Citi Global Wealth Investments

Mid-Year Outlook 2022

Investing in the afterglow of a boom

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Foreword

JIM O'DONNELL
CEO of Citi Global Wealth

It gives me great pleasure to introduce Citi Global Wealth's **Mid-Year Outlook 2022: Investing in the afterglow of a boom.**

The first few months of 2022 have been a trying period. With the pandemic not yet over, rising inflation, interest rate hikes, slowing growth and geopolitical tension have heightened the uncertainty. Equities and fixed income have suffered simultaneous bouts of weakness, making it harder to diversify risk. Amid these conditions, the question we hear more than any other is "what should I do now?"

The good news is that there is much you can do to protect your wealth and grow assets.

In **Mid-Year Outlook 2022**, David Bailin, Steven Wieting and our OCIO team set out our expectations for the rest of this year and beyond. We believe the expansion can endure if the consumer remains strong and the Fed is able to moderate its current aggressive stance against inflation – see Investing in the afterglow of a boom. If so, we believe global equities and bonds may make modest gains for the rest of 2022.

In this environment, our message is to take positive action. Above all, this means getting fully invested in a globally diversified allocation, as David Bailin sets out in A new world order: How should I invest now? With markets volatile, you may be tempted to sit on cash and wait for a lower entry point. However, long experience shows such market timing attempts are almost invariably doomed to failure. We also warn against keeping portfolios static. Instead, we call for dynamic allocations that focus on quality and resilience – see also Our positioning.

Among the potential opportunities we currently see is in fixed income. Bonds have suffered a brutal run in early 2022 on monetary tightening fears. After the sharp rise in yields, we believe many high-quality bonds can again produce portfolio income and diversify portfolio risk – see Bonds are back within our Beat the cash thief! theme. We look to these income opportunities – along with yield from other sources – to help defend your purchasing power against inflation.

We reiterate our case for long-term exposure to unstoppable trends: powerful, multi-year forces that are transforming business and everyday life. The Russia-Ukraine war has further accentuated the split between East and West and the tension between the US and China. In our view, the standoff between the world's two economic superpowers creates return and diversification potential for global investors, as well as heightened risks – The rise of Asia: G2 polarization accelerated.

While technology investments have come under pressure in 2022, the digital transformation of the world around us continues unabated. We update some of our key views in Cyber security: Defense for data and portfolios and The fintech revolution has far to go.

The transition to a more sustainable existence is itself an unstoppable trend and a necessity for our planet and its people. While climate risks are well recognized, recent events have emphasized the economic and national security risks of our reliance on fossil fuels. Over time, we expect the transition to create potential opportunities for portfolios and we expect acceleration in alternatives as a result – Greening the world: A new level of urgency.

In the near-term, the shock to energy, food and other basic materials prices represents another kind of opportunity – Overcoming supply shortages.

As you can see, our **Mid-Year Outlook** is a critical guide for investors around the globe. Throughout these challenging times, we are here as your trusted partner and guide. We look forward to helping you add quality and resilience to your portfolios for the year ahead and beyond.

Thank you for your trust and confidence in Citi Global Wealth.

1 Overview

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1.1

A new world order: How should I invest now?

DAVID BAILIN
Chief Investment Officer and Head of Citi Global Wealth Investments

2022 has seen a reset of the international world order and the end of boom conditions in markets. Despite uncertainties, we see many reasons to be fully but wisely invested.

A new world order

Imagine the past thirty months as a novel. It would most certainly appear on best-seller lists as an unbelievable work of dark, dystopian fiction: A pandemic that shutters the world economy, China applies extreme restrictions to shield its citizens from the virus, a silent chasm between the world's superpowers and their leaders widens, the West appears to be in internal and collective political disarray, leading to an opportunistic Russian president sensing an historic opportunity to restore Soviet dominion over Ukraine.

Imagine Vladimir Putin talking with Xi Jinping during the blizzard days of February, preceding China's COVID-bubble Winter Olympics. Certain of their strength and unity of purpose, they jointly agree to condemn the US and NATO, declaring theirs to be a friendship with "no limits." Together, they sought a "transformation of the global governance architecture and world order."

In cowboy parlance, "them is fightin' words." However, the growing vulnerabilities of the West that preceded Putin and Xi's Eastern confab were numerous and profound. Institutions such as the United Nations and its Security Council, NATO and multi-national agreements such as Strategic Arms Limitation Talks (SALT) appeared to be less influential than they once were. The storming of the US Capitol on 6 January 2021 - beamed to audiences globally - portrayed America as internally divided. Even the slogan "Make America Great Again" somehow implied that some in the US no longer saw their nation as a global superpower and ethicist.

No wonder that columns of Russian tanks and a hundred thousand strong infantry poured confidently into Ukraine just four days after the Winter Olympics concluded.

In a terrific plot twist, Putin grossly underestimated Volodymyr Zelensky, a former TV actor, who has galvanized his country in wartime, turning down an offer of political exile with the phrase "I need bullets, not a ride." The Russian president did not understand that a Churchillian leader could use the internet to greater effect than any state-sponsored cyberattack hitherto.

Zelensky has proven especially formidable because his character is robust and his defense of democracy is clear. He broadcast the resolute and collective commitment of regular women and men to take up arms. And he has appeared live, in wartime, before the legislatures of multiple countries.

The Russian president did not recognize the preparations that NATO and the US had made in training and arming the Ukrainians, nor the provocative, rapid and overwhelming impact the war would have on Western economic, political and military policy.

In the war's first hundred days, the tens of billions of dollars in military and humanitarian aid supplied by a unified West were sufficient to enable the Ukrainians to limit the territory Russia could attempt to control. Economic counter-warfare using unprecedented and lasting sanctions to sever financial and trade lines between Russia and the West were unleashed. More than 400 companies simply closed their doors in the heart of the former Soviet Union, reflecting the values of the people who worked for them. Even previously neutral countries have decided to join NATO, as commitments to see it redouble its power and preparedness became a certainty.

All this empowered President Biden to make it explicit and real to President Xi that America and its allies were willing to punish China economically and severely if it directly aided Russia militarily.

This is the story of the past 30 months.
Well, not entirely.

There was also this global meltdown in financial markets and an extraordinary global recovery that followed. There was this torrent of liquidity that enabled millions of homebound consumers to empty a "just-in-time" supply chain using their mousepads and e-payments. New technologies enabled new traders to bid up everything from digital currencies to real estate in the metaverse, to turn zombie companies into multibillion dollar "survivors" and, ultimately, to drive valuations to unsustainable levels as companies began burning cash to pull forward revenues without regard to profitability. Such was the market euphoria of the 2020-2021 pandemic period.

But no wave of such magnitude and exhilaration could be without consequence.

The "Return of the Incredible Shrinking Wallet," an epic political thriller starring an inflation-infused villain siphoning consumer pockets worldwide, came to your home streaming service. The scarcity of energy, agricultural products, rare commodities and even baby formula became this novel's second narrative, a cost of war, the price we pay for growing frictions in a deglobalizing world economy and a reminder that the pandemic continues.

Enter the Federal Reserve, the world's economic savior in early chapters, but now the "Darth Vader" character in June 2022. Can the Fed slay the wallet-killer without destroying the global economy ("before it's too late") or has it unleashed Father Inflation, determined to exert unlimited destructive power? Markets are volatile. Investors are panicked. Where do you hide?

Now, this is genuinely the story of the past 30 months. It is also the story of our lives, and it is reflected at this very moment in our investment portfolios. Many have too much cash and are poorly positioned for the next months and years. This is not the way the novel should end. Welcome to our Mid-Year Outlook 2022!

"The boom is over: What should I do now?"

"It is much easier to see where you're going, when you can see clearly where you have been."

David Bailin, CIO, Citi Global Wealth

While it may be viewed as too simple or even radical to see 2021 as a time of excessive investor exuberance, there are many observations and data points to suggest that it was exactly that. The distortions caused by the pandemic, the wartime-scale stimulus used to successfully counteract it and the "can't lose" behaviors exhibited by investors all speak of a "boom." When viewed historically, the boom will likely be viewed as a period of excessive equity returns. Peak stock prices reflected far more than projected company profits. Investors ignored the possibility that revenue growth rates would normalize. They assumed the temporary jump in COVID profits would be sustainable. They even assumed interest rates would stay pegged at zero indefinitely. Such is the nature of speculative, frothy markets where chatrooms became the place where momentum "investors" sought "advice."

The Federal Reserve's about-face from a provider of economic jet fuel to a beacon of sobriety, and the unexpected, prolonged and bloody war in the Ukraine marked the end of this boom market. In 2022, we have seen a "bucket of cold water" poured on the economy to fight the major consequence of the boom: excessive inflation.

Through this lens, the correction that began intermittently in the late summer of 2021 and accelerated mightily over the first five months of 2022 was a reset from the excesses of the prior two years.

With the unusual, joint collapse of bonds and equities in early 2022, positive real interest rates returned to the fixed income market, restoring the diversification benefits of a core asset class, as well as much needed portfolio income.

The speed of the correction that took the S&P 500 Index to near-bear market territory on 20 May appeared sharp and deep, but was more likely the mirror image of the rocket recovery of markets just after the pandemic began.

However, investors do not see it this way. And they certainly do not feel it this way. Right now, we see excessive investor pessimism, where the tendency to overweight the probability of a major market decline is too high. Investors are frozen with fear.

Now, there are good reasons for some of that pessimism. We have bullish, base-case and bearish scenarios for the global economy. We call these ROBUST, RESILIENT and RECESSION and we weight their probabilities as of early June 2022 at 20%, 45% and 35%.[1] When a

[1] There is Nothing to Fear but the Fed Itself – CIO Strategy Bulletin | Citi Global Wealth Investments, 22 May 2022

recessionary scenario is weighted almost equally to our "base case" or expected "resilient" scenario, it indicates that there is more risk in markets than usual.

Interestingly, the biggest risk is not in how the economy is behaving of its own accord. In fact, the resilience of the global economy to COVID, a major European war, a shutdown of large swathes of the Chinese economy and inflation itself is pretty remarkable and often unsung. The ability for technologies to substitute effectively in areas like healthcare, retailing, warehouse management, travel, entertainment and even for office space itself speaks to the economic hardiness we have witnessed across these past 30 months. In fact, these are all good areas for future investment – see Harness the power of unstoppable trends, Cyber security: Defense for data and portfolios and The fintech revolution has far to go.

It is the present response of the Fed that is the market's biggest risk. The Fed has only a few instruments to fight inflation and they are mighty and lacking in subtlety. One is rates and the Fed has made it clear that higher rates are a near certainty. The second is called quantitative tightening, the reversal of its easy credit policies that ensured the flow of capital as the pandemic struck home in 2020-21. When the Fed lets bonds it has previously purchased "roll off," investors will need to step in as buyers for newly issued bonds as they are made available. This requires enough buyers of sufficient size to step in. And the truth is that we do not know whether the new supply will be met with sufficient demand. If the Fed hikes rates too high, too fast while also reducing market liquidity, a recession can ensue. This may cause unemployment and other travails that can cause the economy to shrink for a time.

We think that the Fed need not do this to stem inflation. As Steven Wieting notes in Investing in the afterglow of a boom, a "soft landing" is possible. We see demand falling already as consumers tighten their belts due to lower levels of savings, lower levels of household wealth and lower wage growth relative to inflation. We also see supplies rising – albeit not in every category, particularly energy and food prices – but across many other categories. Given time, having supply and demand equilibrate is the best cure for inflation.

We do not think investors should sit on cash and try to "time the markets." In fact, we think that is a highly risky approach - see The perils of holding excess cash. We have positioned portfolios for this moment of uncertainty – see Our positioning.

Falling markets have caused a reset in many valuations in 2022 – see The long-term outlook for asset class returns has improved. We believe that high-quality bonds are likely to add real value to portfolios as we enter 2023, as we set out in Bonds are back within Beat the cash thief!

And assuming that there is no recession, but rather a slow, market consolidation, investors will see that the future environment for moderate growth, in both the US and global economy, is positive. Imagine that the novel ends with no further Chinese lockdowns, an end to the war in the Ukraine and meaningful adjustments to global supply chains. Imagine that inflation is reduced to 3.5% by the end of 2023 and 10-year interest rates in the US were 2.75%. These are our hopes and our views a year or so from now.

As seasoned investors, looking rationally at the data across the global economy, there is little reason to believe that growth is over and that innovation and investment therein is at an end.

And there are several reasons to believe that a more realistic and perhaps more stable world order is possible in the years ahead. China cannot rely on Russia as its strongest ally because the war has negatively impacted so many of its major interests. Furthermore, the reinvigoration of NATO and the possibility of an expanded, global brief for it will certainly inform China's strategy. To the extent that the US, Japan and others view Taiwan as they do now Ukraine, there will be more tension – see The rise of Asia: Accelerating G2 polarization. But it also means more opportunities to forge new relationships.

In short, there are many reasons to be wisely invested. Even now. In our **Mid-Year Outlook 2022**, we show you how.

1.2

The long-term outlook for asset class returns has improved

GREGORY VAN INWEGEN
Global Head of Quantitative Research and Asset Allocation, Citi Investment Management

PAISAN LIMRATANAMONGKOL
Head of Quantitative Research and Asset Allocation, Citi Investment Management

Following big moves in markets in early 2022, we have decided to update our long-term asset class return forecasts mid-year.

The long-term outlook for various asset classes has changed substantially in 2022 to date. That's the message from Adaptive Valuation Strategies (AVS), our proprietary strategic asset allocation methodology. AVS estimates returns over the coming ten years based on current valuations and other fundamentals.

We usually update our AVS strategic return estimates annually, at the beginning of the calendar year. However, given financial markets' big moves in early 2022 – see Investing in the afterglow of a boom – we have decided to update its forecasts at the mid-year stage.

At year-end 2021, our annual update showed relatively low public equity market return forecasts, given the record high stock market valuations. Since then, markets have fallen significantly. This has both validated our previous forecasts, while also making valuations more attractive today. This is reflected in public equities' Strategic Return Estimate (SRE) rising from 4.2% to 6.1% - **FIGURE 1.**

Many central banks' aggressive postures toward taming inflation in 2022 have triggered sharp falls in bond prices. In turn, our fixed income return estimates have risen. Investment grade fixed income has moved from 1.8% to 3.4%, making high quality bonds more attractive – see Bonds are back. High yield and emerging market bond SREs have increased as credit spreads have widened. Alternative asset classes' SREs have also risen.

Figure 1. Strategic return estimates

	STRATEGIC RETURN ESTIMATE FOR 2022	STRATEGIC RETURN ESTIMATE AT MID-YEAR 2022
GLOBAL EQUITY	**4.2%**	**6.1%**
GLOBAL FIXED INCOME	**2.0%**	**3.7%**
CASH	**0.9%**	**1.5%**
DEVELOPED MARKET EQUITIES	3.8%	5.6%
EMERGING MARKET EQUITIES	8.1%	9.9%
INVESTMENT GRADE FIXED INCOME	1.8%	3.4%
HIGH YIELD FIXED INCOME	2.6%	5.2%
EMERGING MARKET FIXED INCOME	3.6%	6.0%
CASH	0.9%	1.5%
HEDGE FUNDS	4.1%	6.1%
PRIVATE EQUITY	11.6%	14.6%
REAL ESTATE	8.8%	9.4%
COMMODITIES	1.5%	2.0%

Mid–Year 2022 SRE updates are preliminary and based on data as of 30 April 2022. 2022 SRE update is based on data as of 31 Oct 2021. Global Equity consists of Developed and Emerging Market Equity. Global Fixed Income consists of Investment Grade, High Yield and Emerging Market Fixed Income. Strategic Return Estimates are in US dollars; all estimates are expressions of opinion and are subject to change without notice and are not intended to be a guarantee of future events. Strategic Return Estimates are no guarantee of future performance. Citi Private Bank Global Asset Allocation Team. SREs for 2021 are based on data as of Oct 31, 2021. Returns estimated in US Dollars. Strategic Return Estimates (SRE) based on indices are Citi Private Bank's forecast of returns for specific asset classes (to which the index belongs) over a 10–year time horizon. Indexes are used to proxy for each asset class. The forecast for each specific asset class is made using a proprietary methodology that is appropriate for that asset class. Equity asset classes utilize a proprietary forecasting methodology based on the assumption that equity valuations revert to their long–term trend over time. The methodology is built around specific valuation measures that require several stages of calculation. Assumptions on the projected growth of earnings and dividends are additionally applied to calculate the SRE of the equity asset class. Fixed Income asset class forecasts use a proprietary forecasting methodology that is based on current yield levels. Other asset classes utilize other specific forecasting methodologies. Each SRE does not reflect the deduction of client fees and expenses. Past performance is not indicative of future results. Future rates of return cannot be predicted with certainty. The actual rate of return on investments can vary widely. This includes the potential loss of principal on your investment. It is not possible to invest directly in an index. SRE information shown above is hypothetical not the actual performance of any client account. Hypothetical information reflects the application of a model methodology and selection of securities in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. Please reference the definition of Strategic Return Estimates in the glossary.

1.3

Investing in the afterglow of a boom

STEVEN WIETING
Chief Investment Strategist and Chief Economist

The boom conditions of 2021 are over, but this does not mean a recession will be forthcoming. Amid economic uncertainty, positive actions for portfolios are recommended.

- Following a the COVID economic collapse and boom, we now face economic uncertainties amid geopolitical tensions, rising inflation and slowing growth
- If the US Federal Reserve ceases tightening in time, we believe economic expansion can be sustained, forestalling a recession
- Despite heavy declines in some technology equities, contracting capital expenditure on technology seems improbable, unlike in the early 2000s
- It is time to build resilient portfolios, with a focus on high-quality investments across asset classes

The earthquake and aftershocks that struck the world economy in 2020 have yet to pass. An unprecedented COVID collapse was followed by a boom in economic activity, financial assets and consumer prices. These rapid and exogenous developments have left a confusing picture for investors in 2022.

As David Bailin discusses in A new world order: How should I invest now?, the tragedy of war in Ukraine has intensified the challenges of a pandemic-scarred global economy, particularly shortages and supply chain disruption. Amid the fading afterglow of last year's boom, today's situation requires us to allocate capital differently in a world of commodity and goods scarcity.

Figure 1. Then and now: Our real GDP forecasts (%)

	2020	2021	2022		2023	
			PREV.	REVIS.	PREV.	REVIS.
CHINA	2.4	8.0	4.5	4.0	5.0	5.0
US	-3.4	5.5	3.5	1.9	2.6	2.0
EU	-5.9	4.8	3.9	2.3	2.4	1.8
UK	-9.7	6.0	4.2	3.0	2.5	2.0
GLOBAL	-3.2	5.6	3.8	2.6	3.5	2.7

Source: Haver and Office of the Chief Investment Strategist, as of 18 May 2022. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events.

Figure 2. Durable demand, equity resilence

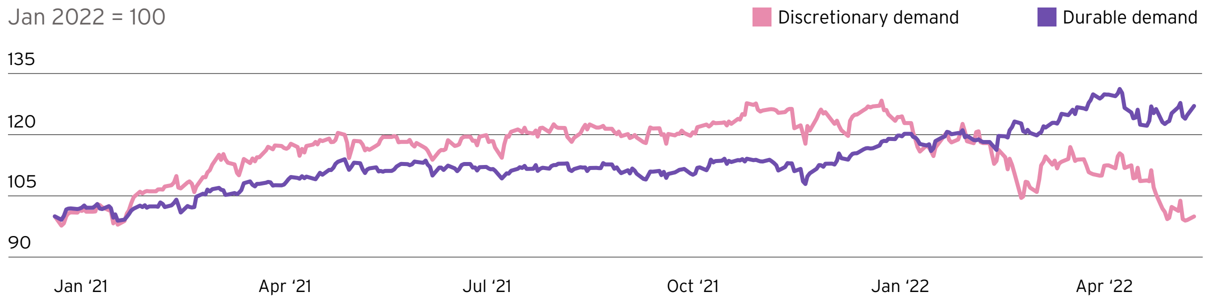


Chart shows performance of "discretionary" and "durable" demand industries. Discretionary demand industries are household durables, specialty retail, textiles, apparel & luxury goods, residential REITs, hotels, restaurants & leisure, financials and airlines. Durable demand industries are food, beverage & tobacco, energy, utilities, healthcare and telecommunication services. Source: Haver Analytics and Bloomberg, as of 15 May 2022. Past performance is no guarantee of future returns. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only.

During the first half of 2022, rapidly rising interest rates left investors more uncertain as to how to value financial assets. The rough doubling in government bond yields in the past twelve months has restored higher quality fixed income to a more appropriate yield level for the first time in several years.

Given a slowing cyclical backdrop, we see a much more compelling opportunity in fixed income assets for both overall portfolio construction and to earn income on surplus cash – see Beat the cash thief: Bonds are back and Our positioning.

