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WisdomTree Market Outlook

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1. Macro Outlook: Will central banks pivot to avoid a global recession?

In this section

Central banks hiking rates and risking economic recessions

Fed to pivot in 2023?

Central bank hesitancy rooted in tight labour markets

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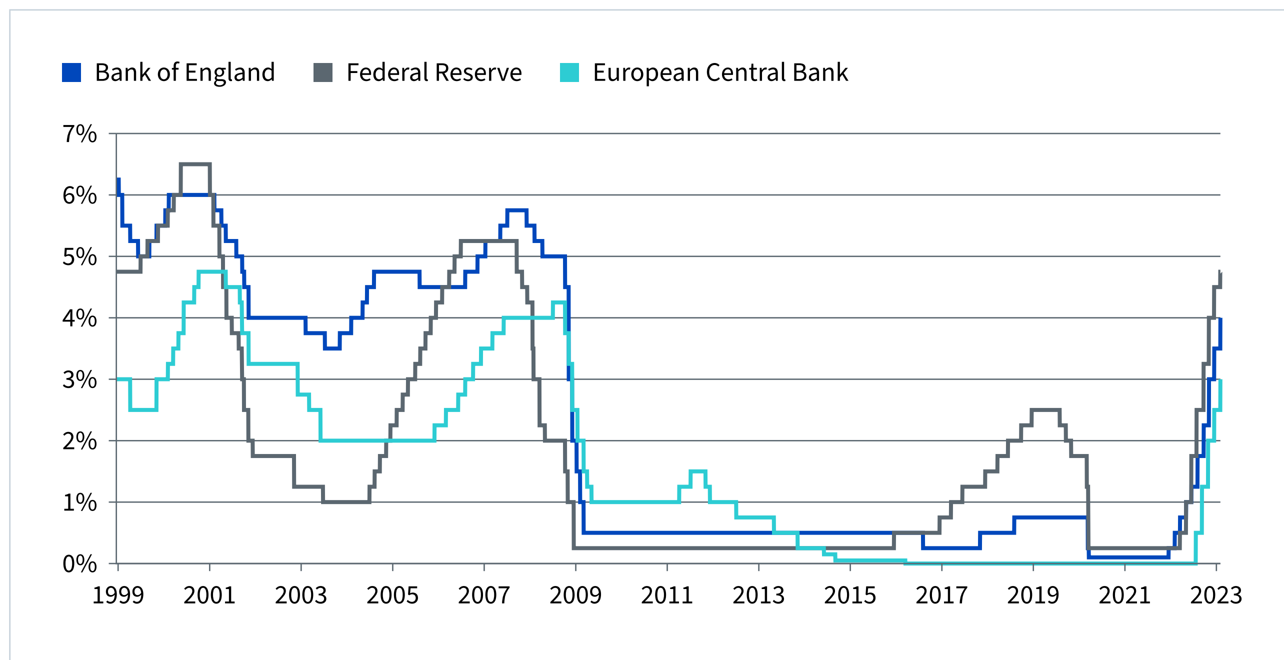
Synchronised monetary policy tightening and unfavourable financial conditions are creating a sharp deceleration in global economic activity. The World Bank projects global growth will slow from 2.9% in 2022 to 1.7% in 2023, marking the slowest pace of growth in nearly three decades (excluding years of outright contraction). Bloomberg's survey of professional investors puts the median probability of a recession in the US at 65.0% and EZ at 68% (February 2023).[2]

Figure 1: Central bank policy interest rates



Source: WisdomTree, Bloomberg, January 1999 to February 2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

Central banks hiking rates and risking economic recessions

Because of still elevated official inflation rates, developed world central banks are maintaining a hawkish tone. The Fed, whilst slowing the pace of rate hikes to 25 basis points in its February 2023 meeting (from a 50 bp hike in December 2022 and four 75 bp clips before that (see Figure 1 and sources above), continued with a hawkish tilt to commentary. Chair Powell asserted that cuts in US rates are not appropriate this year on current trends.

2 However, European sentiment is improving at the margin: the eurozone consensus recession probabilities shifted down from 80% (in January 2023), following the publication of Q4 2022 GDP numbers showing a surprise 0.1% q-o-q expansion rather than the 0.1% contraction expected.

The ECB raised rates by a further 50 bps in February 2023 (see Figure 1 and sources above), keeping the same pace as in December 2022 (which, indeed, was lower than the 75 bp increment in the September and October meetings). Furthermore, the ECB indicated it would raise rates by the same increment in March 2023 but has left room for a slower pace thereafter.

The communication from central banks is still hawkish and designed to quell inflation expectations, even though inflation has shown signs of slowing in most developed countries.

Fed to pivot in 2023?

