	$111	$158	$178	$204	$297	$93	83%
Europe ex UK	Belgium	$314	$319	$530	$585	$653	$689	$743	$159	30%
	Luxembourg	$00	$00	$00	$00	$00	$00	$00	$00	31%
	Denmark	$110	$110	$124	$156	$159	$160	$156	$36	29%
	Finland	$63	$67	$166	$190	$204	$212	$225	$46	28%
	France	$790	$988	$2,696	$3,007	$3,274	$3,439	$3,815	$742	28%
	Germany	$1,226	$1,420	$2,323	$2,627	$3,012	$3,014	$2,949	$691	30%
	Greece	$114	$168	$376	$387	$406	$411	$422	$35	9%
	Ireland	$49	$45	$231	$247	$260	$270	$286	$39	17%
	Israel	$134	$134	$265	$318	$338	$345	$362	$80	30%
	Italy	$1,242	$1,533	$2,730	$2,915	$3,048	$3,178	$3,423	$448	16%
	Netherlands	$274	$267	$448	$493	$540	$580	$665	$132	30%
	Spain	$321	$424	$1,347	$1,524	$1,638	$1,718	$1,896	$371	28%
	Sweden	$149	$138	$200	$224	$235	$243	$244	$43	22%
	Switzerland	$180	$215	$197	$205	$234	$233	$228	$36	18%
Japan	Japan	$3,850	$6,128	$10,903	$11,184	$11,562	$12,107	$13,320	$1,204	11%
North America	Canada	$667	$731	$1,677	$2,185	$2,402	$2,556	$2,910	$879	52%
	United States of America	$3,604	$3,410	$16,801	$21,019	$22,283	$25,275	$28,277	$8,475	50%
United Kingdom	United Kingdom	$507	$543	$2,551	$2,974	$3,288	$3,509	$3,952	$958	38%
World		$14,249	$18,046	$52,180	$60,623	$65,364	$71,551	$83,096	$19,370	37%

Please note that all figures were obtained before the current conflict in Ukraine, and therefore do not account for any resulting policy shifts.

Unless otherwise stated all data is sourced by Janus Henderson Investors as of 31 December 2021. Nothing in this document should be construed as advice.

Past performance does not predict future returns. International investing involves certain risks and increased volatility. These risks include currency fluctuations, economic or financial instability, lack of timely or reliable financial information or unfavourable political or legal developments.

The value of an investment and the income from it can fall as well as rise and you may not get back the amount initially invested.

2021 EXCHANGE RATES BY REGION (USD BILLION)

	Debt USD bn					Expected debt USD bn		Increase in Debt USD bn	Increase in Debt %
Region	1995	2000	2019	2020	2021	2022	2025	2019-2022	2019-2022
Emerging Markets	$393	$1,091	$7,112	$8,533	$9,799	$11,449	$16,776	$4,337	61%
Asia-Pacific ex Japan	$264	$315	$1,506	$1,849	$2,028	$2,164	$2,448	$658	44%
Europe ex UK	$4,965	$5,829	$11,632	$12,879	$14,001	$14,491	$15,412	$2,860	25%
North America	$4,271	$4,141	$18,478	$23,204	$24,685	$27,832	$31,187	$9,354	51%
United Kingdom	$507	$543	$2,551	$2,974	$3,288	$3,509	$3,952	$958	38%
Japan	$3,850	$6,128	$10,903	$11,184	$11,562	$12,107	$13,320	$1,204	11%
World	**$14,249**	**$18,046**	**$52,180**	**$60,623**	**$65,364**	**$71,551**	**$75,241**	**$19,370**	**37%**

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