Unintended side-effects

The Federal Reserve's macroeconomic strategy has, so far, failed to differentiate a series of large exogenous shocks from the economy's normal business cycle. Policymakers have treated both the COVID collapse and recovery with the same medicine, excessive stimulus and potentially excessive tightening. In our view, central bankers are now running their enormous monetary stimulus of 2020-2021 "in reverse." Slower growth is upon us even before the Fed raises rates again this summer. We have revised our real global GDP forecast about a full percentage point lower for both 2022 and 2023 – **FIGURE 1**. Commodity shortages have – and will – restrain growth and raise inflation. But there are countervailing factors at play, too.

We see an ongoing supply recovery and incipient demand slowdown leading to a gradual deceleration of inflation over the coming year.

In time, slowing consumer demand, inflation and employment argue for central banks to swerve from a path of excessive tightening that leads to recession. With significant risks in mind, we have altered portfolio allocations over the past year to focus on higher quality income-generating assets and the economy's essential needs – see Our positioning and **FIGURE 2**.

Too much 2020-21 stimulus, withdrawal symptoms now

In response to the deep but short-lived economic effects of the pandemic, fiscal and monetary policymakers applied unprecedented stimulus. Targeted financial support, say, for the airline and hospitality industry and its workers would not have generated the unsustainable demand boom that the massive support for nearly all consumers did. Now, in fighting pandemic-impacted shortages – mismatches in supply or demand that need to be resolved at a sectoral level – policymakers are applying macro-level economic restraints – **FIGURE 3**.

History suggests that monetary policy has never resolved supply shocks. The Fed regulates demand, but does not produce goods and services. The demand support provided to economies in 2020-2021 is waning fast. In the first quarter of 2022, US federal spending fell 33%. A 250-basis point rise in mortgage rates is just one example of the Fed's blunt force to slow the housing sector – **FIGURE 4**. Consumer spending is likewise decelerating over the course of the first

Figure 3. Declining stimulus, fading boom

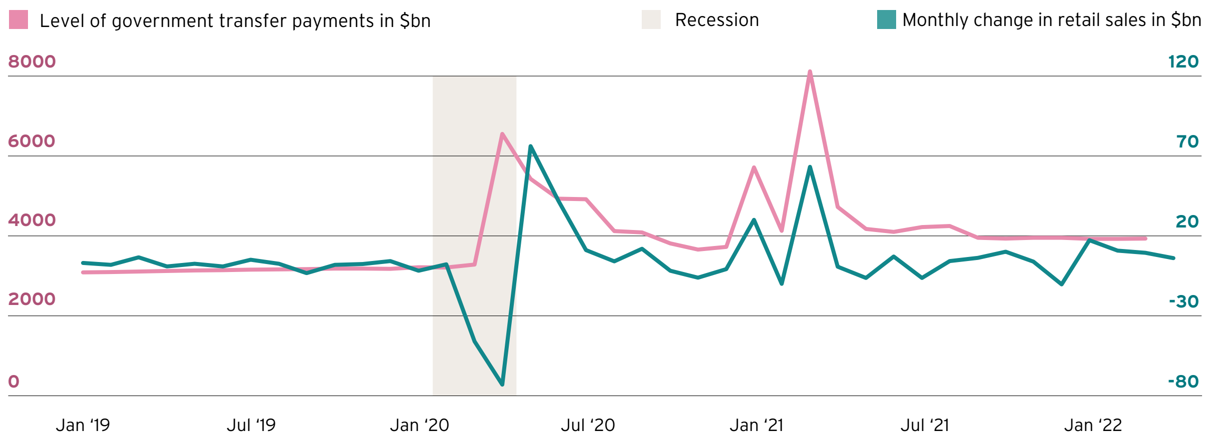


Chart shows month–on–month changes in US government transfer payments of income and retail sales. Source: Haver, as of 15 May 2022.

Figure 4. Surging mortgage rates, sinking home loan applications

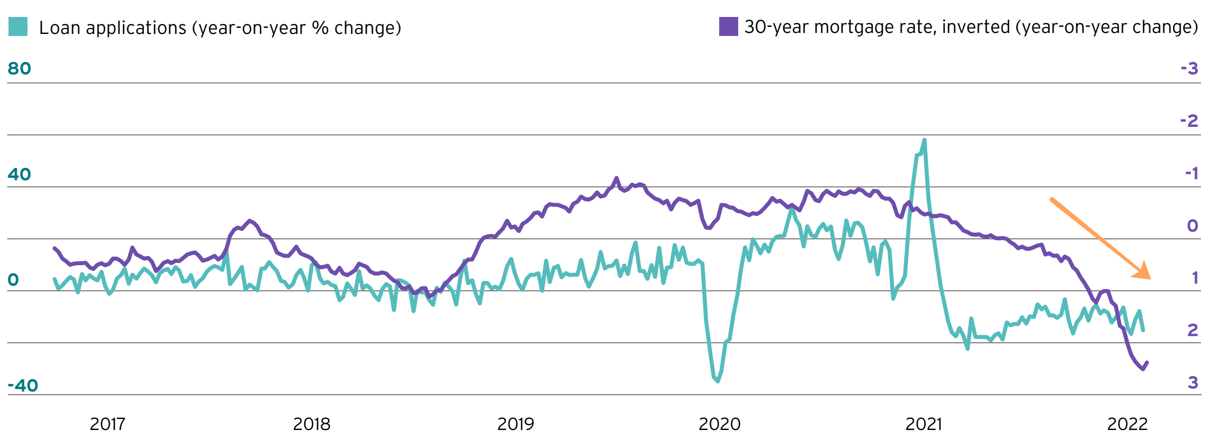


Chart shows the inverted 30–year US mortgage rate and home loan applications. Source: Haver, as of 15 May 2022.

quarter. In time, we expect these actions to slow employment and inflation - **FIGURE 5**.

The Fed was previously unmoved by the argument that monetary easing was excessive in the boom year of 2021. But the central bank's views have changed markedly in 2022. As the Fed begins a period of more rapid monetary tightening, we recall Chairman Powell's words of last August: "The main influence of monetary policy on inflation can come after a lag of a year or more. If a central bank tightens policy in response to factors that turn out to be temporary, the main policy effects are likely to arrive after the need has passed."

At some point – ideally during 2022 – we would hope the Fed will recognize the future impact of its rate hikes and reduced lending ("quantitative tightening"). If recognized early enough, this would preserve the chance of continued expansion and perhaps not require a policy reversal from the Fed. Conversely, the US and global economy are unlikely to sustain growth through another year if the Fed continues with its projected rapid monetary tightening deep into 2023.

The Fed has not managed to end recessions quickly once underway. However, it does have a history of frequent policy reversals. In the past 45 years, the Fed has sustained its maximum policy rate for only seven months on average before cutting rates. In 2019, the Fed cut rates 75 basis points when it expected to raise rates 75 basis points that year. (It also ended quantitative tightening early at an emergency meeting.)

If the Fed can soon strike a balance between the excessive easing of 2021 and the rapid tightening

Figure 5. Where consumer spending goes, labor follows

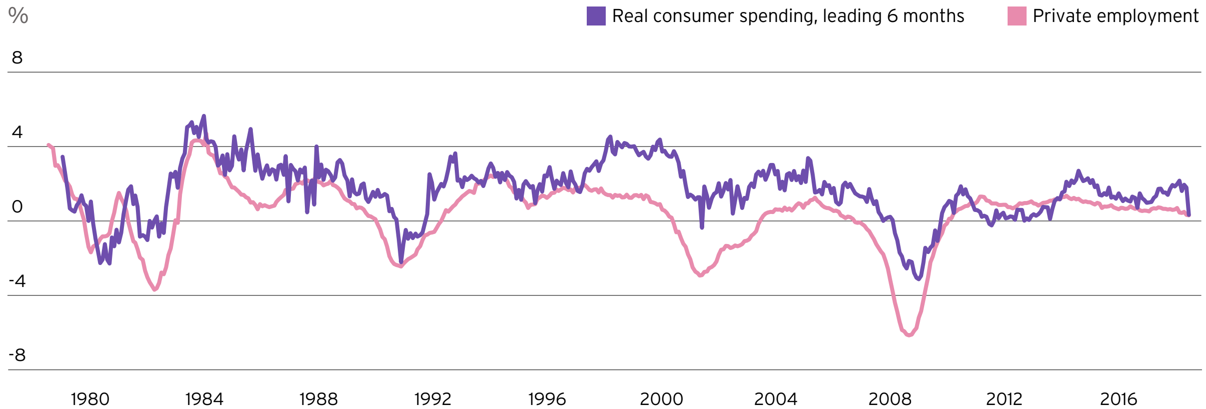


Chart shows real percentage change in consumer spending pushed forward six months, with percentage change in private employment. Source: Haver, as of 15 May 2022.

Figure 6. Inflation surged largely on goods shortages, not wages

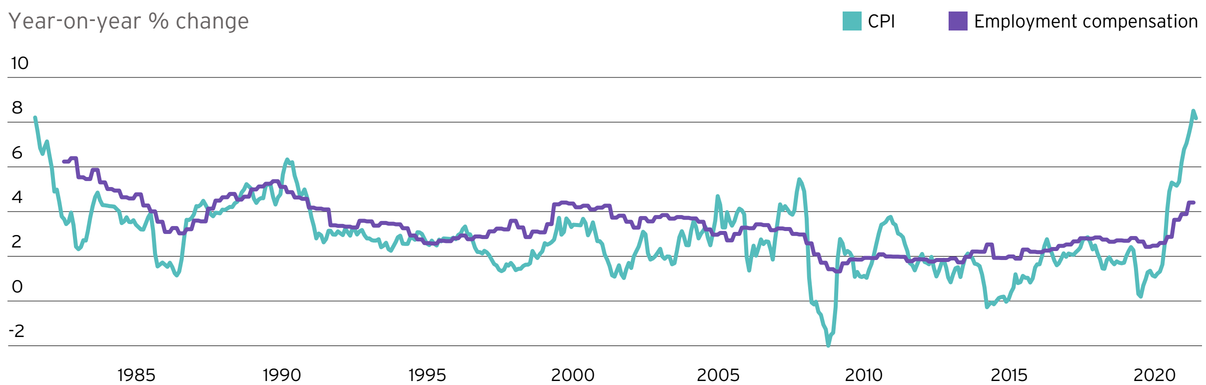


Chart shows the year–on–year percentage change in employment costs as measured by the Employment Cost Index: Civilian Workers, and the year–on–year percentage change in the CPI–U; All Items inflation index. Source: Haver, as of 15 May 2022.

it has "rhetorically" encouraged in 2022, it might avoid amplifying financial and economic excesses. In the meantime, with the US bond market seeing yields rise nearly 200 basis points across nearly all maturities and categories, we believe the risk/reward potential for bond investors has improved markedly – see Beat the cash thief: Bonds are back

In early 2022, US long-term Treasury returns have fallen as much as 35% from their previous high, an historic record loss of value. As we do not believe inflation will rise 2% per year every year into the future, we have added an overweight to long-duration US government bonds for the first time since yields bottomed in 2020. Cheaper, high-quality bonds now deserve a larger allocation in many types of portfolios.

Wages accounted for very little of the post-COVID inflation spike – FIGURE 6. That's why a recession causing millions of job losses in 2023 would be a massive sacrifice that would do very little to slow inflation.

Patience, please!

Fortunately, rapidly growing global production is outstripping demand growth. This can be seen in the recovery of business inventories from record low levels. We believe this is sowing the seeds of lower inflation without an employment collapse, with goods imports now surging to meet demand. In other words, market forces – rather than tightening – are gradually doing what is needed to rebalance supply and demand. What central banks need to do is allow for a full year of such recovery.

To date, the Fed has raised rates a mere 75 basis points in 2022. Quantitative tightening is soon to come. This has been painful for financial markets, but not yet too much for the expansion to bear. However, the Fed is widely expected to tighten another 250 basis points in the next 18 months. If the Fed must wait for lagging economic indicators to weaken – instead of looking ahead to policy's impact "a year or more" into the future – the probability of a new recession will only increase. We place a 35% likelihood on this.

Engineered recessions

Recollections of 1980 and 1982 may be dim. The recession of 1982 was particularly painful by the standards of the time. However, when the Fed has deliberately engineered recession, the economy's ability to return swiftly to full potential has been notable – FIGURE 7. In some ways, the impact is "engineered," although not as benignly as the very temporary economic shutdown of the second quarter of 2020 to stem the pandemic. Similarly, we would expect China's economic recovery to resume when COVID restrictions are lifted – see The rise of Asia: Accelerating G2 polarization.

Such recessions differ markedly from contractions where large parts of the economy have been booming, with big imbalances to work off. The clearest economy-wide example was the housing excesses in 2008-2009.

Figure 7. US growth has often rebounded rapidly from recessions

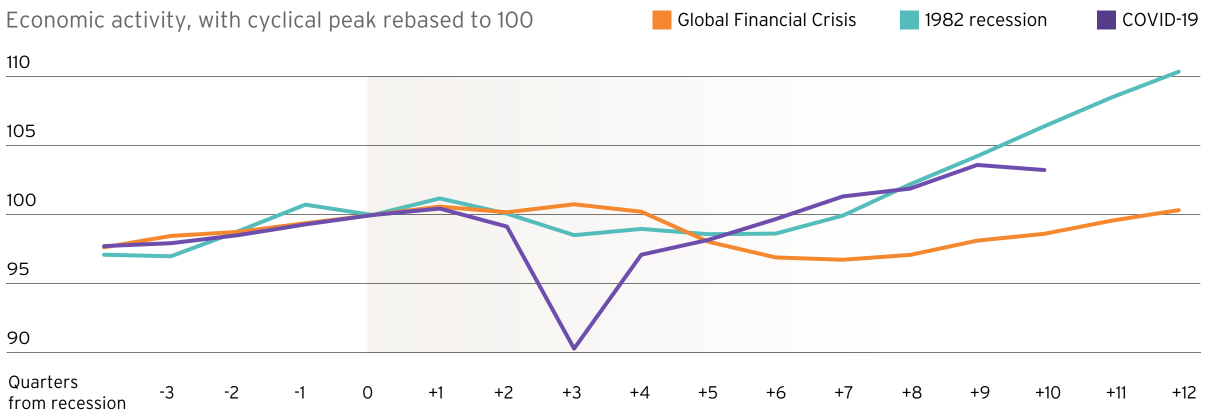


Chart shows quarterly changes US real GDP in recessionary and post–recessionary periods (Period 0 = recession start). Source: Haver, as 18 May 2022.

Figure 8. The rise and fall of US growth equity valuations

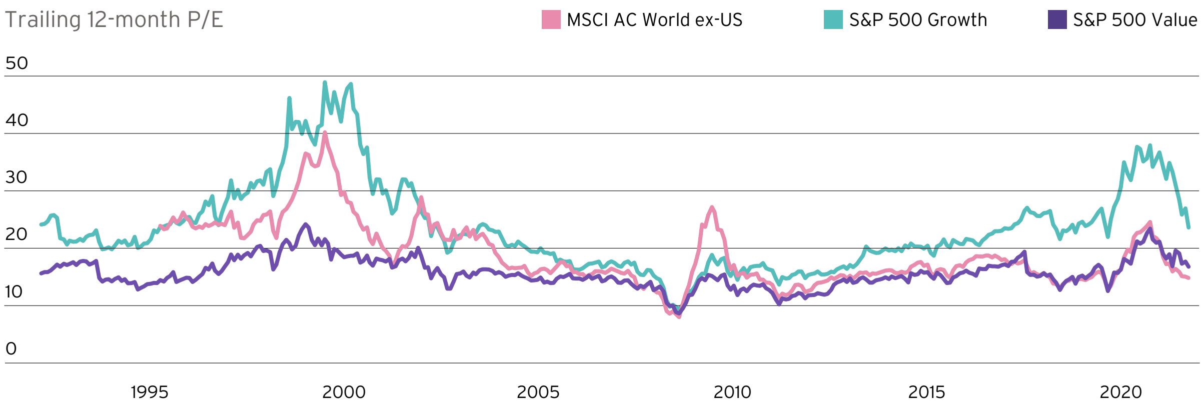


Chart shows US growth, value and non–US equity trailing price/earnings multiples. Source: Haver as of 15 May 2022. Past performance is no guarantee of future returns. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only.

Figure 9. Tech spending looks more resilient today

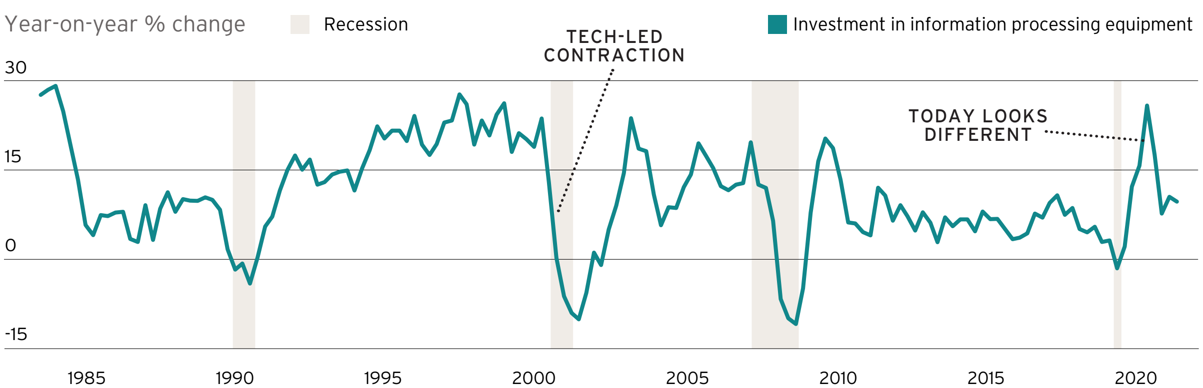


Chart shows year–on–year real private nonresidential investment in information processing equipment. Gray shaded zones denote US recessions. Source: Haver Analytics, as of 30 Mar 2022

To date, banking sector leverage has remained historically moderate in the aftermath of the Global Financial Crisis. That said, there are some systemic risks beyond traditional banks – **FIGURE 8.** This is one remaining strength for the economy facing sharp policy tightening. Still, the boom in speculative tech valuations in 2020-2021 does bear some resemblance to the 1995-1999 period, and the unwind that followed – **FIGURE 9.**

Technology shares will rise again

Technology valuations in recent years may somewhat resemble those of the late 1990s, tech profitability does not. There is less concentration in tech spending today. While late 1990s firms had the "internet boom" in common, firms such as Tesla and Meta today have very little business in common.

While time will tell, we do not see technology spending as about to retreat – **FIGURE 9.** In 2000-2002, fundamental excesses in technology – such as the massive buildout in "dark fiber" communications networks – resulted in excess capacity and a tech-led economic contraction. Today, discretionary consumer spending is likely the economy's most vulnerable component, and only while rapid inflation lasts.

Security, tragedy, inflation in commodities

We have shifted our tactical asset allocation to reflect a tragic new world of scarcity – see Our positioning. Without speculating as to how and when hostilities might end, the futures prices of a widespread basket of natural resources exported by Russia and Ukraine have risen sharply over the two-year delivery period ahead – **FIGURE 10.**

The loss of key agricultural inputs and outputs from the region will have painful consequences for much of the emerging world, where foods comprise much larger shares of household budgets. The answer to this is higher production everywhere possible. We have made significant allocations to global natural resources firms at the expense of other equity sectors and regions such as Europe.

Fortunately, commodities are far from the most powerful determinant of end-consumer prices even for closely aligned products – **FIGURE 11.** In the slowing demand environment we expect, high commodity prices will simply displace profits and sales of more discretionary merchandise. While our commodity equity and quality US fixed income overweights seem contradictory, the supply shock of lost Russian and Ukrainian exports is a source of slower global growth. If supplies recover and commodity prices fall, we would expect a stronger economic outlook and potential benefits for broader global equity markets.