Professor Jeremy J. Siegel, an external advisor to WisdomTree, notes that US inflation is falling fast.[3] The core PCE deflator (the Fed's preferred inflation measure) has been decelerating for close to a year now, with the three-month moving average of the month-on-month calculation falling to 0.24% in December 2022 from 0.49% in December 2021. Moreover, he believes that if the Fed were to incorporate real-time indicators for housing market data, actual inflation would look even softer. US money supply (based on the M2 measure) is in outright contraction, which, based on data to 1960, never happened before. The prior negative readings occurred during the Great Depression in the 1930s.

3 See My Bottom-Line Year-Ahead Outlook by Professor Jeremy J. Siegel.

Professor Siegel expects the Federal Reserve to acknowledge the price weaknesses and soon pivot to rate cuts. At the start of the year, he thought this benign inflation and recessionary outlook could drive ten-year bond yields lower by 50–100 basis points and aid continued dollar depreciation. In January alone, yields moved sharply lower, reflecting almost three-quarters of the decline he thought would occur throughout the full year.

Central bank hesitancy rooted in tight labour markets

One of the main counter-arguments against Professor Siegel's projected pivot is that the labour market in the US remains tight. Loosening monetary conditions into tight labour could drive wages significantly higher, rekindling inflation. However, as Professor Siegel points out, there has been a structural shift in the labour market since the COVID-19 pandemic. Many workers who left the labour market during the initial lockdowns have never come back. This appears to be a one-time structural shock. Real wages should rise as a result of a supply shock, and workers are falling behind inflation still today.

The US is not necessarily in a unique situation. Many developed countries have experienced a similar phenomenon, where workers have not returned after COVID-19 reopening. Figures 2 and 3 below show that vacancies in 2022 were much higher than normal, and unemployment rates were below normal across a selection of developed countries. If the Fed pivots and cuts rates, acknowledging the institution's inability to change the labour market dynamics, we believe other central banks like the ECB could follow.