Figure 10. High but potentially easing: Select energy, metals and food commodities

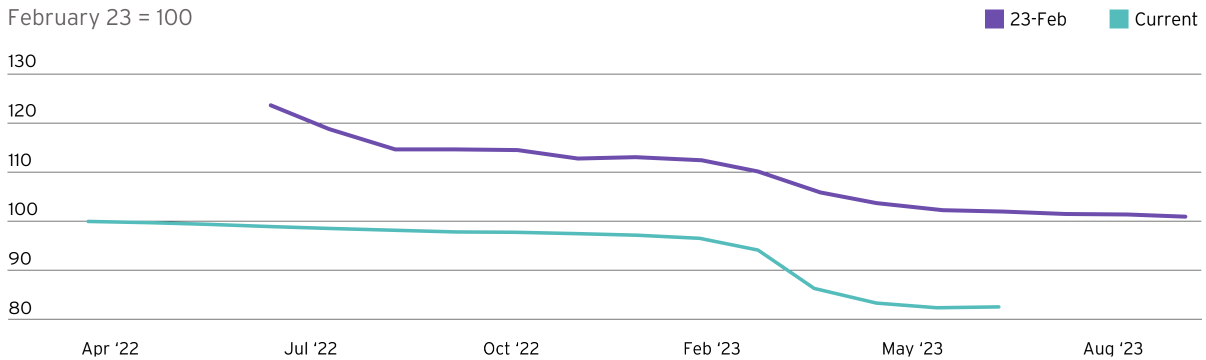


Chart shows a basket of Brent crude oil, wheat, German natural gas and steel futures, comprised of futures contracts with delivery through 2024, are equal weighted and indexed to Feb 2023; the day before the start of the war was set to 100 for each asset. Source: Haver Analytics, as of 15 Apr 2022. Note: All forecasts are expressions of opinion and are subject to change without notice and are not intended to be a guarantee of future events. Past performance is not indicative of future returns. For illustrative purposes only.

Figure 11. Producer prices: Only one ingredient of consumer prices

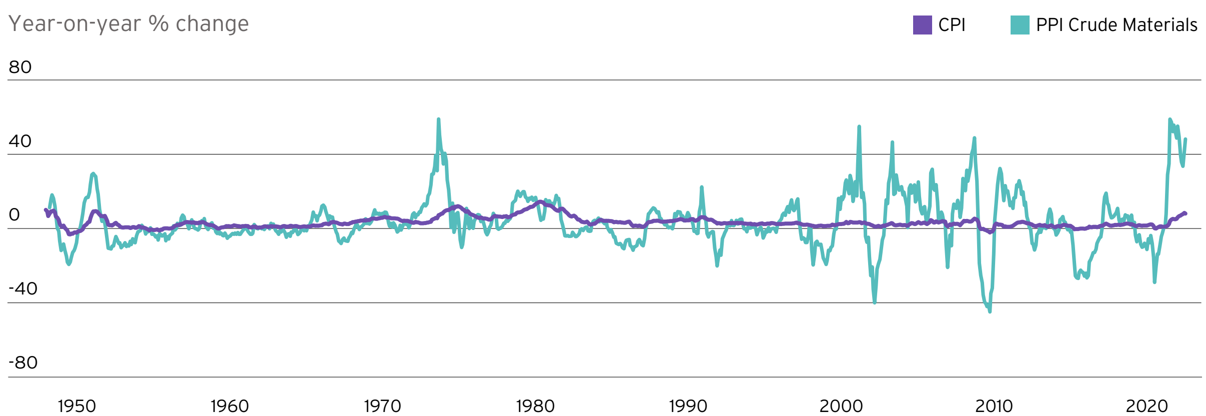


Chart shows CPI and Core Crude Materials same scale year–on–year %. Source: Haver Analytics, as of 18 May 2022.

Figure 12. Tech-oriented equities and inventions' upward march

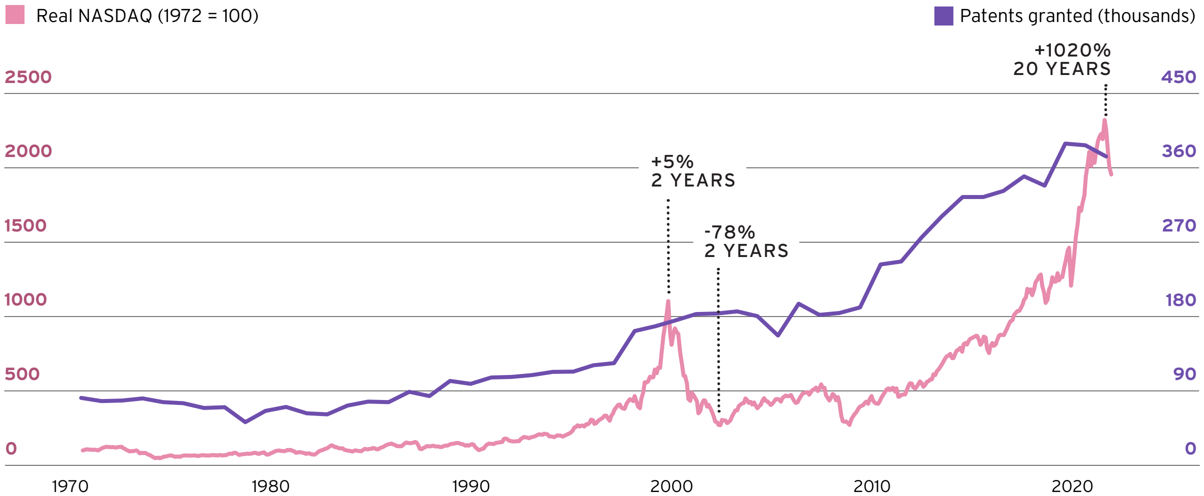


Chart shows the inflation-adjusted Nasdaq Composite Index price and US patent grants since 1971. Source: Haver Analytics, as of 18 May 2022. Past performance is no guarantee of future returns. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only.

Less stimulus does not mean less innovation

Despite the market value of innovation being under pressure, we think there are key differences with past episodes. In particular, we do not believe the world is about to reduce expenditures in such areas as cybersecurity and green tech – see Harness the power of unstoppable trends. This contrasts with the end of the "dot-com" bubble in the early 2000s, when both valuations and fundamentals unwound together.

Like some of the most speculative ventures of the past year, the Nasdaq Composite Index lost 78% of its value in just over two years through mid-2002. Subsequently, it returned more than 1000% in the next 20 years. Why? Because even during the tech collapse of 2000-2002, growth-creating technological progress took shape – **FIGURE 12**. Innovations of that bear market period included the predecessor of the iPhone and today's electric vehicles, the sequencing of the human genome and the establishment of today's private space industry – **FIGURE 13**.

Figure 13. Tech innovation flourished even as tech stocks tanked in early 2000s

BLUETOOTH WIRELESS
TEXT MESSAGING (AT&T)
CAMERA PHONE
USB FLASH DRIVE
PLUG-IN HYBRID AUTOS (PRIUS)
1GHZ INTEL MICROPROCESSOR
APPLE IPOD
APPLE MAC OS
WINDOWS XP
MICROSOFT XBOX
BLACKBERRY SMARTPHONE

CONSUMER GPS
ADVANCED ARTIFICIAL HEART & LIVER
HUMAN GENOME PROJECT DRAFT
FIRST TELESURGERY
SPACEX
BLUE ORIGIN
AT&T MOBILITY
GOPRO
WAYFAIR
VISTA EQUITY PARTNERS

Table shows tech inventions made and companies founded during the 2000–2002 tech bubble collapse. Source: Office of the Chief Investment Strategist, 19 May 2022. The companies named are for illustrative purposes only and do not represent the performance of any specific investment. This is neither a solicitation to buy nor a recommendation to sell any of the aforementioned securities.

The largest firms of the equity bubble period traded at 78 times earnings at the peak of the 10-year economic expansion before the collapse. Some were absorbed by competitors, while others never recovered their peak value. But an investor who had bought them all near their 1999 peak and held them through today would have still beaten cash by 290 basis points per year – **FIGURE 14.**

We are not arguing for some imminent new concentration holding in growth shares. However, at a time when markets are not delivering immediate positive returns, the foundations of future returns are at least being laid.

"What should I do now?"

Amid heightened uncertainty, investors often find themselves frozen with fear. The resulting portfolio inaction can prove costly. Two of the most common mistakes are retaining a portfolio positioned for past conditions and holding excess cash.

Our goal is to build quality, resilient portfolios for today's environment. Citi Global Wealth Investments has already made important adaptations in our tactical asset allocation in 2022. These include an overweight position in natural resources and oil services equities.

Amid scarcity and supply shocks, we think these assets may help reinforce portfolios – see also Overcoming supply shortages.

We reiterate our conviction in a broad range of high-quality assets. Among equities, these include long-term leaders – companies with a variety of quality characteristics – see Time to follow the long-term leaders in **Outlook 2022**. Examples include dividend growers – see Beat the cash thief! – and many equities related to our Unstoppable trends – see Digitalization and the Rise of Asia. Another of our key calls focuses on high quality fixed income. With yields having risen significantly in 2022, we see greater potential in this asset class – see Beat the cash thief! Bonds are back.

The first positive action you should consider though, is to request your personalized Outlook Watchlist from your relationship team. This report compares your portfolio to suggested allocations. We can then discuss ways for you to bring the two into alignment.

Figure 14. Buying big tech at the bubble peak still beat holding cash over time

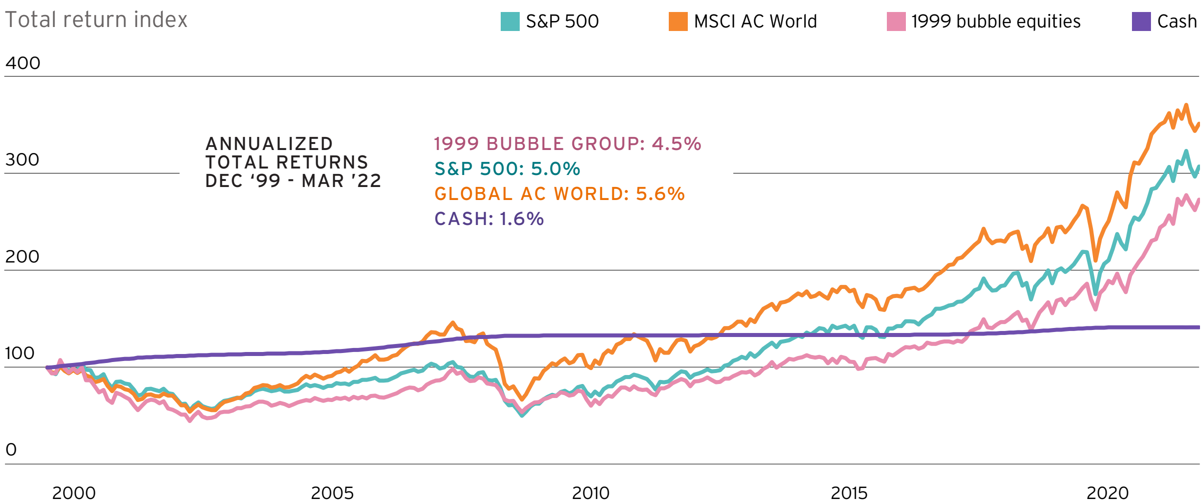
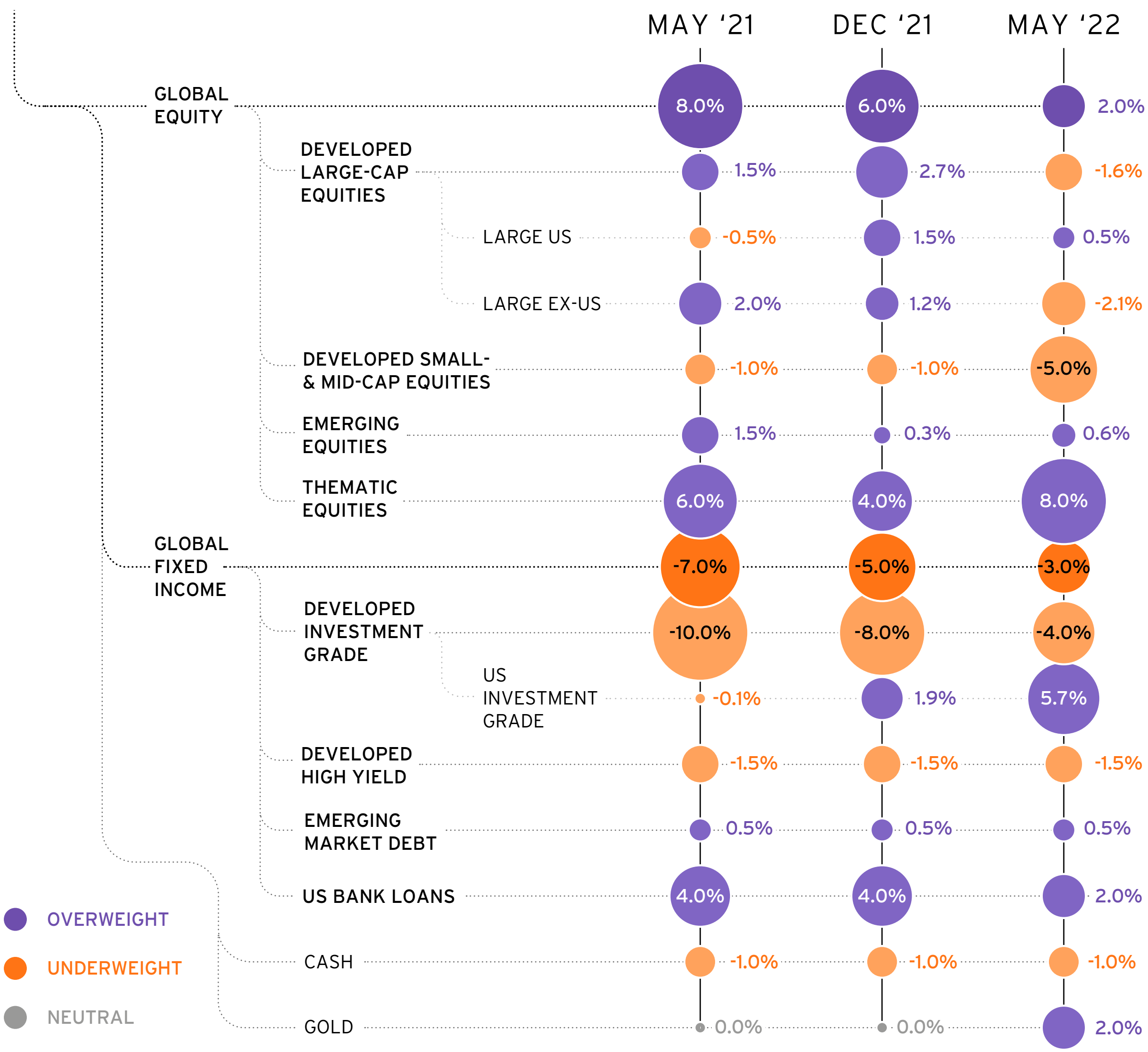


Chart shows the total returns from "tech bubble equities," the S&P 500 Index, the MSCI Global AC World Index and cash between the end of 1999 and March 2022. Source: FactSet, as of 31 May 2022. Past performance is no guarantee of future returns. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only. See Glossary for definitions.

Malcolm Spittler and Joseph Fiorica contributed to this article.

Our positioning



Office of the Chief Investment Strategist, Citi Private Bank, as of 23 May 2022.

Opportunities

GLOBAL PHARMACEUTICALS

GLOBAL NATURAL RESOURCES AND OIL SERVICES FIRMS

HIGH QUALITY BONDS, INCLUDING US MUNICIPAL BONDS OF EVERY MATURITY FOR SUITABLE INVESTORS AND LONG-TERM US TREASURIES FOR RISK MANAGEMENT

LONG-TERM LEADER EQUITIES

CYBER SECURITY, SUCH AS PROTECTION OF CLOUD COMPUTING AND THE "INTERNET OF THINGS"

FINTECH, ESPECIALLY PAYMENTS COMPANIES

VENTURE CAPITAL, GROWTH EQUITY AND LONG/SHORT HEDGE FUND STRATEGIES TARGETING DIGITALIZATION

BENEFICIARIES OF US-CHINA POLARIZATION AND THE RISE OF ASIA MORE GENERALLY

EQUITIES LINKED TO CHINA'S ECONOMIC REOPENING AND CHINESE TECHNOLOGY

USING ANY INDISCRIMINATE SELLING TO BUILD LONG-TERM EXPOSURE TO SUSTAINABLE ENERGY INVESTMENTS

Changing times call for a dynamic portfolio. How are you positioned?

Slowing growth, surging inflation and geopolitical tensions have hit global markets in 2022.

Amid the uncertainty, many investors are still positioned for last year's conditions or sitting on excess cash.

Mid-Year Outlook 2022 explores what might happen next and answers the question we hear most often: "What should I do now?"

Next, discover how your portfolio aligns to the allocation we customize for you by asking us for your personalized **Outlook Watchlist**.

More than 5,000 Citi Global Wealth clients took this vital step at the start of this year. Let us show you how to build resilient, quality portfolios for the rest of 2022 and beyond.

We also offer customized analyses for Private Bank clients to help you:

Get a holistic view of all your investments held at Citi and elsewhere

Find ways to seek income amid negative real interest rates

Determine your portfolio's environmental, social and governance impact

To receive the analyses of your choice, please contact your relationship team.

2 Thematic updates

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2.1

Beat the cash thief! The perils of holding excess cash

STEVEN WIETING
Chief Investment Strategist and Chief Economist

Negative real interest rates remain a clear and present danger to the purchasing power of cash. We believe select income-seeking strategies can help defend against this threat.

- Amid the present uncertainty, many investors are tempted to sit on excess cash
- While we expect moderating inflation and a peak in rates this year, the threat from the "cash thief" is set to persist
- Following the rise in rates, we see potential income-seeking opportunities in various high quality bonds once more
- We favor dividend grower and commodity-producer equities, for qualified investors, select capital markets and alternative strategies

The first few months of 2022 have been a tough period for many stocks and bonds. The MSCI All Country World Index has shed as much as 18%, with some US long-term government bonds suffering their worst run for decades. Among investors' most pressing concerns is tighter monetary policy. The US bond market is currently pricing in one of history's largest rate increases over the next two years – **FIGURE 1.**

At Citi Global Wealth Investments, we doubt that the Fed will indeed tighten as much as that. Instead, we expect rates to peak at some time in 2022. And, even if the Fed did tighten as much as it is suggesting, history suggests it would then be cutting rates again just six months later or so. Amid all the uncertainty, many investors are asking the same question: "Isn't now a good time to hold cash?"

Despite the rise in interest rates, the owners of cash remain in much the same situation as before. After adjusting for inflation, rates in most leading economies remain deeply negative. In the US, consumer price inflation recently hit 8.5%, several points above most short- and long-term interest yields. While readings may not stay this extreme, interest rates below the rate of inflation could be a fact of life for some time to come.

The effect of this for the owners of cash is painful. We compare the process to the exploits of a cash thief, who silently steals your purchasing power year after year – see Beat the cash thief! in **Outlook 2022**. Far from offering safety, therefore, we warn that sitting on lots of cash risks leaving you much poorer over time.

Figure 1. US bond investors expect record Fed tightening

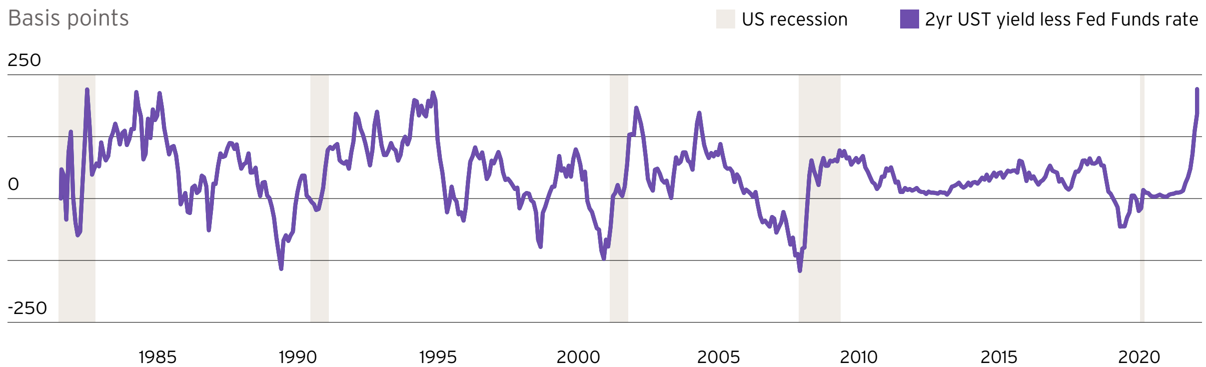


Chart shows US Treasury 2–yr note less Fed policy rate. Source: Haver Analytics and Bloomberg, as of Apr 19, 2022. Past performance is no guarantee of future returns. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only.

Defending against the cash thief

In our view, the cash thief's exploits call for taking action. Our preferred approach is to put cash to work in assets that may generate a positive real income for portfolios.

In recent years, ultra-low yields on many bonds have left them as vulnerable as cash. A few months into 2022, however, and the situation now looks rather different. If you have been waiting for a rise in yields, we believe your wait is now over – see Beat the cash thief! Bonds are back.

We also favor core allocations to dividend growers, companies with a track record of growing shareholder payouts throughout economic cycles. These higher-quality, more defensive equities have outperformed during a volatile first half of 2022, and we have historically seen dividend growers beat the broad market with lower volatility over the long-run. Commodity producer equities also have attractions.

One possibility for qualified and suitable investors is certain capital markets strategies that seek to turn higher equity market volatility into a source of income. Likewise, various private market strategies may also help mitigate inflation's impact – see Alternative paths to portfolio income.

Seeking a positive real income can help defend the purchasing power of your wealth. We believe it is time to get portfolios fully invested and keep the cash thief at bay.

2.2

Beat the cash thief! Bonds are back

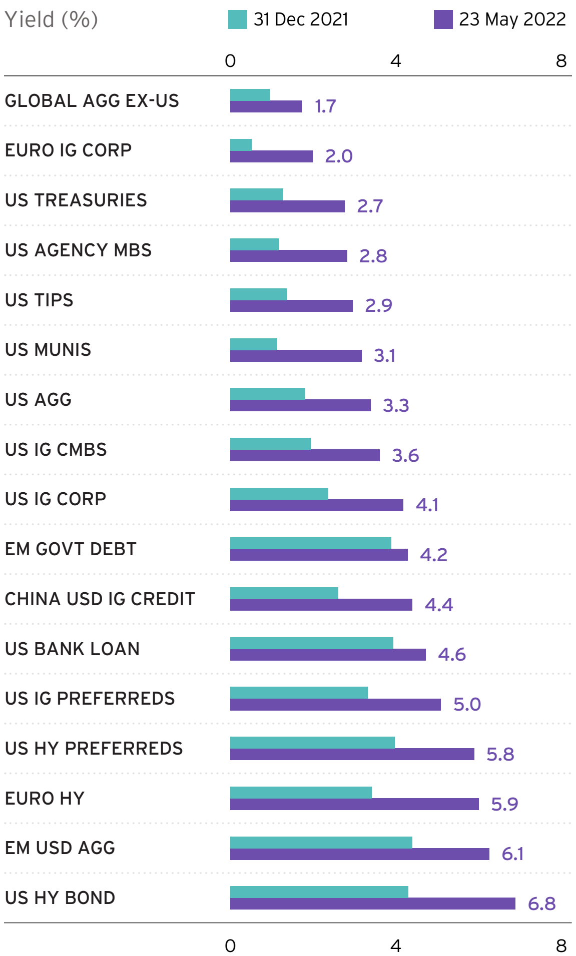
BRUCE HARRIS
Head of Global Fixed Income Strategy

KRIS XIPPOLITOS
Global Fixed Income Portfolio Strategist,
Citi Investment Management

A difficult start to 2022 for fixed income has driven up yields in this asset class. We believe this has created potential income-seeking opportunities.

- Monetary tightening has driven up fixed income yields across the board
- While painful for existing investors, we believe the move has created further possibilities for earning income and diversifying portfolios
- We believe a peak in rates is likely to occur in 2022
- Potential opportunities include US investment grade bonds, preferred securities, and US dollar denominated emerging market bonds

Figure 1. Yields surge in early 2022



Source: Bloomberg, as 23 May 2022. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events.

Early 2022 was a lousy time to be a fixed income investor. The asset class suffered one of the worst total return periods in its history, with the Bloomberg US Aggregate Bond Index down 9.5% year-to-date as of 23 May 2022.

Monetary policy was the primary reason for this sharply negative performance. In early January, the US Federal Reserve suddenly pivoted away from its plan for measured and controlled tightening. Instead, the Fed signaled a much more aggressive – almost emergency-type – approach to combat the risk of persistently high inflation that it perceived.

Given the lack of a decline in inflation readings so far this year, combined with the "commodity price shock" imparted by the Ukraine conflict, the Fed has felt compelled to continually "talk rates" higher. This is in addition to its initial 25-basis point (bp) rate hike in March and a 50bp hike in May. The futures market is now pricing almost eight more 25bp rate hikes in 2022 and a couple more in 2023. The Fed also announced that as of June, it will begin reducing the size of its near-$9 trillion balance sheet up to a cap of $95bn a month by the end of the summer, a process called "quantitative tightening" (QT).

Short-term US Treasury yields ratcheted up mechanically alongside monetary tightening expectations. As those yields rose, longer-term US Treasury yields and credit yields rose worldwide. The price of "near cash" instruments increased almost 200 basis points (bps) in four short months, a record move that reverberated through every fixed income class – **FIGURE 1**.

Our view is that most of the expected US tightening is now embedded in Treasury yields. We believe it is possible that rates will peak this year, as US GDP growth decelerates rapidly. In turn, this will likely see reduced inflation readings, perhaps allowing the Fed to relax its hawkish stance.

For investors, these higher yields may represent an attractive level at which to buy. We believe certain fixed income assets now offer an "antidote" to the "cash thief," given their higher yields.

What is more, such assets may also help mitigate equity risk within a diversified portfolio. Historically, long-term US Treasuries are one of the few assets with a negative correlation to equities during large equity corrections – **FIGURE 2**. However, we emphasize the need for selectivity here. Neither long-dated European and Japanese government securities nor "risky credit" have the same historical hedging properties. This is due to more active central bank intervention in those regions and because "risky credit" returns tend to track equity returns.

So, which are the fixed income assets that we see as most appropriate to help beat the cash thief?

Figure 2. Total return in fixed income during 20%+ US equity corrections

DATE OF DRAWDOWN	MAR '01	JUL '08	MAR '20	AVG
# OF DAYS	251	197	17	**155**
US TREASURY	12.4	7.6	4.3	**8.1**
UST SHORT	9.1	5.1	1.5	**5.2**
UST INTERMEDIATE	12.6	8.4	31.1	**8.1**
UST LONG	14.8	9.4	10.7	**11.7**
US IG CORP	12.4	2.2	4.0	**3.5**
US IG CORP SHORT	9.9	3.9	0.7	**4.4**
US IG CORP INTERMEDIATE	12.4	3.2	2.4	**4.4**
US IG CORP LONG	13.2	0.4	7.0	**2.2**
US HY CORP	7.6	4.4	10.8	**7.6**

Table shows the total return in certain fixed income asset classes as represented by Bloomberg indices during the last three US equity bear markets (>20% declines). Source: Bloomberg as of 16 May 2022. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events. See Glossary for definitions.

Investment grade bonds

The yield on investment grade bonds – as represented by the Bloomberg US Corporate Bond Index – had risen to 147 basis points above those on US Treasuries by 23 May. This spread is well up from its year-to-date low of 91bps on 5 January.

This swift spread widening likely resulted from uncertainty over the Ukraine conflict and the direction of the US economy. These higher yields are certainly welcome for new investors, since in addition to Treasury yield increases the overall spread level is now almost double its multi-decade low of 76bps in 2005 – **FIGURE 3**. Further spread widening may be limited absent a further increase in risk aversion.

We continue to favor intermediate IG for seeking income to help offset inflation, while also providing a potential hedge should equities decline.

Figure 3. US investment grade spreads widen once more

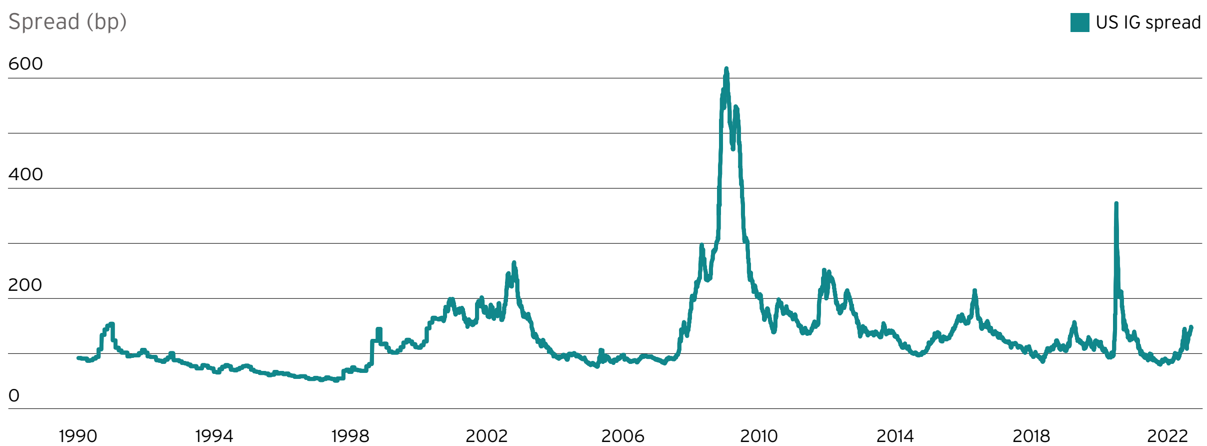


Chart shows the spread of US Investment Grade's yield over US Treasuries of the same duration. Source: Bloomberg, as March 16, 2022. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events. See Glossary for definitions.

US municipal bonds

US municipal bonds or "munis" – debt issued by states, cities and other government entities to finance public projects – look appealing for investors who can take advantage of favorable tax treatment.

The muni yield/Treasury yield ratio (M/T ratio) compares the yield on AAA-rated municipal bonds to the yield on the same maturity Treasury. Currently, munis are favorably valued versus Treasuries at all maturities by past standards. As of 23 May, the 5-year M/T ratio stood at 89%, up from 45% on 3 January. The 10-year ratio has risen from about 70% to 100%. Most other M/T ratios are near the top quartile of their 5-year historical highs.

The value of this ratio is indicated by the high tax-equivalent yields that can be obtained – FIGURES 4 and 5. Additionally, credit ratings for most munis are as robust as we have ever seen. The metrics for US states – some of the largest munis issuers – are improving thanks to very strong tax revenues.

Figure 4. Muni yield ratios, by tenor

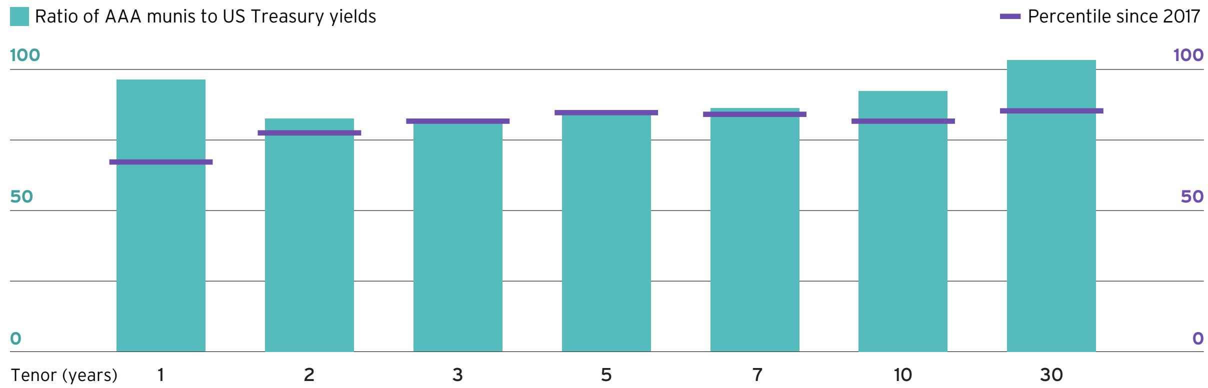


Figure 5. Tax equivalent yields in select states

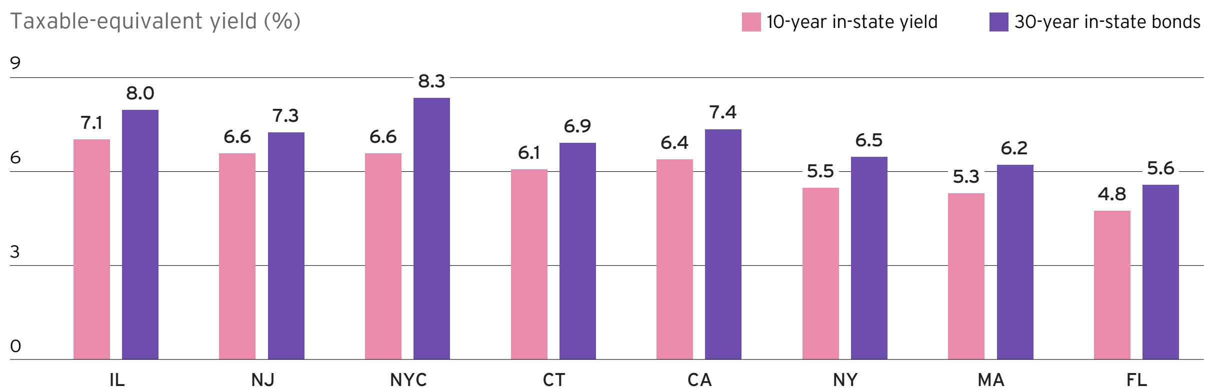


Chart 4 shows the yield ratios of US munis to US Treasuries and their current percentile versus their history back to 2017. Chart 5 compares 10– and 30–year taxable equivalent yields across various US states. TEY adjust for top Federal and Affordable Care Act tax rate (40.8%), as well as state income tax rates for each state yield. Source: Bloomberg, as 23 May 2022. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events. See Glossary for definitions.

US high yield bonds

Investment grade bonds may be entering yield and spread ranges that are nearer to past averages. By contrast, high yield (HY) spreads now exceed their 5-year average pre-pandemic levels of around 440bps. As of 23 May, they stood at 475bps – FIGURE 6. HY spreads may have further to widen if concerns about the US economy intensify.

HY credit metrics overall have improved since the pandemic because of higher product prices creating a sort of "windfall revenue," allowing many companies to pay down their debt quickly. This is especially true in energy, which represents about 13% of the HY sector.

In addition, many companies' assets have appreciated, such as retailers that own real estate. Others have seen the replacement cost of their fixed assets have increased due to inflation, such as auto producers. This has improved debt-to-asset metrics.

However, as the Fed raises rates, corporate financing costs will increase. Since HY companies are generally more leveraged than IG companies, higher rates will consume more of their free cashflow over time. And if the economy slows, such issuers' top-line revenues might decline as well. Nevertheless, we see a place for select higher-rated HY bonds or loans in suitable investors' portfolios.

Figure 6. High yield spreads may widen further if economic concerns intensify

Chart shows the spread of the yield of the Bloomberg US Corporate High Yield Bond Index and US Treasury yields of the same duration. Source: Bloomberg, as 23 May 2022. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events. See Glossary for definitions.

US preferred securities

Preferred securities and other "contingent capital" securities sit near the bottom of an issuer's capital structure, below unsecured debt and just above equity. These securities are generally "fixed-to-float." This means they offer a fixed rate for a certain period, often five years. After that, they generally switch to floating rate plus a credit spread. At the end of the fixed period, most issues are callable, i.e., the issuer can return the investors' principal and cease making interest payments.

Most of preferred securities are "perpetuals," such that they never mature unless called. By contrast, some issues mature 30 to 50 years after issuance. Given their relatively short-fixed rate period and then switch to floating rate, preferreds have low duration, despite their long maturities. Conventional wisdom holds that most issuers will generally choose to call the securities at the end of the fixed period if rates are rising, but they are not required to do so.

Similar to other fixed income assets, preferreds have dropped meaningfully in price in 2022. At present yield levels – IG preferreds at 5.76% and HY preferreds at 6.54% as of 23 May – these securities may be interesting for investors who want shorter-duration – less than four years' – fixed income exposure and are comfortable with both the credit risk, and the "extension risk" of the preferred structure – FIGURE 7. For US taxpayers, there may be favorable tax treatment on the dividend income for certain preferreds as well. This can translate into taxable-equivalent yields of between 6 and 7% or higher, depending on the issuer.

Figure 7. Rising yields in US preferreds

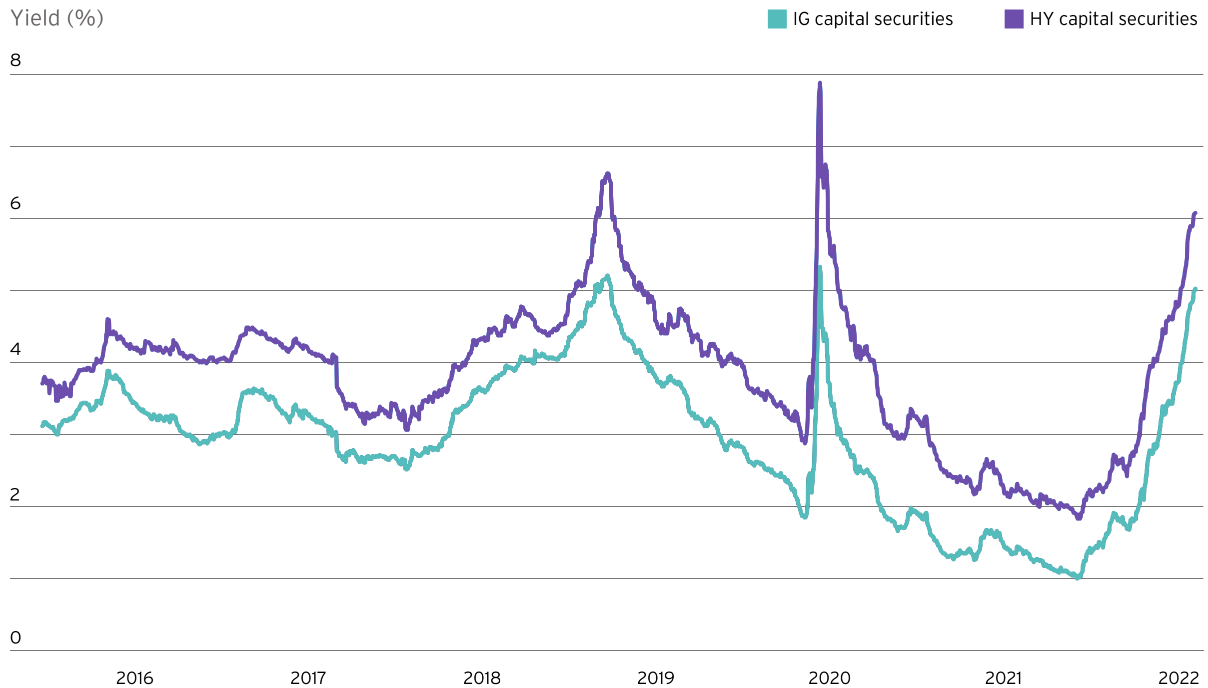


Chart shows the yields of the ICE BofA Investment Grade Institutional Capital Securities Index and ICE BofA High Yield Institutional Capital Securities Index. Source: Bloomberg, as 30 Apr 2022. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events. See Glossary for definitions.

Emerging markets US dollar-denominated debt

Emerging markets (EM) US dollar-denominated debt is a very broad category. It encompasses both IG and HY debt, as well as sovereign and corporate issuers in both rating categories. They are influenced by country, regional and industry sector considerations. "Idiosyncratic" developments can also arise, which can have major valuation impacts on a particular sector or country's US dollar denominated debt, such as what recently occurred to issuer countries involved with or geographically near to the Ukraine conflict.

Overall, spreads in EM are trading at 364bps as of 23 May and near the top of a multi-year channel– excluding the COVID pandemic period – FIGURE 8. With Russia removed from the index, yields are not as high as they were a few weeks ago. However, given the blend of rating, industry, and geographic diversification, this may be one of the best values in fixed income currently.

One of the considerations for EM countries and companies currently is that higher US Treasury rates can lead to a stronger US dollar, which in turn may cause balance-of-payment issues, as imports become more expensive. However, in many EM regions and countries local currencies have held up against the US dollar, as many of them are large commodity exporters and expected to benefit from higher commodity prices which are priced in US dollars.