Figure 2: Vacancies

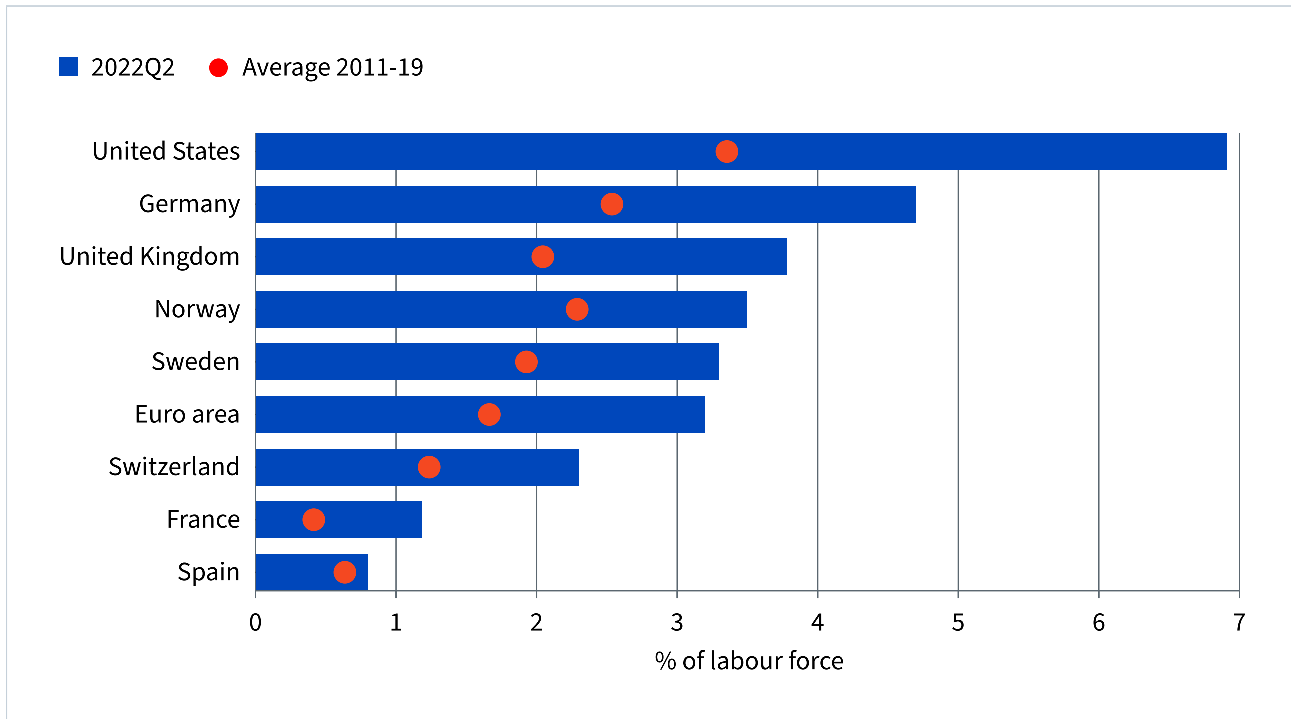
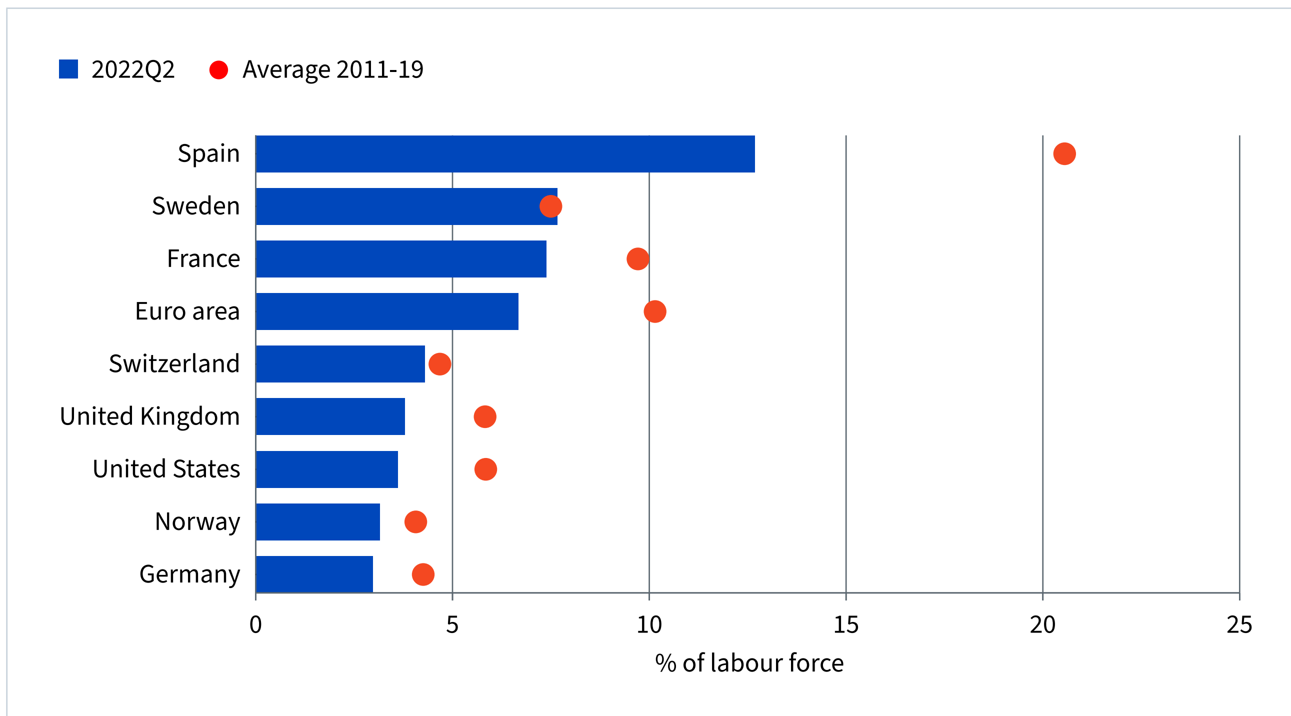


Figure 3: Unemployment



Source: WisdomTree, Organisation for Economic Co-operation and Development (OECD), Q1 2011 to Q2 2022. **Historical performance is not an indication of future performance, and any investments may go down in value.**

Our outlooks presented in this spring update are conditioned on developed world central banks pivoting in 2023, but we acknowledge the risk of waiting too long. Given the long lags between changes in monetary policy and actual economic outcomes, the damage to growth may already be baked in. However, certain asset classes will respond more quickly to policy changes. The equity rallies we have seen after softer inflation prints indicate that markets are also expecting central banks to pivot sometime this year.

China reopening

Whilst most of the developed world bounced back strongly in 2021 and 2022 after reopening, China's growth was constrained by its Zero-COVID policies. In November 2022, China's Zero-COVID policy was swiftly reversed. At the same time, the People's Bank of China maintains a loose policy setting, and Chinese policy makers are intent on cushioning the economy from a real estate down-spiral that has been constraining the country for more than a year. China could act as a counterweight to slowing growth elsewhere in the world. We examine the impact of reopening in 'China Re-opens: What It Means for Global Investors'.

Conclusion

In conclusion, the data is supportive for central banks to slow down policy tightening and start the process of loosening. A China reopening may initially be bumpy with rising COVID-19 cases, but ultimately with the world's second-largest economy fully engaged in normal activity, the global economy should receive a boost.

2.
Commodity Outlook: Cyclical pressures vs structural strengths

In this section

Cyclical headwinds have emerged

Fading backwardation indicates market tightness easing

China reopening to counter economic headwinds elsewhere

What about the commodity supercycle?

Energy transition

Infrastructure rebound

The green industrial ‘arms race’ takes off

Conclusion

Commodities have been enjoying a strong revival in recent years, with broad commodities returning 27% in 2021 and 15% in 2022 (Figure 4). A combination of fiscal and monetary support in the early phases of the COVID-19 pandemic helped to soften the damage to demand from one of the deepest economic shocks in modern times. As COVID-19 restrictions lifted, commodity demand bounced back strongly.

In 2022, the Ukrainian invasion presented a supply shock, restricting energy and agricultural product supplies and further supporting commodity prices. Whilst many developed world central banks tightened monetary policy in the first half of 2022, inflationary pressures became the most extreme since 1981.

Commodities proved again to be one of the best asset classes to hedge this extreme inflation. After arguably falling behind the curve, developed world central banks sought to get ahead and became the most hawkish since the early 1980s. Whilst commodities posted double-digit returns, other cyclical assets like equities and real estate fell by double-digit magnitudes. An aggressive bond sell-off saw this defensive asset class also decline by 21%. Commodities emerged as the best refuge in a storm battering both cyclical and defensive assets alike.