Figure 8. US denominated emerging market debt's wider spread

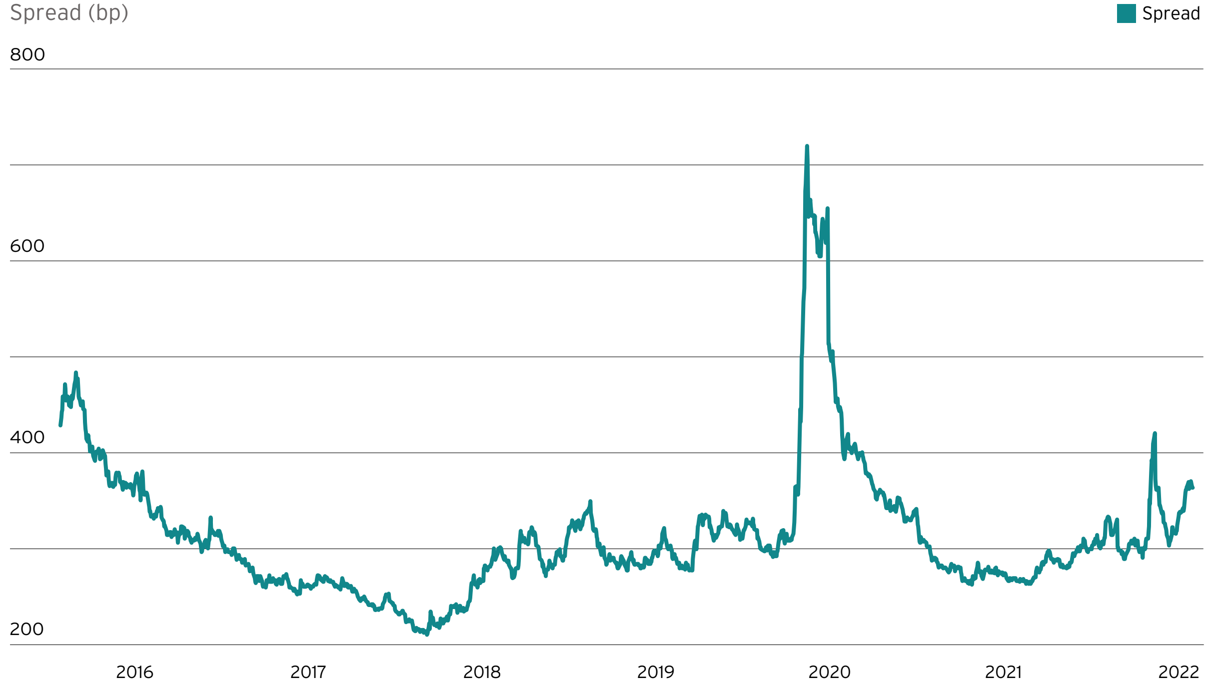


Chart shows the spread of the Bloomberg Emerging Markets Hard Currency Aggregate Index yield over US Treasuries of the same duration. Source: Bloomberg, as 23 May 2022. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events. See Glossary for definitions.

"What should I do now?"

The speed and extent of the fixed income moves in 2022 so far has taken many by surprise. As such, many portfolios still reflect the lower yield environment of late last year. At that time, many more bonds were at risk of the cash thief's activities. We believe investors should now review their fixed income allocations in light of the higher yields now available.

On a tactical view, our Global Investment Committee is overweight intermediate Treasuries and Investment Grade, slightly overweight long-term Treasuries, underweight in European and Japanese government securities, neutral in High Yield and overweight in Emerging Markets.

Going forward, we would expect to add to longer-term duration as the Fed's actions on tightening become clearer. We will likelier add more credit risk once the effects of this tightening are absorbed by the economy.

If we have underestimated the extent of likely yield increases, however, fixed income assets may suffer further losses. However, we have high conviction in our view that rates will peak in 2022.

While the cash thief remains on the prowl, there are more possibilities now within fixed income to help seek to defend your portfolio from his exploits.

2.3

Alternative paths to portfolio income

DANIEL O'DONNELL
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Following the fixed income sell-off, we see various alternative strategies that could help suitable investors seek income and mitigate the impact of inflation on portfolios.

- Yields across alternative fixed income sub-asset classes remain higher than in traditional core sectors
- Alternative strategies with flexible mandates may be able to take advantage of performance divergence within fixed income
- Direct lending to financially healthy technology companies may potentially provide current income and capital appreciation
- Private real estate can potentially hedge against inflation, if underlying income can offset possible higher financing costs

Widespread, indiscriminate selling in fixed income in early 2022 may have created various potential opportunities accessible via alternative investment strategies. These include yield-oriented assets in public and private markets, where skilled managers can perform diligent security selection and sub-asset class rotation. We are also drawn to inflation-aware investments such as inflation-linked bonds and select real estate opportunities, which can produce income while helping to insulate portfolios from inflationary risks.

Yield-oriented opportunities

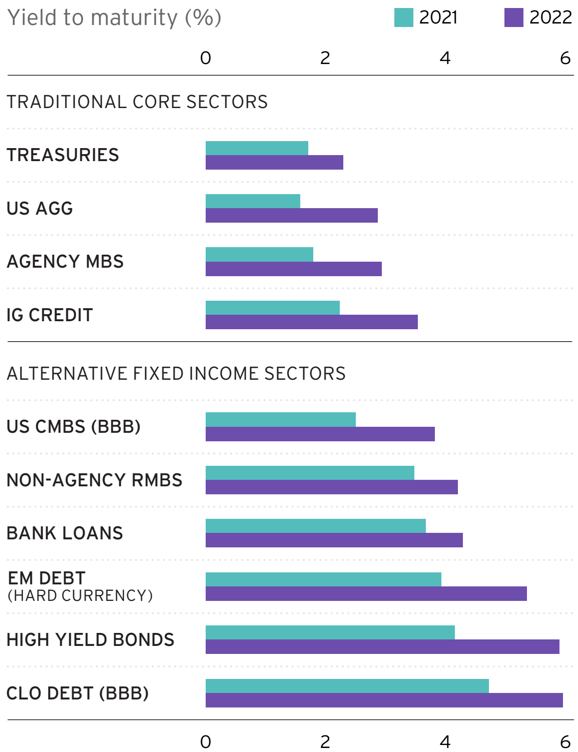
Credit markets have been volatile during the early stages of 2022. Nevertheless, the premiums associated with more specialized pockets of the fixed income markets remain robust. In fact, most fixed income sub-sectors offer a considerable step-up in yield, while trends in delinquencies and defaults have stayed low.

Yields across alternative fixed income markets have increased by an average of 1.2% on a year-over-year basis. They remain notably higher than in traditional core sectors – **FIGURE 1**. The increase may have created an attractive entry point for qualified investors seeking additional yield for their portfolios.

Fixed income sub-sectors are prone to wide dispersion, with relative performance dependent on a variety of macroeconomic factors. We believe the current environment should be conducive for alternative fixed income managers who can exploit temporary market dislocations, relying on market expertise and flexible investments mandates to shift exposures to more favorable sectors. In the first three months of 2022, the spread between the best and worst performing alternative fixed income sub-sectors has eclipsed the full year dispersion over the past four full years and indeed for most of the past decade.

We expect volatility to persist as markets digest the Federal Reserve's evolving policies, creating more opportunities for managers with more flexible investment strategies.

Figure 1. Fixed income yields by asset class subsector



Sources: Bloomberg, JP Morgan, FRED, Cliffwater, NYMT, EARN, ACRE, ARI, as of 31 Mar 2022. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events.

Attractive yields via direct lending strategies

Despite the recent volatility in the technology sector, we believe in the sector's long-term strength. Senior secured floating rate direct loans to technology companies may provide attractive current income and the potential for capital appreciation from structured debt and equity securities. Investors can access differentiated exposure in established and high-growth technology companies.

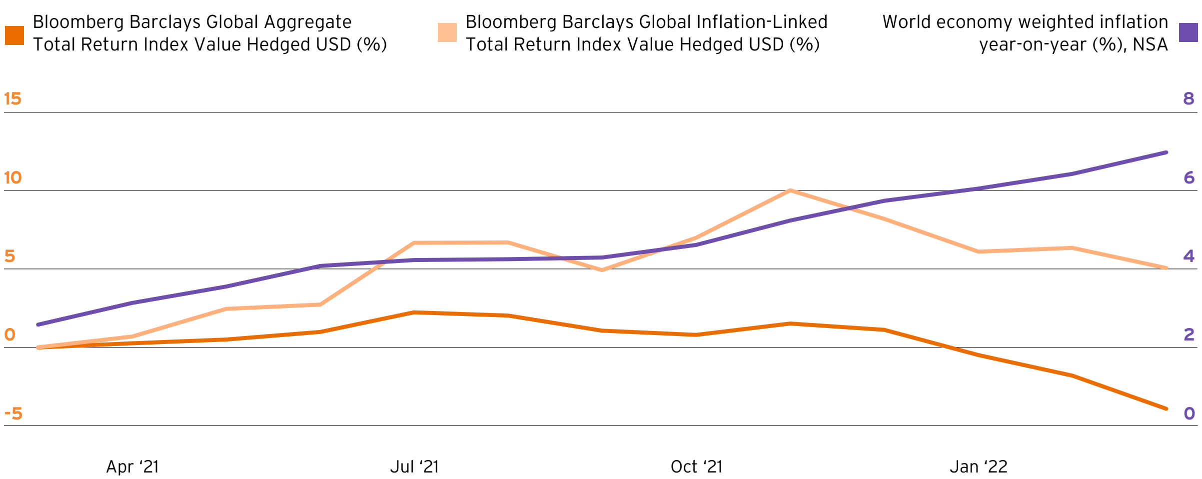
Features that could potentially mitigate risk include low loan-to-values and weaker correlations to other asset classes. In addition, investors can benefit from an increase in interest rates so long as underlying positions are primarily floating rate debt.

Inflation-aware investing: Why inflation-linked bonds matter

We believe both traditional and inflation-linked bonds play an important role in multi-asset class portfolios. This is especially true during periods of falling growth, which are challenging for equities. Inflation-linked bonds may offer mitigation in periods of higher-than-expected inflation, which tend to hit both equities and nominal bonds.

Global inflation-linked bonds have outperformed traditional bonds over the past twelve months as inflation has risen around the world – FIGURE 2. They may outperform further if longer-term inflation exceeds current expectations. Inflation-linked bonds are a core component of select alternative strategies, including multi-asset class risk-parity funds that can be more balanced versus other more traditional asset allocation implementations.

Figure 2. Inflation-linked have outperformed



Sources: Bloomberg. Data from 31 Mar 2021 to 31 Mar 2022. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events.

Real estate amid inflation

We also believe investment in real estate and other tangible assets may benefit portfolios amid inflation. Real estate focused on income-generation and our high-conviction subsectors such as the multi-family residential and industrial sectors may be especially well positioned.

Private real estate can potentially hedge against inflation. It may continue benefiting from underlying income growth from select sectors and markets to compensate for potential higher financing costs resulting from rising interest rates. What is more, the spread between US real estate capitalization rates and the 10-year US Treasury yield is defined as the "risk premium" and remains in line with historical averages at approximately 289bps as of 31 March 2022.[1] A lower spread versus a historical average could signal potentially higher capitalization rates. However, the current spread implies some potential to offset higher debt costs through spread compression.

"What should I do now?"

For suitable investors, we believe there is a compelling case for seeking potential income, diversification and inflation hedges via alternative strategies. Your relationship team stands ready to discuss which strategies may be appropriate for your portfolio, given your current asset allocation and risk tolerance.

[1] Real Capital Analytics, as of Q1 2022

2.4

Harness the power of unstoppable trends

STEVEN WIETING
Chief Investment Strategist and Chief Economist

Unstoppable trends continue to reshape the world around us. We see a compelling case for portfolio exposure to these forces.

- Unstoppable trends are powerful multi-year phenomena that are transforming business and everyday life
- These disruptive forces create both risks and opportunities for your wealth
- Given key developments in 2022, we update our views on the rise of Asia, the transition to a more sustainable world, and two aspects of the digital revolution
- We reiterate our conviction in our other existing unstoppable trends, such as the need for healthcare in an aging society

Especially in turbulent times, news headlines typically dominate investors' attention. Battles, lockdowns, abnormal economic data prints and interest rate moves can indeed impact markets on a day-to-day basis. Over time, however, such developments are far from the only influence on investment returns – nor even the most important. So, what are?

Unstoppable trends are major, multi-year phenomena that transform the world around us. They take many forms, from technological advances, demographic developments and new behaviors. They may seem slow-moving but tend to gain in speed and influence over time. As they do so, they fundamentally challenge and then upend the status quo, ultimately impacting every industry and every investment portfolio.

Of course, neither current events nor unstoppable trends occur in isolation. In 2022, geopolitical developments particularly have strengthened the case for some of the trends we have highlighted in recent years. We therefore offer you our latest thinking here, while reiterating that our other unstoppable trends – such as increasing human longevity and hyperconnectivity – remain in force.

The rise of Asia: Accelerating G2 polarization

Global economic power continues to shift from West to East, driven by Asia's urbanization, expansion of the middle class and advancements in home-grown technologies. The Ukraine conflict has further accentuated the rivalry between the G2 powers: China and the US. We believe this dynamic will continue to create return and diversification potential.

Greening the world

Public concern, tightening legislation and advancing technologies are driving global adoption of alternative energy. Spiking energy prices in 2022 have underlined the economic risks of dependence on fossil fuels. We stress the long-term importance of this trend to the planet, economic activity and portfolios, even as fossil fuel assets experience a counter-trend revival – see Overcoming supply shortages.

Digitalization

Digital innovation is revolutionizing industries and consumer life, shaking up long-established ways of doing business. We believe **cyber security** and **payments** to be so critical to today's companies that these areas are likely to experience stronger and stabler growth.

"What should I do now?"

On the pages that follow, we offer key updates to these unstoppable trends. Having read our latest thinking, please ask us for your personalized Mid-Year Outlook Watchlist report. This will compare your portfolio's current exposure to these and our other themes. We can then explore strategies to help you optimize your allocation and harness the power of unstoppable trends.

2.5

The rise of Asia: Accelerating G2 polarization

DAVID BAILIN - Chief Investment Officer and Head of Citi Global Wealth Investments

LIGANG LIU - Head of Economic Analysis, Asia Pacific

KEN PENG - Head of Investment Strategy, Asia Pacific

The Russia-Ukraine war has further underlined deep differences between the US and China. We believe their escalating strategic competition will create potential investment opportunities.

- Despite tough rhetoric, we see US-China relations remaining steady for the rest of 2022
- Against the backdrop of Asia's rise, the increasing struggle between the G2 powers may benefit Southeast Asian economies and markets
- A Chinese economic recovery later in 2022 could see a bounce in its depressed financial markets
- Among the areas we find most attractive are those linked to economic reopening, green energy and technology more broadly
- Across Southeast Asia, we favor investments linked to tourism, natural resources and industrial diversification away from China

Tensions between the world's two economic superpowers – the US and China – have increased in 2022. The Russia-Ukraine war has highlighted the "G2" nations' geopolitical and ideological differences. Amid strong words and sanction threats from both sides, China's President Xi has said the standoff between countries over their alignment in the Ukraine conflict could be more damaging to world peace than the war itself.

The US-China divergence over Ukraine is merely the latest development in their momentous struggle. China is seeking to become the dominant power in its home region and beyond. We call the standoff resulting from this challenge to US hegemony "G2 polarization." The struggle is playing out in many different spheres, including in trade, financial markets, technology, military capabilities and diplomatic influence.

We have long argued this rivalry would continue to intensify with each side trying to advance its own interests and block the other – see Is your portfolio ready for a G2 world? in **Mid-Year Outlook 2019.** And we continue to believe it has important implications for the global economy and for investors' portfolios.

Stability rather than strife near term

The G2 powers' current rhetoric is harsh. At the end of April, the US House of Representatives passed the AXIS (Assessing Xi's Interference and Subversion) Act. This requires the US State Department to provide updates to Congress on China's backing of Russia over Ukraine. In response to US attempts to strengthen ties with Southeast Asian nations, China has warned the US not to provoke confrontation.

Despite the prevailing mood, we expect near-team stability in US-China relations rather than strife. We do not believe China will suffer sanctions for continuing to trade with Russia, at least until inflation settles down. Amid the supply shock and rapidly rising prices, avoiding further disruption to trade relations is key for the US and others. For its part, China realizes that its economic interests are much more tied to those of the West than to Russia, so will probably limit aiding Russia in the conflict.

By the same token, we do not expect any major near-term improvement in US-China relations. There is potential for progress on various issues, including reducing tariffs and easing Chinese access to US capital markets. A lowering of tariffs on Chinese imports would be welcome for both US consumers and investors alike. However, it could also be a political liability for the ruling Democratic Party in November's elections. So while there are deals to be done, they may have to wait until after 2022.

Taiwan remains an obvious potential flashpoint between the G2 powers. President Xi has stated reunification "must be fulfilled" and has not ruled out using force against what China considers a wayward province. However, the resistance Russia has encountered in Ukraine and the massive international sanctions backlash may have given China's authorities pause for reflection.

Currently, China is preoccupied with COVID, the economic hardship from lockdowns and the upcoming 20th National Congress of the Chinese Communist Party. Given all this, any near-term conflict over Taiwan is unlikely.

Ultimately, the Ukraine conflict has accelerated G2 polarization. However, we also believe that this intensifying rivalry does not make a full-blown conflict between the US and China inevitable. Our base case remains that tough but peaceful strategic competition is the likeliest outcome.

The rise of Asia remains intact

G2 polarization is closely related to what we describe as the unstoppable trend of the rise of Asia. This describes the long-term shift in global economic power from West to East, driven by the region's urbanization, growth of the middle class and advancements in homegrown technologies. As the region's largest economy, China is central to this trend.

China's aim is for domestic consumption to become its key driver of economic growth for the coming decades, rather than the external demand it has relied upon hitherto. COVID – and the strict lockdowns imposed by the Chinese authorities – have hindered this shift. We believe consumption's potential is huge but realizing it will require further growth and difficult policy reforms mainly in three areas, although each have seen patchy progress:

- Broadening and deepening universal medical coverage, as well as an overhaul of the pension system, so that households may amass less precautionary savings and spend more – FIGURE 1.
- Rural land reform to enable more financial transactions and agricultural productivity could also enrich rural populations, triggering more consumption. However, we see limited political will to expand the current pilot project nationwide.[1]
- Further opening-up of Chinese financial markets to outsiders could help bring about innovative financial products that could help unlock the substantial wealth invested in property and allow more people to spend beyond their current incomes.

Near term, China's draconian anti-COVID measures will likely produce economic contraction for the second quarter of 2022. To try to offset this, the authorities are in easing mode, with credit expansion and fiscal stimulus already exceeding 2020's levels. In the second half of 2022, we believe relaxing lockdowns and additional stimulus could produce a strong rebound. This prospect could drive a recovery in Chinese equities, which are currently trading on distressed valuations – FIGURE 2.

Figure 1. Lofty savings rate = potential consumption

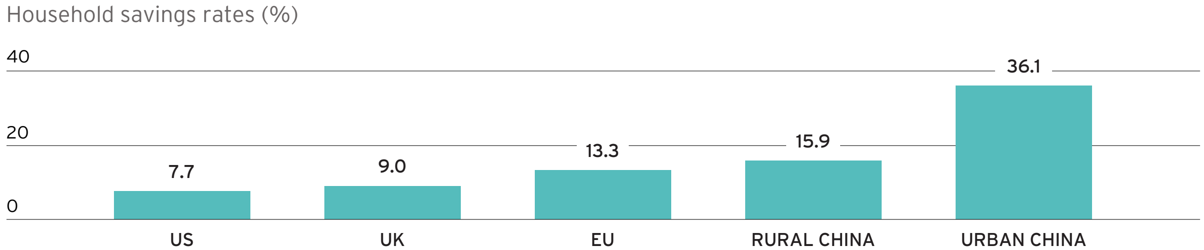
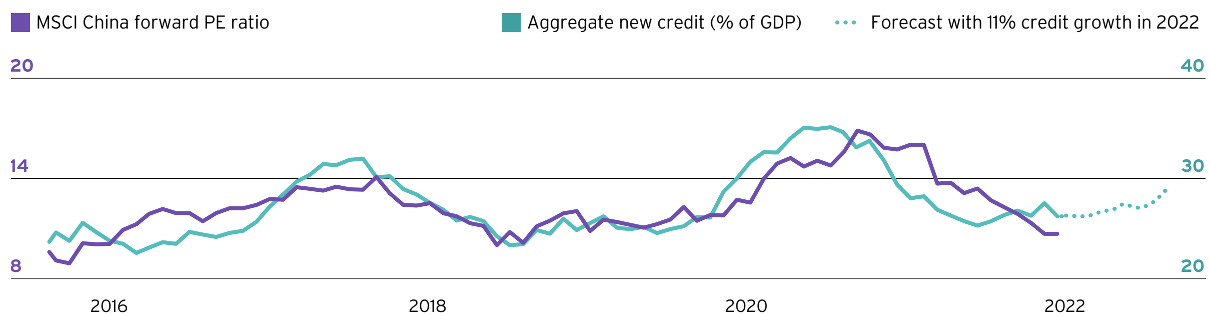


Chart shows net household saving as a percentage of household net disposable income. Source: Haver Analytics, as of May 2021.

Figure 2. Credit expansion may lead equity valuation recovery



Source: Bloomberg, as of 17 May 2022. Past performance is no guarantee of future returns. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only. All forecasts are expressions of opinion, are subject to change without notice, and are not intended to be a guarantee of future events. See Glossary for definitions.

Diversifying into Southeast Asia

China's tough lockdowns have reinforced another key dimension of our G2 polarization thesis. We believe US-China polarization will benefit Southeast Asian (SEA) economies, as they stand to win more business from many developed nations diversifying their supply chains away from China. At the same time, we see SEA doing more business with China.

Factory shutdowns and transport restrictions amid China's lockdowns have highlighted the supply chain vulnerability that heavy reliance on China can cause, especially if Chinese policy becomes less predictable. Some parts suppliers to leading tech companies and electric vehicle makers, for example, are adding more capacity in SEA and India to mitigate China-related risks.

Unlike in China, SEA's economic recovery from COVID shutdowns is well underway. Given its reliance on tourism, SEA may see further recovery in services, as restrictions on foreign visitors relax. Philippines and Thailand were among the earliest to reopen their borders, followed by Singapore, Vietnam, Indonesia and Malaysia. Despite bouncing from near zero, visitor numbers are still below 10% of 2019 levels, indicating further recovery potential.

Lastly, major commodity exporters such as Indonesia and Malaysia are benefiting from higher commodity prices induced by Russia-Ukraine conflict. Indonesia has the world's largest nickel reserves, a key material for electric vehicle batteries, and is attracting investments from leading battery makers. Manufacturing exports have surged more than 60% versus pre-COVID levels. Meanwhile, Malaysia is the main oil exporter in Asia, while Singapore is the major refiner.

"What should I do now?"

We observe that global investors frequently have too little portfolio exposure to Asia – or none. As economic power continues to shift eastwards, we think this will prove an increasingly expensive mistake. We also believe that today's market conditions may offer a potential opportunity to rectify this.

Given Chinese equities' distressed valuations, we see rebound potential this year. Among the areas we find most attractive are those linked to economic reopening, green energy and technology more broadly. Across Southeast Asia, we favor investments linked to tourism, natural resources and industrial diversification away from China. The rise of Asia is set to continue. Is your portfolio oriented to this unstoppable trend?

2.6

Cyber security: Defense for data and portfolios

JOSEPH FIORICA
Head of Global Equity Strategy

Geopolitical, economic and market developments have reinforced our investment case for cyber security in 2022. We reiterate the potential opportunity for portfolios.

- Ongoing digitalization makes the protection of data and networks ever more critical
- The Russia-Ukraine conflict has highlighted the cyber threats to infrastructure and national security
- Just as cyberattacks may escalate over coming years, greater investment may lead to innovative defenses
- We see potential investment opportunities in cloud, identity and data security specialists

Digital technologies are transforming the world around us. Thanks to their deployment over recent decades, we can now do business, consume and communicate more efficiently than ever before. Nevertheless, we believe that the digital revolution still has far to go.

Over the coming years and beyond, we expect digitalization to disrupt and improve many other aspects of our lives. Autonomous vehicles, fully smart homes and widespread remote surgery are just some of the advances we envisage. Enabled by ever-faster connectivity, these developments will see a massive increase in the amount of data that needs to be stored and analyzed in cloud facilities.

As we become ever more reliant on digital networks and data, the more important protecting them becomes. Attempts by cybercriminals to thieve, extort ransom and inflict malicious damage are likely to intensify. Sophisticated cyber defenses are thus integral to protecting our data, wealth, economic activity and national security. We believe the need for continuous spending here makes cyber security an unstoppable trend.

Cyber warfare

Times of conflict have frequently seen new technologies develop rapidly, as combatants strive to gain the upper hand. The emergence of armored tanks in World War One, jet engines and radar in World War Two, and unmanned drones during post-9/11 counterinsurgency operations are prominent examples. The Russia-Ukraine war could spur cyber security innovations.

The conflict has already seen cyber warfare waged alongside the armed struggle, with both state and non-state actors targeting websites and networks. A report by Microsoft's Digital Security Unit highlighted 40 destructive attacks between 23 February to 8 April 2022. Over 40% of these targeted organizations in critical infrastructure sectors – including nuclear, other energy and communications – with almost one-third aimed at Ukrainian government organizations.

We believe that the longer the war continues, the likelier that escalation of such cyberattacks becomes. Not only might such activity be directed at Ukrainian targets, but also toward countries that are standing with Ukraine. Retaliatory moves could then follow. Rather than more of the same, such cyberattacks could prove ever more creative, as might the defenses against them.

Increased investment will be an important driver of cyber innovation. Just as we expect greater military spending in the years ahead, we believe it vital that governments and private organizations invest more in state-of-the-art cyber defenses during wartime and peacetime.

Cyber security's defensive qualities

Amid a bear market in the tech-heavy Nasdaq 100 Index, cyber security has fallen 19.9% to date. It has outperformed most other secular growth themes in a challenging environment for all such equities.

The outbreak of war in Ukraine in late February catalyzed a partial recovery in the cyber sub-sector, as investors recognized its services' importance amid the conflict. However, a challenging first quarterly earnings season in early May led to a broad selloff across the enterprise software landscape, with cyber firms falling in concert. Going forward, however, we continue to view spending on cyber security as a more durable segment of corporate tech budgets. We also expect a peak in long-term interest rates this year to help drive recovery in high-quality growth equities broadly, including cyber security.

Figure 1. Cyber security has outpaced other technology

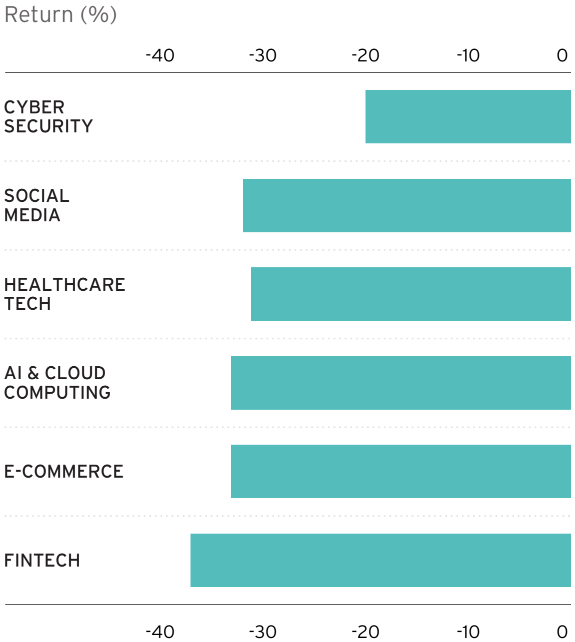
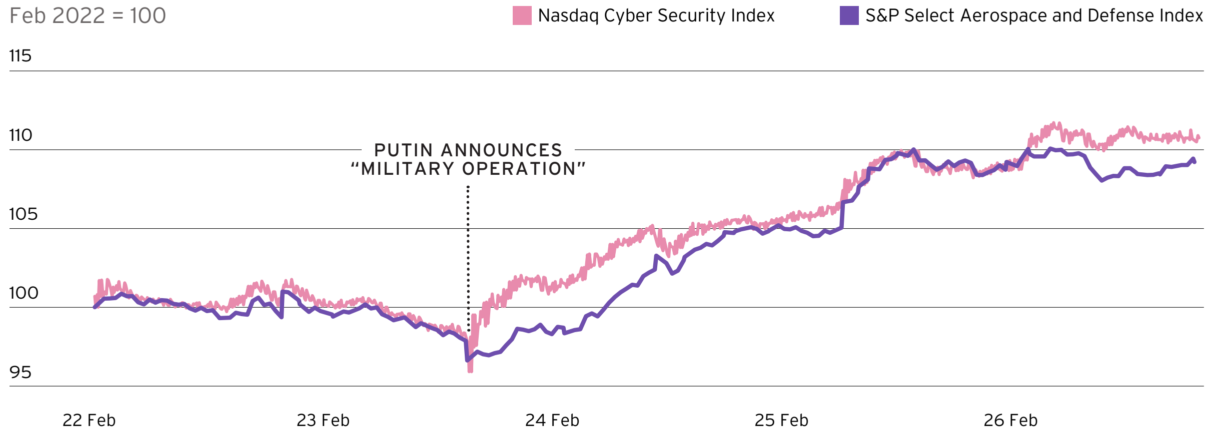


Chart shows the performance of various digitalization sub–themes between 1 Jan and 31 May 2022. Cyber security is represented by the NASDAQ Cyber Security Index, healthcare tech by the ROBO Global Healthcare Technology and Innovation Index, social media by the Solactive Social Media Index, fintech by the Indxx Global FinTech Thematic Index, AI & cloud computing by the Indxx Artificial Intelligence and Big Data Index; e–commerce by the Solactive E–commerce Index. Source: Have Analytics and Bloomberg as of 1 Jun 2022. Past performance is no guarantee of future returns. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only. Past performance is no guarantee of future returns. Real results my vary.

Figure 2. Traditional defense and cybersecurity's wartime rally



Source: Haver Analytics and Bloomberg, as of 29 Apr 2022. Past performance is no guarantee of future returns. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only. Past performance is no guarantee of future returns. Real results may vary.

"What should I do now?"

Geopolitical, economic and market events in 2022 have reinforced our case for including cyber security in portfolios.

The global economic slowdown is set to make earnings growth harder to achieve for many companies. However, since we see cybersecurity spending as a non-discretionary item, we believe the sector can better withstand economic pressures. The sector's earnings profile has proved more defensive than technology companies more broadly in recent years. Cybersecurity equities' relatively robust performance this year also speaks to their quality growth and defensive characteristics.

Among cyber security equities, we prefer specialists in cloud, identity and data security. These offer potentially strong growth as ever more sensitive data shifts to centralized third-party servers. Meanwhile, leading firewall vendors who historically specialized in on-site server protection face disruption if they cannot reinvent themselves for today's cloud-based ecosystem.

The state of the world today calls for increased cyber defenses. Likewise, we believe that cyber equities could help bolster portfolio defenses.

2.7

The fintech revolution has far to go

WIETSE NIJENHUIS
Senior Equity Portfolio Manager, Citi Investment Management

CHARLIE STUART
Equity Research Analyst and Portfolio Manager, Citi Investment Management

While fintech equities have weakened this year, the sector's long-term prospects still look robust. We believe investors should consider adding exposure to this unstoppable trend.

- Rising interest rates have hit fintech equities, along with other growth investments
- Consumers and businesses continue to embrace fintech services
- Innovation in fintech remains in good shape
- The payments sub-sector in particular offers potential opportunities, in our view

Alongside many other growth-oriented sectors, fintech equities have struggled in 2022 amid rising rates and geopolitical uncertainty. Fintech as a sector is down 46% year-to-date, while the payments sub-sector has shed 31% – FIGURE 1.

In our view, fintech equities are now factoring in a very weak macroeconomic outlook. Slower GDP growth does indeed impact fintech companies in two main ways. For fintech services providers, lower corporate spending on upgrading financial infrastructure reduces expansion possibilities. For payments providers, the dominant driver is consumer health. This impacts areas such as payment amounts, transaction volumes and new account activations.

While pressing macroeconomic and geopolitical challenges are unlikely to be fully resolved any time soon, we believe fintech's longer-term underpinnings are robust. The pandemic has accelerated the already-powerful shift toward digital payments, online wealth management and digital lending, with user trust growing further.

The state of innovation also bodes well. Large amounts of new capital are flowing to firms at the cutting-edge of fintech development. Global investment reached $210bn in 2021, $115bn of which via venture capital, according to a report by KPMG.[1] We believe this may prove especially supportive for areas such as data analytics within fintech, payments and accounts, and crypto and blockchain technologies.

[1] Pulse of Fintech H2'21, Global Analysis of Investment in Fintech, KPMG International.

Figure 1. Fintech and payments' recent struggle

Chart shows the price of the Indxx Global Fintech Thematic Index and the Prime Mobile Payments Index from the start of 2017 to May 2022. Source: Haver Analytics and Bloomberg, as of 12 May 2022. Past performance is no guarantee of future returns. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only. See Glossary for definitions.

Even amid slowing economic conditions, we believe fintech companies can continue to drive important process improvements for consumers and businesses, leading to benefits such as greater convenience, lower costs and better profit margins. This is happening in diverse sectors including retail, restaurants, e-commerce and financial services, with fintechs also gaining market share from traditional players in these sectors.

"What should I do now?"

We maintain our strong conviction that fintech remains an unstoppable trend – see Fintech is redefining financial services in **Outlook 2022**. The large drawdown from 2021's peak has led to a meaningful reset in valuations, which have retreated from their 2020 apex to pre-pandemic levels. Particularly for investors who are underweight or have no fintech exposure, we believe current levels represent a potentially attractive entry-point.

Of course, there are risks to our positive case. If interest rates continue to rise – contrary to our call for a peak this year – it would put further pressure on fintech and growth-orientated equities more generally. Other risks include a weaker than anticipated macro backdrop, unfavorable regulatory changes, the deceleration of e-commerce's advance over in-store activity and a high-profile cyberattack on digital wallets.

Ultimately, however, we believe the greatest risks for investors arise from not having long-term exposure to this unstoppable trend and from having excessive exposure to its likely victims.

2.8

Alternative investments in the world of digitalization

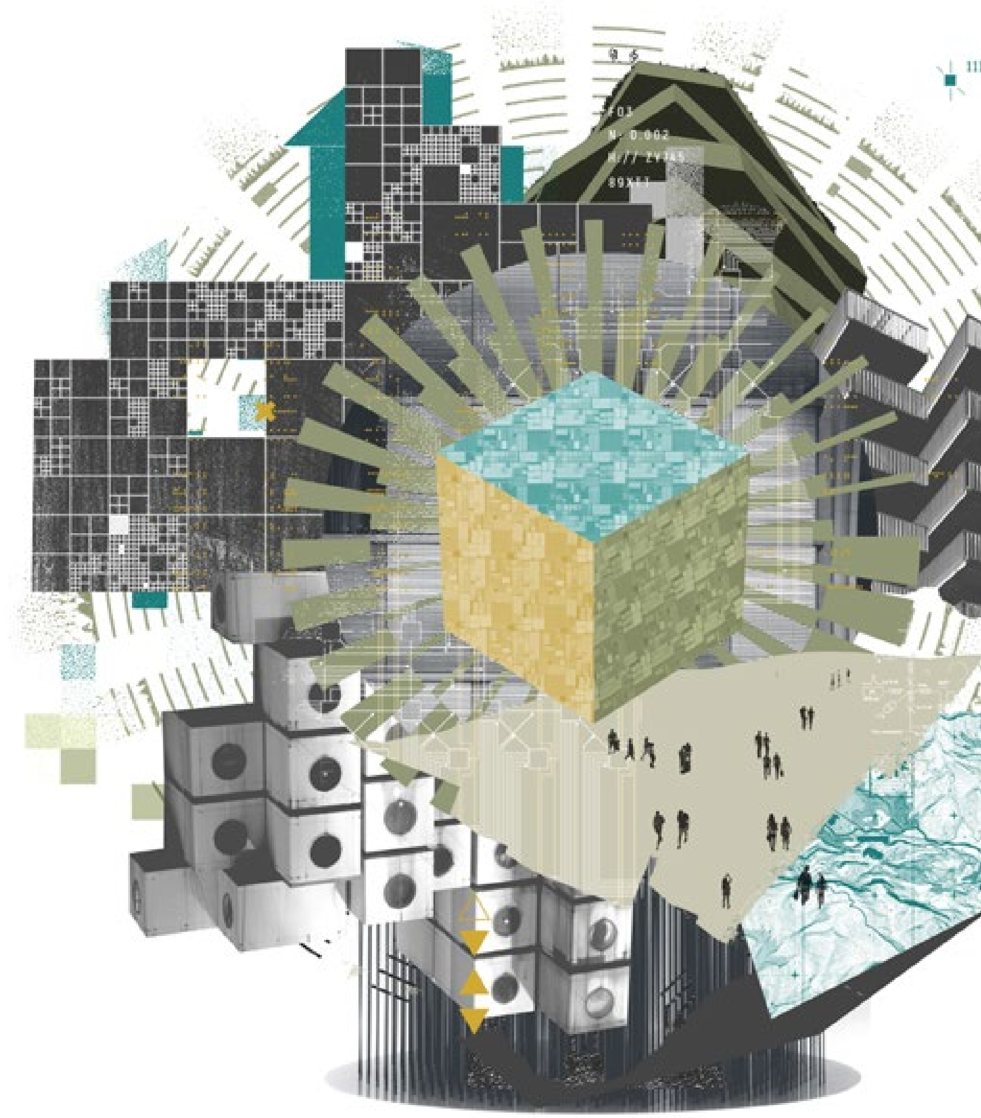
D A N I E L O ' D O N N E L L
Global Head of Alternative Investments

J E F F R E Y L O C K E
Global Head of Private Equity and Real Estate Research and Management

M I C H A E L S T E I N
Global Head of Hedge Fund Research and Management

Digitalization equities have sold off along with many other secular growth themes in 2022. But we believe the long-term trend remains well intact and seek some exposure through certain alternative strategies.

- Valuations of digitalization-related companies have come under pressure amid the broad sell-off in public growth equities
- We see many suitable clients with insufficient exposure to private equity and hedge funds
- In digitalization-related private equity, we see potential opportunities in venture capital and growth equity strategies
- We also favor long/short equity hedge fund strategies, where the market sell-off may be creating better entry points for skilled managers



Digital technology is becoming ever more ubiquitous. But while we are surrounded by software, apps, artificial intelligence, robotics and the like, opportunities to invest in digitalization leaders present and future are much scarcer. Many companies and strategies are only available to a small minority of suitable investors who are willing and able to take on illiquidity, duration and other risks.

Private opportunities

The venture capital and growth equity ecosystem is the financial engine of digital innovation. It channels money from sophisticated investors to the world's most promising companies. Venture capital managers incubate companies from initial idea and product development through all their expansion stages, typically called early-stage to late-stage venture capital. Growth managers select from some of the most successful private technology companies and support significant scale expansion. This helps those firms to globalize, disrupt incumbents and potentially become public companies.

Although somewhat insulated from short-term economic shocks and equity market volatility, late-stage private companies have felt some impact amid the broad sell-off in public growth equity. Exits have slowed: the first quarter of 2022 saw only 14 traditional initial public offerings (IPOs) completed, of which just five were technology companies.[1] That said, deal-making activity and pricing has remained well above pre-2021 levels, albeit down from the peak levels of 2021. In the first quarter of 2022, $108.5bn of investment activity by venture capital and growth managers occurred, versus $131.9bn a year earlier. However, that quarter was still approximately 53% higher than the five-year average from 2017 to 2021, where the average quarterly deal activity was $71.0bn – FIGURE 1.

[1] Pitchbook; Data as of 1 Apr 2022

Figure 1. Deal-making activity is still healthy

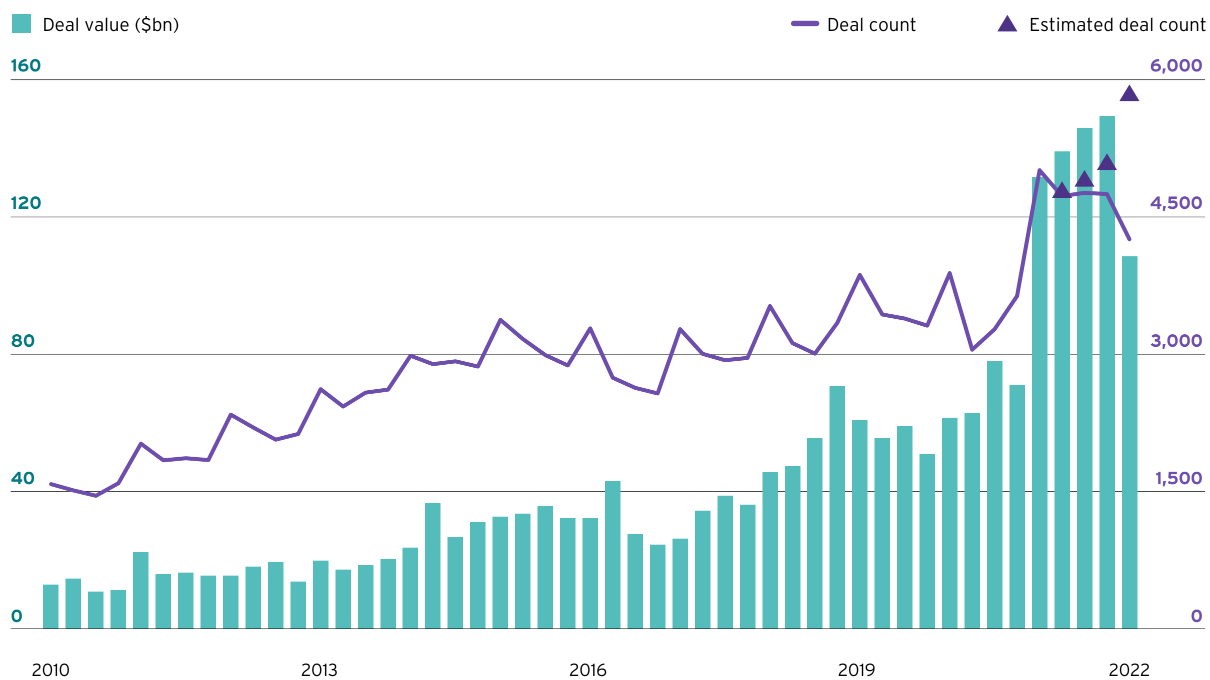
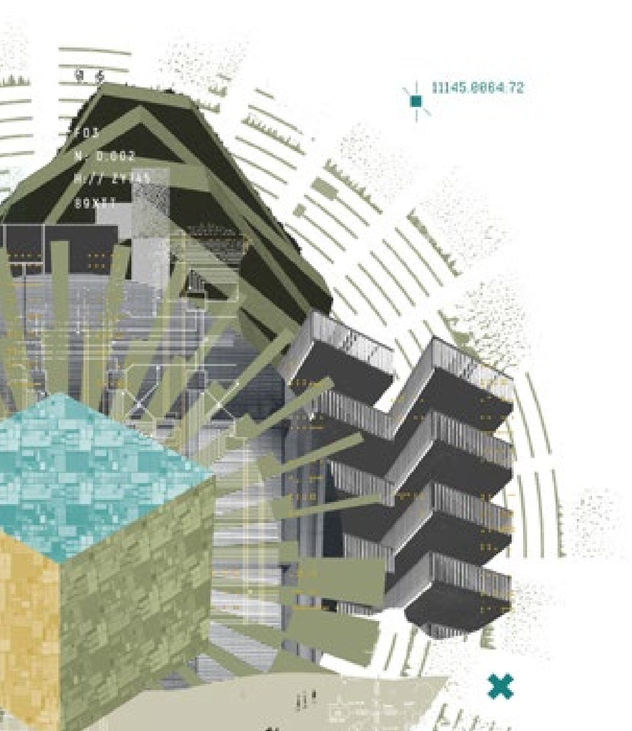


Chart shows US venture capital and growth equity deal activity by quarter. Source: Pitchbook, as of 31 Mar 2022.