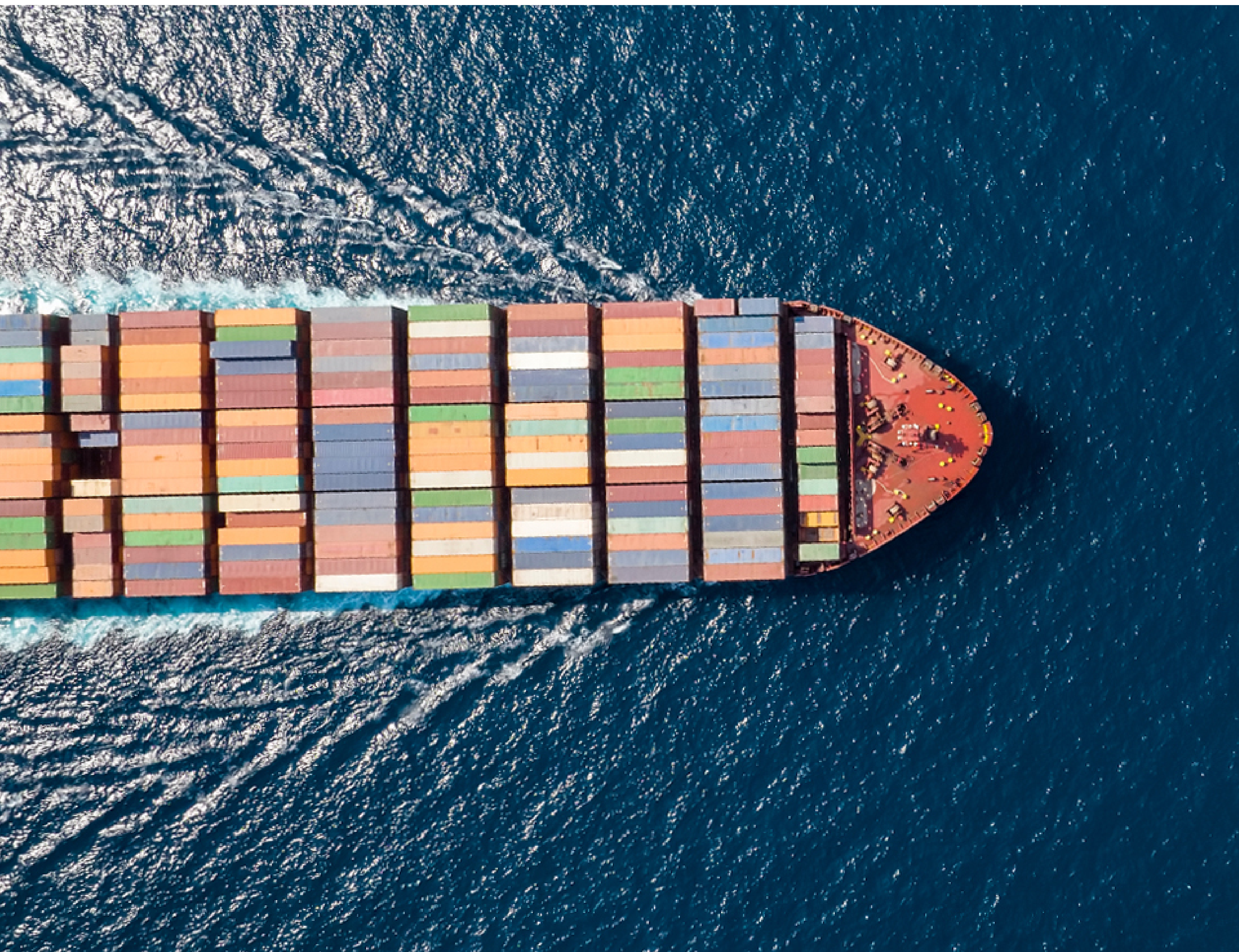


Figure 4: Asset performance over the past decade

Performance Ranking	2010	2011	2012	2013	2014	2015	2016
1	Real Estate 20.4%	Bonds 4.5%	Real Estate 28.7%	Equities 20.3%	Real Estate 15.9%	Cash 0.2%	Commodities 12.4%
2	Commodities 17.4%	Cash 0.2%	Equities 13.4%	Real Estate 4.4%	Bonds 5.6%	Real Estate 0.1%	Equities 5.6%
3	Equities 10.4%	Real Estate -5.8%	Bonds 13.4%	Cash 0.2%	Equities 2.1%	Bonds -2.8%	Real Estate 5.0%
4	Bonds 4.9%	Commodities -7.5%	Commodities 2.0%	Bonds -4.0%	Cash 0.2%	Equities -4.3%	Bonds 3.6%
5	Cash 0.2%	Equities -9.4%	Cash 0.3%	Commodities -10.1%	Commodities -13.3%	Commodities -21.3%	Cash 0.5%

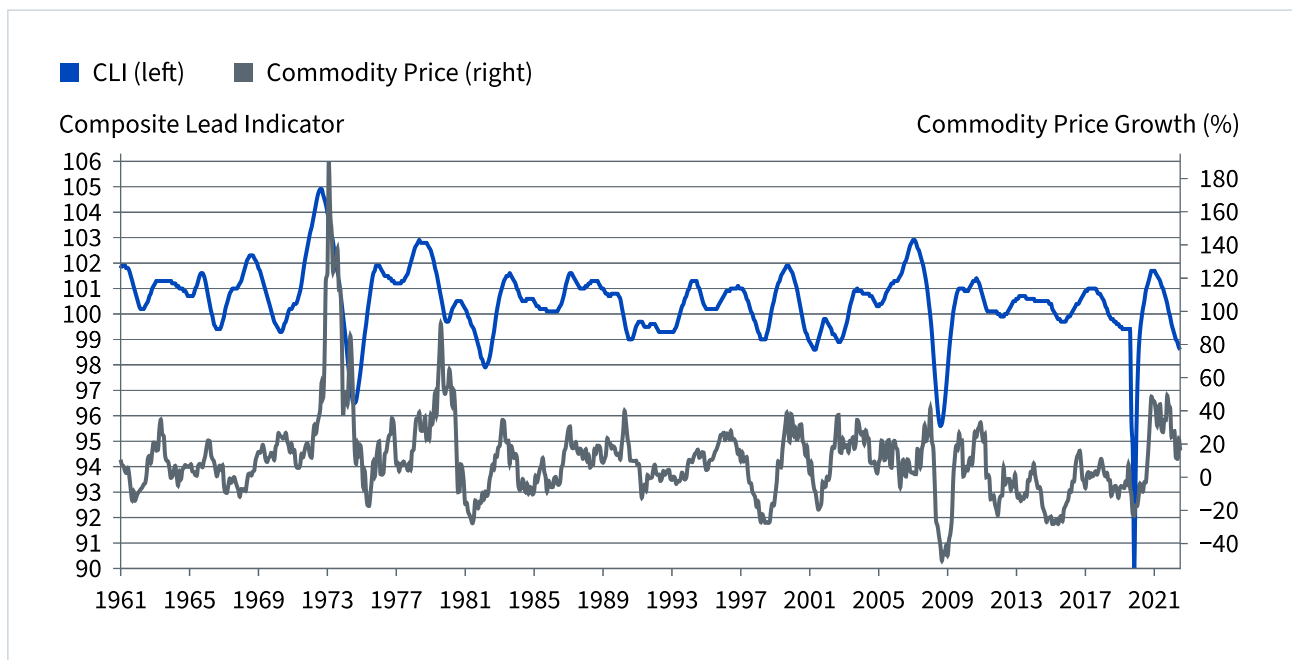
Performance Ranking	2017	2018	2019	2020	2021	2022	10 Yrs
1	Equities 21.6%	Cash 1.7%	Equities 24.0%	Equities 14.3%	Commodities 27.3%	Commodities 14.7%	Equities 5.9%
2	Real Estate 11.4%	Bonds -2.4%	Real Estate 23.1%	Bonds 10.3%	Real Estate 27.2%	Cash 1.7%	Real Estate 3.9%
3	Bonds 10.3%	Real Estate -4.7%	Bonds 13.6%	Commodities 2.3%	Equities 16.8%	Equities -19.8%	Cash 0.8%
4	Commodities 6.3%	Commodities -9.0%	Commodities 7.7%	Cash 0.5%	Cash 0.1%	Bonds -21.0%	Commodities 0.7%
5	Cash 0.9%	Equities -11.2%	Cash 1.7%	Real Estate -8.2%	Bonds -3.5%	Real Estate -24.4%	Bonds 0.5%

Source: WisdomTree, Bloomberg, data until 31/12/2022. All returns are in USD; 10 Yrs returns are annualised from 31/12/2012 to 31/12/2022. Data: Equity – MSCI World, Bond – Bloomberg Barclays Agg Sovereign TR Unhedged, Real Estate – EPRA/NAREIT Global, Commodity – Optimized Roll Commodity Total Return Index, Cash – US three-month t-bill. **Historical performance is not an indication of future performance and any investments may go down in value.**

Cyclical headwinds have emerged

Commodities, often seen as a late-cycle asset performer, struggled in late-2022. Energy prices, which had been propelling the asset class, declined by Q3 2022, joining metals, which had been weak since Q1 2022. Economic deceleration resulting from monetary tightening in developed nations weighed on the asset class. Composite lead indicators (CLIs)—designed to provide early signals of turning points in business cycles—turned decisively even before 2022 started (Figure 5). Commodity performance peaked later in 2022. CLIs are still declining, indicating the cyclical headwinds faced by commodities are still present.

Figure 5: Composite Lead Indicator and Commodities

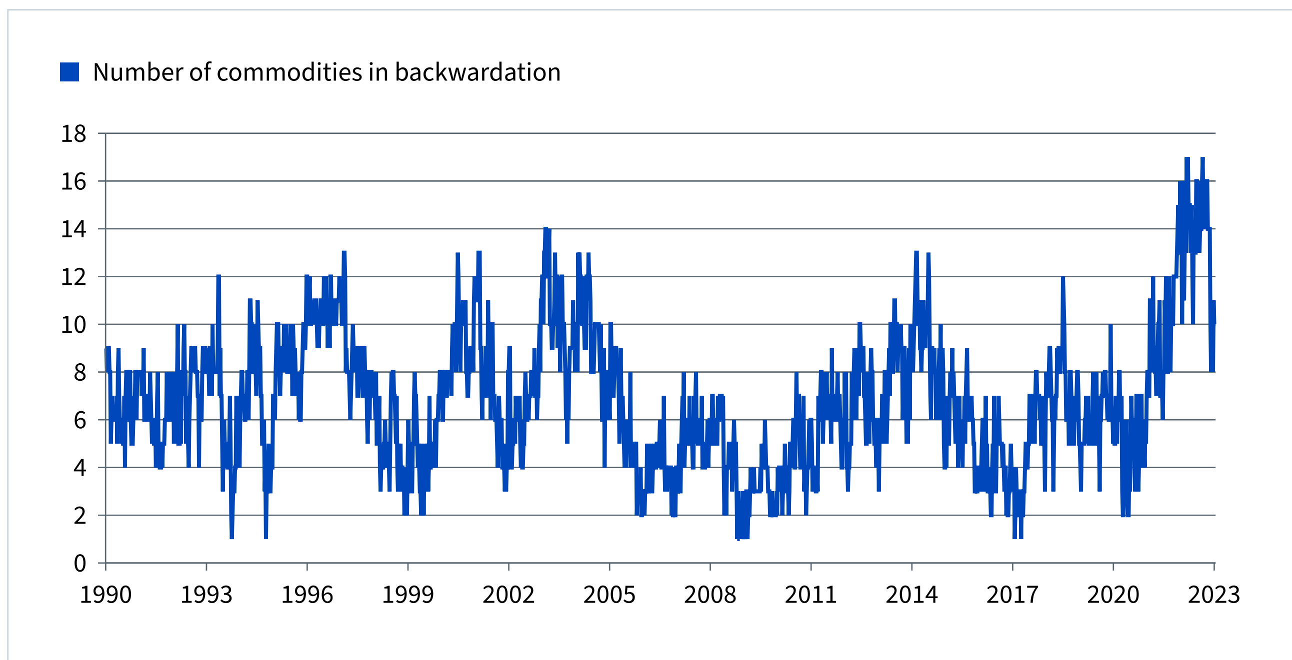


Source: WisdomTree, Bloomberg, OECD, June 1961 to December 2022. Commodity price based on Bloomberg Commodity Total Returns Index. The composite leading indicator (CLI) is designed to provide early signals of turning points in business cycles showing fluctuation of the economic activity around its long-term potential level. CLIs show short-term economic movements in qualitative rather than quantitative terms. CLI is amplitude-adjusted; long-term average = 100. **Historical performance is not an indication of future performance and any investments may go down in value.**