Although a pricing reset is seen first in the pre-IPO sector, continued weakness in public technology markets such as the steep decline in software and software-as-a-service multiples will likely filter down to earlier stages of private investment.

At the earlier stages of corporate development, though, valuation is less important than factors such as total addressable market, product-market fit, market leadership and growth rate. Specifically, seeking to mitigate the technology risk inherent in new products and services, we focus on late-stage venture capital strategies in the broad technology and software sectors, where execution and product-market fit are the key drivers of returns.



Exploiting dispersion in public markets

While technology has helped drive equity markets higher in recent years, the sector is not a one-way street. Stark differences in corporate prospects can translate into wide divergences in equity performance.

Within the S&P 500 Technology Index, the average gap between first and third quartile returns for companies has been 37% over the past five years.[2] This dispersion provides potential opportunities for long/short equity hedge funds, which buy shares they expect to rise and sell short those they expect to fall. Long/short strategies historically have had a lower sensitivity to market movements and thus add diversification potential to a portfolio.

Recent market declines have left digitalization company valuations looking more attractive. Price/sales multiples for the highest growth software firms – those whose revenues are increasing more than 30% annually – have fallen from a 2021 high of almost 35 to 11, as of 1 March 2022. This is despite their continued business growth and improving profitability.[3] Globally, software represents 43% of technology capital expenditures.[4]

We believe that specialized managers can apply their analytical expertise to identify positions and then exploit high levels of equity market volatility to seek more favorable entry points.

"What should I do now?"

We observe that many suitable clients either lack enough exposure to private equity via venture capital and growth equity, as well as hedge funds, or have none. Many of the same clients may also benefit from increased exposure to the unstoppable trend of digitalization. Such investors should compare their portfolios to the strategic asset allocation we customize for them using our own methodology. They should then consider ways to align them.

While today's market environment is challenging for cutting-edge technology firms of every type, we also believe that it may create the conditions for strong returns and efficient diversification going forward.

[2] Bloomberg, as of 30 Dec 2021. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary.

[3] Thomson Reuters; Data as of 1 Mar 2022.

[4] Gartner; Data as of April 2022

2.9

Greening the world: A new level of urgency

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Energy security concerns have boosted fossil fuel investments in recent months. But the case for sustainable alternatives has strengthened even further

- Fossil fuel supply disruption in 2022 has further underlined the economic imperative of the green energy transition, with cheap fossil fuels unlikely to return soon
- Globally, renewables' generating capacity continues to increase, although much more is needed
- While fossil fuel investments may continue to strengthen near term, we caution that the longer-term risks to this sector are great
- We believe the unstoppable trend of greening the world will accelerate as new ways of doing business become not only more sustainable but also more affordable than business as usual

Has the world's transition to clean energy suffered a setback in 2022? Superficially, it might appear so. The continued reopening of the global economy and Russia's invasion of Ukraine have contributed to acute global energy shortages. Faced with potential blackouts and struggling consumers, securing national energy supplies may seem like a more pressing priority than striving for a sustainable future.

In China, daily coal production has hit record levels. The European Union – traditionally the trailblazer for green energy – has said that it too will burn more coal than previously forecast over the next decade as it seeks to wean itself off Russian oil and gas. In the US and globally, oil and gas suppliers are ramping up output while investing more in fresh exploration and extraction.

Nevertheless, the case for the green energy transition is more urgent than ever. Climate risks continue to mount. For the month of April 2022, average carbon dioxide levels exceeded 420 parts per million for the first time ever. Climate scientists have also warned of a significant chance that the average global temperature in any year between now and 2026 will be 1.5°C above pre-industrial levels. A sustained breach of this threshold could have highly damaging effects upon sea levels, biodiversity and agriculture.

Events in 2022 have also underlined the economic imperative for the clean energy transition. Skeptics have often claimed the likes of solar and wind energy were unreliable compared to fossil fuels. Even if this were once true, the situation has now reversed.

Figure 1. Alternatives have become the cost-efficient option

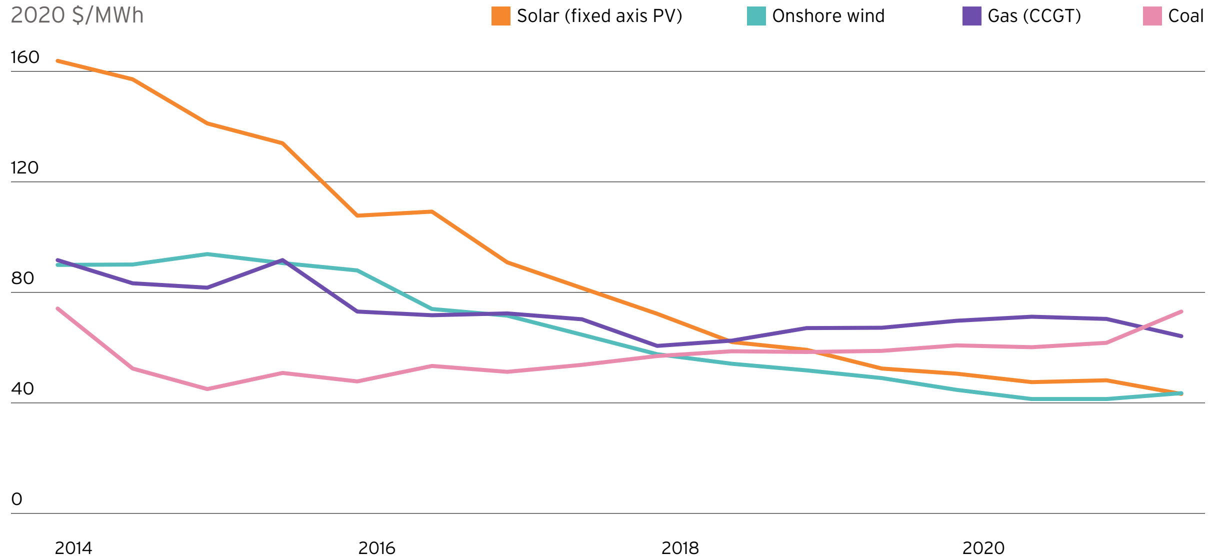


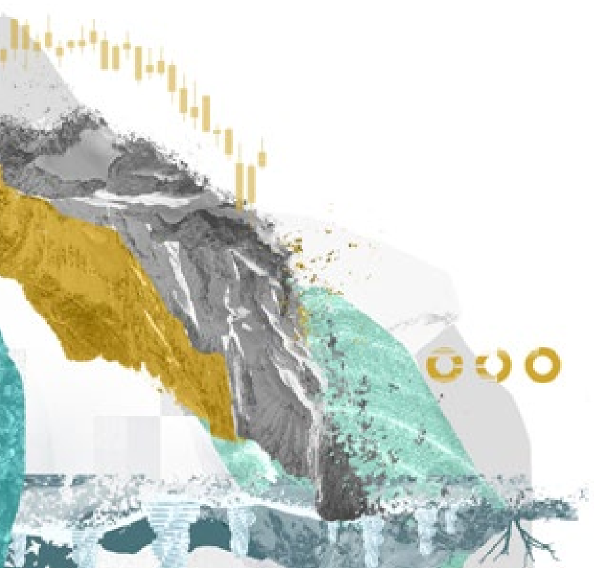
Chart shows the price per Source: Bloomberg, as of 20 May 2022.

The production price of renewables is typically now known far in advance. Contrast this with the spike in natural gas input prices for German power generators, which hit a peak of 1200% in March above prior year levels. Reliance on weather conditions seems much less precarious than reliance on geopolitical stability.

Crucially, the cost of installing renewable energy generation facilities is now more predictable than for fossil fuel varieties. With renewables, the future costs are relatively visible. Life-cycle new plant alternative energy costs have fallen precipitously and were below the cost of coal and combined cycle power plants even before the war in the Ukraine drove up fossil fuel input costs – **FIGURE 1**.

As well as having highly volatile input costs, by contrast, new fossil fuel plants may feasibly be shut down before the end of their originally envisaged useful lifespan owing to new regulations or other environmental pressures. This means fewer years across which to spread construction prices, decreasing such projects' potential total return. Tellingly, new oil rig deployment is far below levels during previous periods of high oil prices. This implies that oil companies view this as a risky time to add new capacity. It also makes a rapid return to lower prices less likely.

Not only has the case for the green energy transition become more compelling in 2022, there has also been progress toward it. Having reached an all-time high in 2021, global renewables' generating capacity is expanding further in 2022. Some of the strongest growth is occurring in solar, where fresh records may also follow in 2023. Policy support is a key driver here. For example, Germany has responded to the conflict-driven energy squeeze by ramping up renewables' production and setting a goal for 100% renewable electricity by 2030. If, as we expect, there is no return of cheap fossil fuel prices any time soon, it may spur further innovation and a ramping up of renewables' capacity.



"What should I do now?"

After years of underperformance, many fossil fuel-related investments have strengthened in 2022. With current high energy prices and potentially high returns from fossil fuel projects in the short term, we believe this counter-trend rally may continue – see Overcoming supply shortages. That said, we caution that such investments come with outsized risks, including intensifying competition from renewables, tightening environmental regulation and eventual geopolitical stabilization. In the long term, fossil fuel projects are in danger of becoming stranded assets: subject to premature write-off or even becoming outright liabilities.

The case for greening the world via a transition to sustainable energy is more urgent than ever. We believe this unstoppable trend will accelerate over the coming years. Companies supporting the transition to renewable energy are likely to be significant winners over the medium term and bear much less long-term risk. However, still-high valuations may limit short-term potential upside opportunities. The current high value of fossil fuel investments, and the high degree of volatility and indiscriminate selling, may offer very attractive entry points for investors with longer time horizons and an eye on the future.

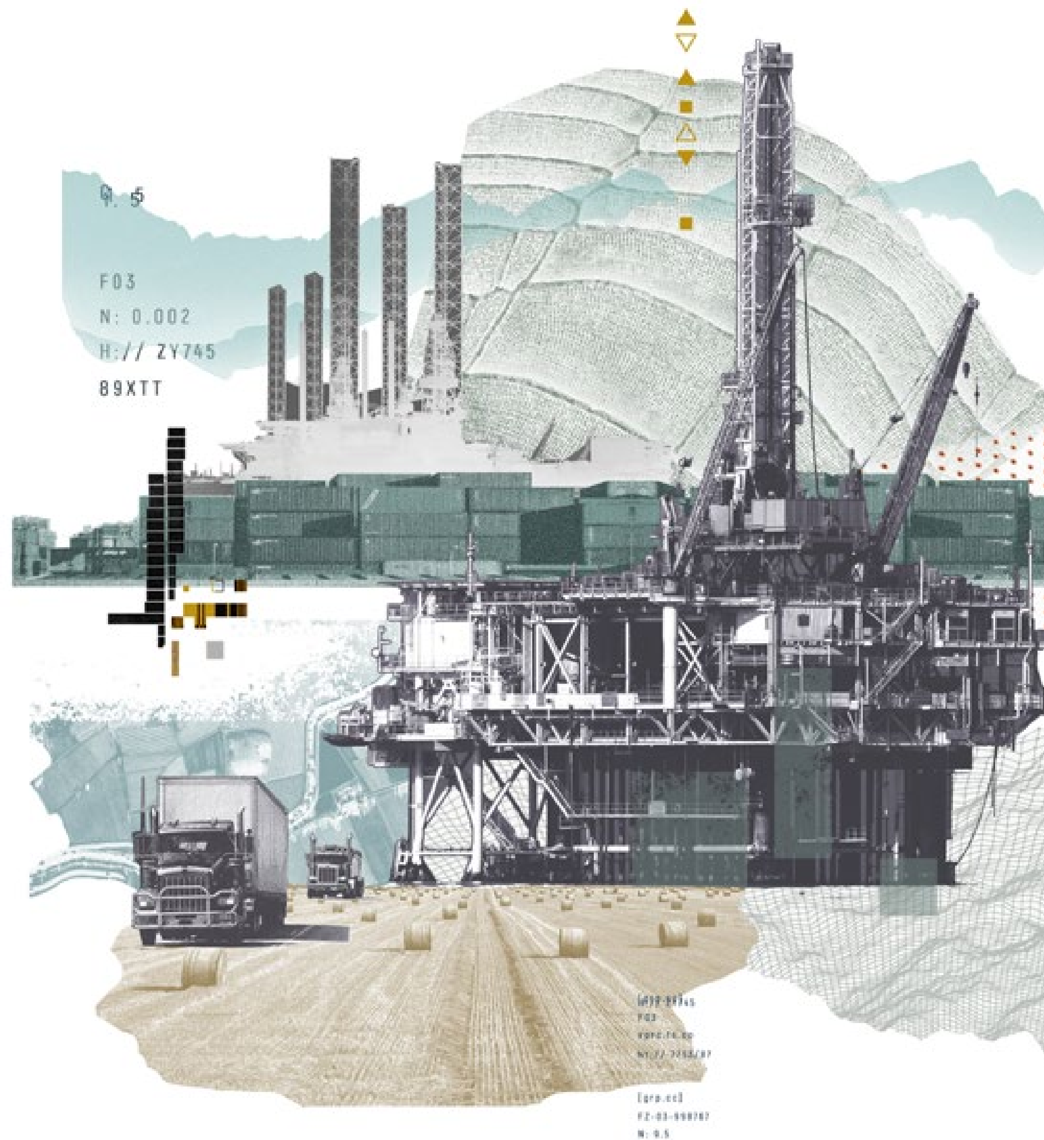
2.10

Overcoming supply shortages

STEVEN WIETING
Chief Investment Strategist and Chief Economist

The Russia-Ukraine war has generated shortages in global commodities and further dislocations in supply chains. Other producers will have to fill the gap. Investing to address this challenging situation may offer a portfolio hedge.

- Successive shocks have driven commodity prices sharply higher since 2020
- The resulting economic, geopolitical and social instability may linger for some time
- Capital will have to be reallocated to help solve for this. Among the potential opportunities we see are commodity producer and oil services equities



You don't know what you've got till it's gone. For much of the last decade, the world enjoyed moderate and often falling commodity prices – FIGURE 1. No longer, though. Since early 2020, the IMF's Index of Primary Commodities – which tracks the prices of a broad range of food, industrial inputs and energy products – has risen by 170%. This has far-reaching implications for consumers, businesses and investors globally.

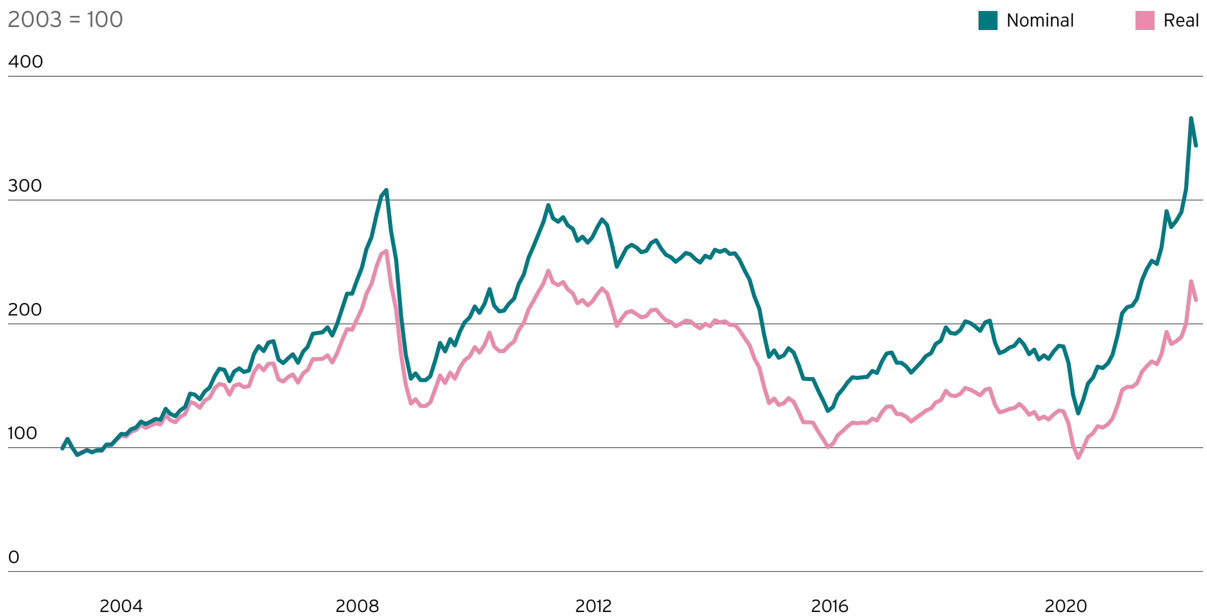
The new world of shortages

Today's commodity shortages have their origins in the COVID economic shutdowns. Flush with government stimulus cash and unable to spend it on many services, consumers' demand for goods ballooned. At the same time, supplies of almost everything suffered owing to lockdown restrictions. While both these distortions have now eased, full normalization is a far way off. Russia's ongoing invasion of Ukraine has caused a major new disruption.

Both Russia and Ukraine are major commodity suppliers. Together, their agricultural output accounts for around one-tenth of calories traded on world markets. Ukraine currently has millions of tons of unsold grain that the war is preventing it from exporting, while a new harvest is about to begin. The ability of farmers elsewhere to make up the shortfall is under threat from the suspension of fertilizer exports from Russia, the world's largest fertilizer producer.

The war and the resulting sanctions' disruption to energy supplies is also causing intense pain.

Figure 1. The rapid run-up in commodity prices

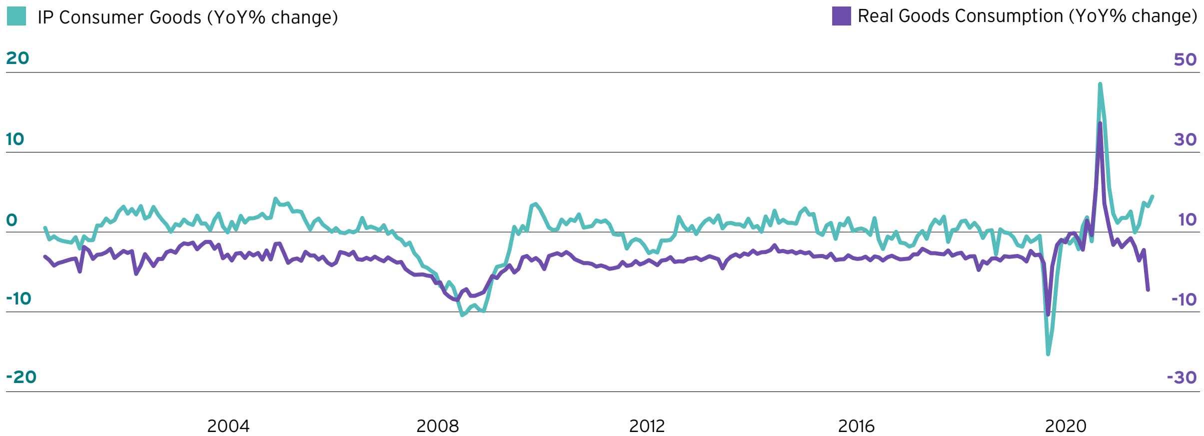


Source: Haver, as of 20 May 2022.