Fading backwardation indicates market tightness easing

Another bearish signal is that backwardation in commodities appears to be fading. Our tracker of 25 commodities shows that the number of commodities in backwardation peaked at 17 in September 2022 and fell to 10 in January 2023 (Figure 6). Backwardation is usually a sign of commodity market tightness: a situation where buyers are willing to pay a higher spot price for a commodity for immediate delivery rather than lock into a contract for future delivery at a lower price.

Figure 6: Backwardation in commodities fading



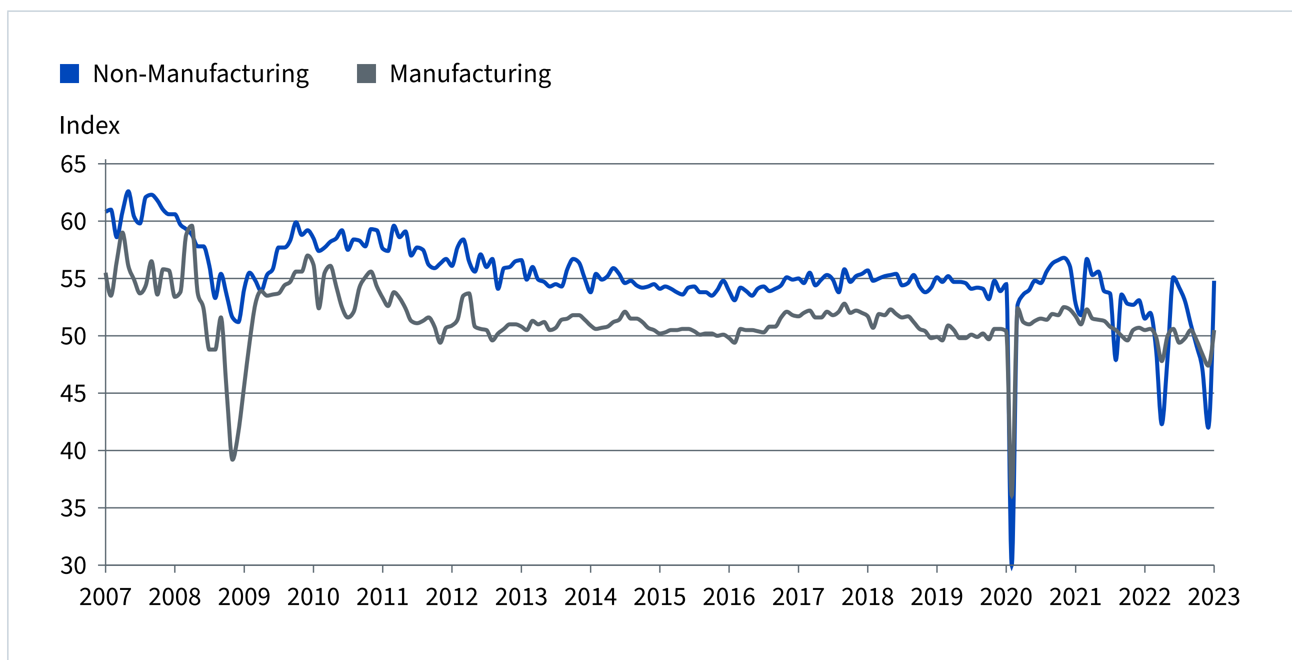
Source: WisdomTree, Bloomberg, January 1990 to January 2023. Backwardation counted as the price of a front month contract being below the price of a second month contract. Covers 25 commodities. **Historical performance is not an indication of future performance and any investments may go down in value.**

China reopening to counter economic headwinds elsewhere

The global economic rebound experienced in 2021 and 2022 and the accompanying commodity rally occurred largely without China's contribution. Chinese policy makers pursuing a Zero-COVID policy up until November 2022 hamstrung their economy, and growth was disappointing. Although Chinese exports remained relatively strong due to international demand for Chinese goods, constant supply disruptions restrained export volumes during the Zero-COVID period.

Now that China abandoned its Zero-COVID policies, domestic economic activity is likely to pick up strongly. In fact, the first prints of Purchasing Manager Indices (PMIs) in 2023 look encouraging (Figure 7). Both manufacturing and non-manufacturing PMIs rose above 50 (the demarcation between growth and contraction). Non-manufacturing PMIs rebounded very strongly in January 2023, indicating that domestic conditions are very supportive. The rebound in manufacturing was less brisk, which could be associated with still weak international demand.