The European Union has committed to cease taking Russian oil exports by the end of this year. It is also aiming to cut natural gas imports by two-thirds within a similar timeframe. Amid soaring energy prices, many governments are having to intervene to help struggling households by way of subsidies.

The economic impact is mounting. Already, commodity shortages have dampened growth and raised input costs. More spending power is going toward putting food on the table, heating and cooling homes and fueling cars. Naturally, this means less to spare for discretionary items from meals out to gadgets to overseas trips. Most apparent day-to-day are the inflationary effects, with rates of consumer price inflation in many advanced economies not seen for a generation or more. If the US Federal Reserve and other central banks raise interest rates excessively in response, recession becomes a real danger.

Figure 2. Consumer demand decelerating, supply accelerating



Source: Haver, as of 20 May 2022

Figure 3. Severe supply chain pressures coming off the boil

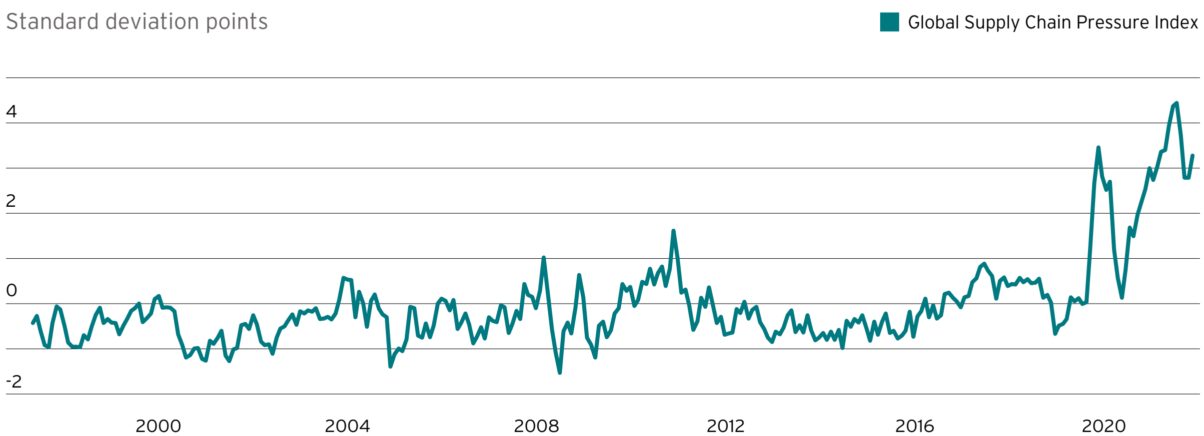


Chart shows the Global Supply Chain Pressure Index. Source: Haver, as of 25 May 2022.

Commodity disruption may persist

Neither accelerating inflation nor recession are our base-case scenario. And we see some stabilization in supply and demand in the world's largest economy – **FIGURE 2.** Globally, supply chain disruption appears to be easing – **FIGURE 3.** We believe that the economic expansion can be sustained, with US inflation falling toward 3.5% in 2023 – see Investing in the afterglow of a boom. However, none of this is to say that we necessarily expect an end to commodity disruption either in 2022 or 2023.

Put simply, we see commodity shortages as a likely source of instability – economic and otherwise – for some time to come. In late May, Russian President Vladimir Putin offered to unblock Ukrainian food and fertilizer exports in return for an easing of sanctions on his country. The longer that households globally suffer high food and energy prices, the more potent this bargaining chip becomes.

Food scarcity in 2011 set off the violent uprisings and regime change of the "Arab Spring." A sustained cost-of-living crisis could also radicalize voters in advanced economies, strengthening the hand of populist politicians. This will not have been lost on Putin and other autocrats whose domestic industries are key producers.

Both the COVID pandemic and the Russia-Ukraine conflict have highlighted the world's vulnerability to supply shocks. Companies and governments alike are reconsidering their dependency on materials, products and logistics over which they have little or no control. While we do not expect a wholesale drive toward autarky, the trend toward onshoring production and supply chain diversification – see The rise of Asia: Accelerating G2 polarization – is likely to continue. The world's reliance on Taiwanese semiconductors or Chinese rare earth metal production should prompt deep reflection, for example.

As painful as commodity shortages are, they can sometimes yield benefits too. The oil shocks of the 1970s, for example, led to less oil-dependent industries and more fuel-efficient vehicles. For versatile companies, this proved an opportunity, as in the case of Japanese carmakers who captured and then retained a share of the US market. We believe today's high fossil fuel prices will intensify the shift toward sustainable alternatives – see Greening the world. The longer challenging conditions persist, the more it may spur innovation.

Figure 4. High crude prices can benefit explorers and producers

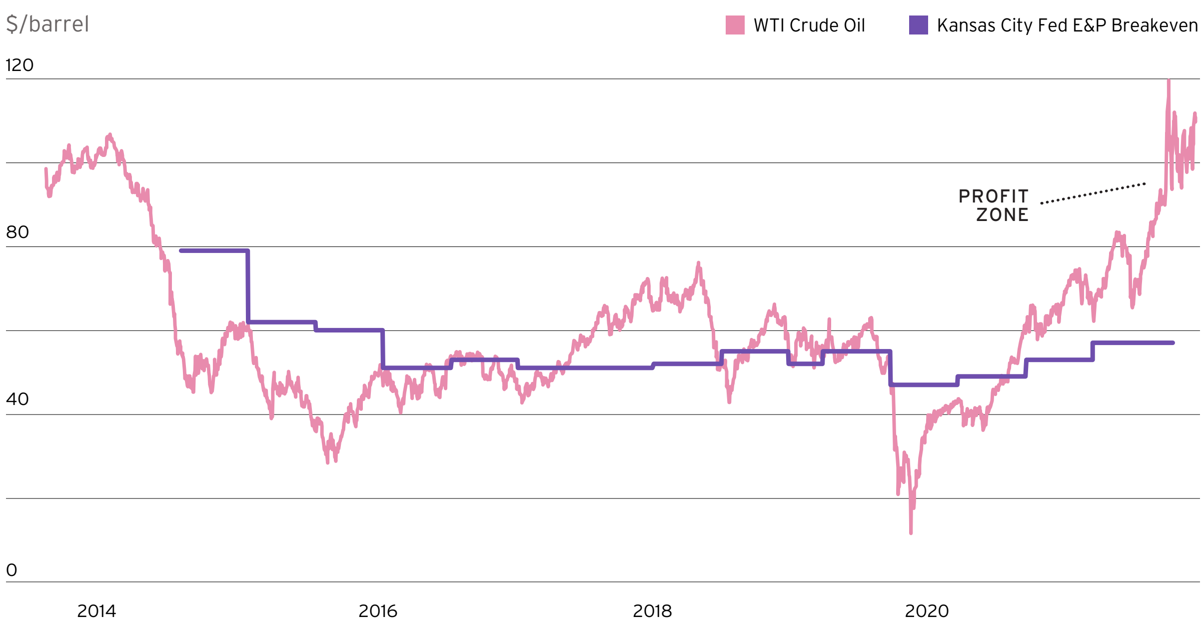


Chart shows West Texas Intermediate crude oil price alongside the Kansas City Federal Reserve's estimate of exploration and production breakeven prices. Source: Haver, as of 31 May 2022. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Past performance is no guarantee of future results. Real results may vary.

"What should I do now?"

Commodity shortages and price volatility have deepened the uncertainty facing investors in 2022. The potential for further dislocation – be it from the Russia-Ukraine conflict or elsewhere – remains significant. At the same time, we stress that commodity shortages do not represent an "unstoppable trend." Market forces should ultimately help to rebalance the situation. However, this may take longer than a year or two.

We believe portfolios need to reflect the potential for ongoing shortages over this period. Commodity producers and oil services equities offer a potential hedge against inflation while their output growth is a needed contributor for world stability. Such firms have the potential to generate stronger earnings in this environment – **FIGURE 4**. We therefore have established a tactical overweight in this area. As you can see in our detailed thematic, tactical asset allocation – see Our positioning – we hold some basic inflation hedges in the form of gold and inflation-linked US Treasuries. However, the larger opportunity, we believe, is to be gained from investing in the expanded output of global commodity producers and oilfield services firms, where we have a 4% overweight. These firms generally pay dividends and grow their profits with rising production. Over time, we believe this is superior to simply investing in commodities futures that don't reflect gains in the volume of commodities produced.

Glossary

ASSET CLASS DEFINITIONS:

Cash is represented by US 3-month Government Bond total returns, measuring the US dollar-denominated active 3-month, fixed-rate, nominal debt issues by the US Treasury.

Commodities asset class contains the index composites — GSCI Precious Metals Index, GSCI Energy Index, GSCI Industrial Metals Index, and GSCI Agricultural Index — measuring investment performance in different markets, namely precious metals (e.g., gold, silver), energy commodity (e.g., oil, coal), industrial metals (e.g., copper, iron ore), and agricultural commodity (e.g., soy, coffee) respectively. Reuters/Jeffries CRB Spot Price Index, the TR/CC CRB Excess Return Index, an arithmetic average of commodity futures prices with monthly rebalancing, is used for supplemental historical data.

Direct Private Investments or **Direct Investments** imply the purchase or acquisition of a stake or controlling interest in a business, asset or special purpose vehicle/instrument by means other than the purchase of shares.

Emerging Markets (EM) Hard Currency Fixed Income is represented by the FTSE Emerging Market Sovereign Bond Index (ESBI), covering hard currency emerging market sovereign debt.

Global Developed Market Corporate Fixed Income is composed of Bloomberg Barclays indices capturing investment debt from seven different local currency markets. The composite includes investment grade rated corporate bonds from the developed-market issuers.

Global Developed Market Equity is composed of MSCI indices capturing large-, mid- and small-cap representation across 23 individual developed-market countries, as weighted by the market capitalization of these countries. The composite covers approximately 95% of the free float-adjusted market capitalization in each country.

Global Developed Investment Grade Fixed Income is composed of Bloomberg Barclays indices capturing investment-grade debt from 20 different local currency markets. The composite includes fixed-rate Treasury, government-related, and investment grade rated corporate and securitized bonds from the developed market issuers. Local market indices for US, UK and Japan are used for supplemental historical data.

Global Emerging Market Fixed Income is composed of Bloomberg Barclays indices measuring performance of fixed-rate local currency emerging markets government debt for 19 different markets across Latin America, EMEA and Asia regions. iBoxx ABF China Govt. Bond, the Markit iBoxx ABF Index comprising local currency debt from China, is used for supplemental historical data.

Global High Yield Fixed Income is composed of Bloomberg Barclays indices measuring the non-investment grade, fixed-rate corporate bonds denominated in US dollars, British pounds and euros. Securities are classified as high yield if the middle rating of Moody's, Fitch, and S&P is Ba1/BB+/BB+ or below, excluding emerging market debt.

Ibbotson High Yield Index, a broad high yield index including bonds across the maturity spectrum, within the BB-B rated credit quality spectrum, included in the below-investment-grade universe, is used for supplemental historical data.

Hedge Funds are composed of investment managers employing different investment styles as characterized by different subcategories – HFRI Equity Long/Short: Positions both long and short in primarily equity and equity derivative securities; HFRI Credit: Positions in corporate fixed income securities; HFRI Event Driven: Positions in companies currently or prospectively involved in a wide variety of corporate transactions; HFRI Relative Value: Positions based on a valuation discrepancy between multiple securities; HFRI Multi Strategy: Positions based on realization of a spread between related yield instruments; HFRI Macro: Positions based on movements in underlying economic variables and their impact on different markets; Barclays Trader CTA Index: The composite performance of established programs (Commodity Trading Advisors) with more than four years of performance history.

High Yield Bank Loans are debt financing obligations issued by a bank or other financial institution to a company or individual that holds legal claim to the borrower's assets in the event of a corporate bankruptcy. These loans are usually secured by a company's assets, and often pay a high coupon due to a company's poor (noninvestment grade) credit worthiness.

Preferred securities are a type of investment that generally offers higher yields than traditional fixed income securities, such as US Treasury securities or investment-grade corporate bonds. However, the higher yield comes with different risks attached.

Private Equity is an alternative investment class which at its most basic form is the capital or ownership of shares not publicly traded or listed on a stock exchange. Its characteristics are often driven by those for Developed Market Small Cap Equities, adjusted for illiquidity, sector concentration, and greater leverage.

Tax equivalent yield is the return that a taxable bond would need to equal the yield on a comparable tax-exempt municipal bond.

INDEX DEFINITIONS:

Bloomberg Emerging Markets USD Aggregate Bond Index is a hard currency Emerging Markets debt benchmark that includes fixed and floating-rate US dollar-denominated debt issued from sovereign, quasi-sovereign and corporate EM issuers.

Bloomberg Barclays Global Aggregate Bond Index is a flagship measure of global investment grade debt from 24 local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers.

Bloomberg Barclays US Corporate Bond Index measures the investment grade, fixed-rate, taxable corporate bond market. It includes US dollar denominated securities publicly issued by US and non-US industrial, utility and financial issuers.

Bloomberg Barclays US Treasury Index measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury. Bloomberg-JP Morgan Asia currency index is a spot index of the most actively traded currency pairs in Asia's emerging markets valued against the US dollar.

The **Bloomberg CMBS Investment Grade: Eligible for US Aggregate Index** measures the market of conduit and fusion CMBS deals with a minimum current deal size of $300mn. The index contains bonds that are ERISA eligible under the underwriter's exemption & excludes bonds that are not ERISA eligible.

Bloomberg US Aggregate Bond Index, or the **Agg**, is a broad base, market capitalization-weighted bond market index representing intermediate term investment grade bonds traded in the United States.

Employment Cost Index is a measure of the change in the cost of labor, independent of the influence of employment shifts among occupations and industry categories. The series includes changes in compensation, wages and salaries and in employer costs for employee benefits.

FTSE All-World Index is a stock market index representing global equity performance that covers over 3,100 companies in 47 countries starting in 1986.

Global Supply Chain Pressure Index integrates more than 27 variables from commonly used metrics, including data from global transportation costs and regional manufacturing surveys across seven economies, to track shifts in supply chain pressures from 1997 to the present.

ICE BofAML US Investment Grade Institutional Capital Securities Index (CIPS) tracks the performance of US dollar denominated investment grade hybrid capital corporate and preferred securities publicly issued in the US domestic market.

ICE BofAML US High Yield Institutional Capital Securities Index (HIPS) tracks the performance of US dollar denominated investment grade hybrid capital corporate and preferred securities publicly issues in the US domestic market.

Indxx Global Fintech Thematic Index is designed to track the performance of companies listed in developed markets that are offering technology-driven financial services which are disrupting existing business models in the financial services and banking sectors. The index has a base date of June 30, 2015 with an initial value of 1,000.

MSCI AC Asia ex-Japan Index captures large- and mid-cap representation across two out of three Developed Markets (DM) countries* (excluding Japan) and nine Emerging Markets (EM) countries* in Asia. With 1,187 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

MSCI AC World Index is designed to track broad global equity-market performance. It comprises the stocks of nearly 3,000 companies from 23 developed countries and 25 emerging markets.

MSCI China Index captures large- and mid-cap representation across China A shares, H shares, B shares, Red chips, P chips and foreign listings (e.g., ADRs). With 704 constituents, the index covers about 85% of this China equity universe.

MSCI Emerging Markets Index captures large- and mid- cap representation across 24 Emerging Markets (EM) countries. With 837 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

MSCI Emerging Markets (EM) Latin America Index captures large- and mid-cap representation across five Emerging Markets (EM) countries in Latin America. With 113 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

MSCI Global Alternative Energy Index includes developed and emerging market large-, mid- and small-cap companies that derive 50% or more of their revenues from products and services in alternative energy.

MSCI AC World Automobiles Index is composed of large- and mid-cap automobile stocks across emerging and developed countries.

MSCI World Information Technology Index tracks the large- and mid-cap IT segments across 23 developed markets countries.

MSCI ACWI World ex-USA Index covers large- and mid-cap representation across 22 of 23 Developed Markets (DM) countries (excluding the US) and 27 Emerging Markets (EM) countries. With 2,352 constituents, the index covers approximately 85% of the global equity opportunity set outside the US.

MSCI World Index covers large- and mid-cap equities across 23 Developed Markets countries. With 1,603 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

MSCI World Momentum Index is designed to reflect the performance of an equity momentum strategy by emphasizing stocks with high price momentum, while maintaining reasonably high trading liquidity, investment capacity and moderate index turnover.

Nasdaq 100 is a large-cap growth index consisting of 100 of the largest US and international nonfinancial companies listed on the Nasdaq Stock Market based on market capitalization.

Nasdaq Composite is a stock market index that includes almost all stocks listed on the Nasdaq stock exchange. Along with the Dow Jones Industrial Average and S&P 500, it is one of the three most-followed stock market indices in the US.

Prime Mobile Payments Index is designed to provide a benchmark for investors interested in tracking the mobile and electronic payments industry. The stocks are screened for liquidity and weighted according to a modified linear-based capitalization-weighted methodology. An investment cannot be made directly in an Index.

Russell 2000 Index measures the performance of the small-cap segment of the US equity universe. The Russell 2000 Index is a subset of the Russell 3000 Index representing some 10% of the total market capitalization of that index.

S&P 500 Index is a capitalization-weighted index that includes a representative sample of 500 leading companies in leading industries of the US economy. Although the S&P 500 focuses on the large-cap segment of the market, with over 80% coverage of US equities, it is also an ideal proxy for the total market.

S&P 500 Healthcare Index includes companies from the S&P 500 Index that are involved from such areas as pharmaceuticals, healthcare equipment & supplies, biotechnology and healthcare providers and services.

S&P Global Dividend Aristocrats is designed to measure the performance of the highest dividend yielding companies within the S&P Global Broad Market Index (BMI) that have followed a policy of increasing or stable dividends for at least ten consecutive years.

S&P/LSTA US Leveraged Loan 100 Index is designed to reflect the performance of the largest facilities in the leveraged loan market.

VIX or the **Chicago Board Options Exchange (CBOE) Volatility Index**, is a real-time index representing the market's expectation of 30-day forward-looking volatility, derived from the price inputs of the S&P 500 index options.

OTHER TERMINOLOGY:

Adaptive Valuations Strategies is Citi Private Bank's own strategic asset allocation methodology. It determines the suitable long-term mix of assets for each client's investment portfolio.

Assets Under Management or **AUM** are the total market value of the investments that a person or entity handles on behalf of investors.

Correlation is a statistical measure of how two assets or asset classes move in relation to one another. Correlation is measured on a scale of 1 to -1. A correlation of 1 implies perfect positive correlation, meaning that two assets or asset classes move in the same direction all of the time. A correlation of -1 implies perfect negative correlation, such that two assets or asset classes move in the opposite direction to each other all the time. A correlation of 0 implies zero correlation, such that there is no relationship between the movements in the two over time.

Digital commerce or **e-commerce** involves transactions conducted online to purchase goods and services. Digital remittances are funds sent from one person to another over the internet, typically across borders.

EU or the **European Union** is a political and economic union of 27 member states in Europe.

Internal Rate of Return or **IRR** is the expected compound annual rate of return that will be earned on a project or investment.

Mobile POS payments are payments made at the point of sale but facilitated via mobile devices like smart phones.

OECD or the **Organisation for Economic Co-operation and Development** is an intergovernmental economic organization with 38 member countries, aimed at stimulating economic progress and world trade.

Sharpe ratio is a measure of risk-adjusted return, expressed as excess return per unit of deviation, typically referred to as risk.

SPAC, short for **Special Purpose Acquisition Company**, also known as a "blank check company", is a shell corporation listed on a stock exchange with the purpose of acquiring a private company, thereby making it public without going through the traditional initial public offering process.

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Bond credit quality ratings	**Rating agencies**		
Credit risk	**Moody's[1]**	**Standard and Poor's[2]**	**Fitch Ratings[2]**
Investment grade			
Highest quality	Aaa	AAA	AAA
High quality (very strong)	Aa	AA	AA
Upper medium grade (strong)	A	A	A
Medium grade	Baa	BBB	BBB
Not Investment grade			
Lower medium grade (somewhat speculative)	Ba	BB	BB
Low grade (speculative)	B	B	B
Poor quality (may default)	Caa	CCC	CCC
Most speculative	Ca	C	CC
No interest being paid or bankruptcy petition filled	C	D	C
In default	C	D	D

[1] The ratings from Aa to Ca by Moody's may be modified by the addition of a 1, 2, or 3 to show relative standing within the category.

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Changes in Regulatory or Tax Treatment of Energy Related MLPs. If the IRS changes the current tax treatment of the master limited partnerships included in the Basket of Energy

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