Figure 7: China Purchasing Manager Indices



Source: WisdomTree, Bloomberg, January 2007 to January 2023. Index above 50 indicates expansion. Index below 50 indicates contraction. Dotted line marks that demarcation. **Historical performance is not an indication of future performance and any investments may go down in value.**

The initial phases of reopening in China saw a large spike in COVID-19 cases, which constrained economic activity from rebounding. But COVID-19 cases appear to be peaking after a rapid spread (although disruptions from still elevated case numbers may linger for longer). The lunar New Year holiday period (22–29 January 2023), when normal activity is disrupted, makes reading the data more difficult, but everything from flights to train rides to road congestion looks higher this year than last year. Subway ridership across major cities has rallied to 70% of pre-pandemic levels, almost doubling from December 2022 lows. Flight schedules have ramped up by nearly 30% in the past two weeks (to 19 January 2023), boosting jet fuel demand.[4]

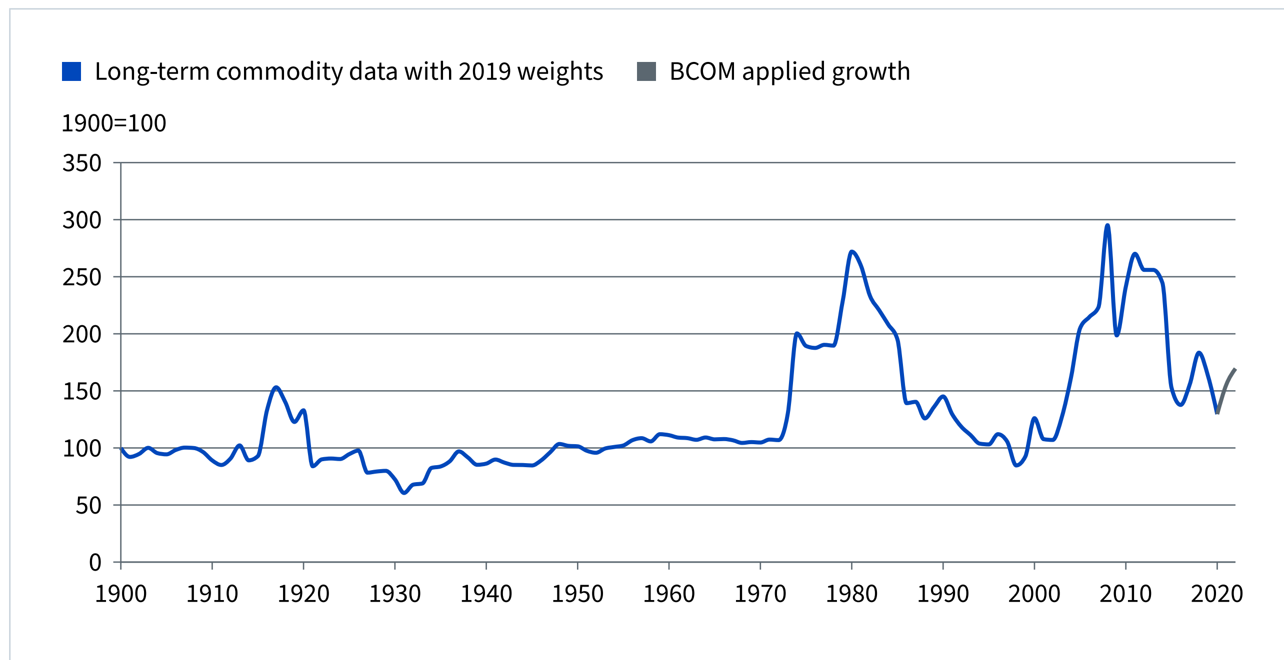
China, being the largest consumer of most commodities, is likely to have a material impact on demand growth as it reopens and counter the headwinds on demand elsewhere (see China Reopens: What It Means for Global Investors).

What about the commodity supercycle?

We believe commodities should see long-term structural support from an energy transition and an infrastructure spending rebound. Furthermore, these catalysts could drive another supercycle in commodities. There have been some very strong bull markets in commodities in the past 120 years (Figure 8). Supercycles coincide with periods of industrialisation and urbanisation when the supply of commodities failed to keep up with the growth in demand. The last supercycle occurred after China joined the World Trade Organization in 2001, which turbocharged development as barriers to commerce were removed. After two strong years of commodity market performance (2021 and 2022), could we be on the cusp of another supercycle? We believe there are some strong structural underpinnings, but for now, business cycle dynamics, including a rising risk of recession, could dominate price behaviour in the short term.

4 Source: BloombergNEF.

Figure 8: Long-term Real Commodity Prices

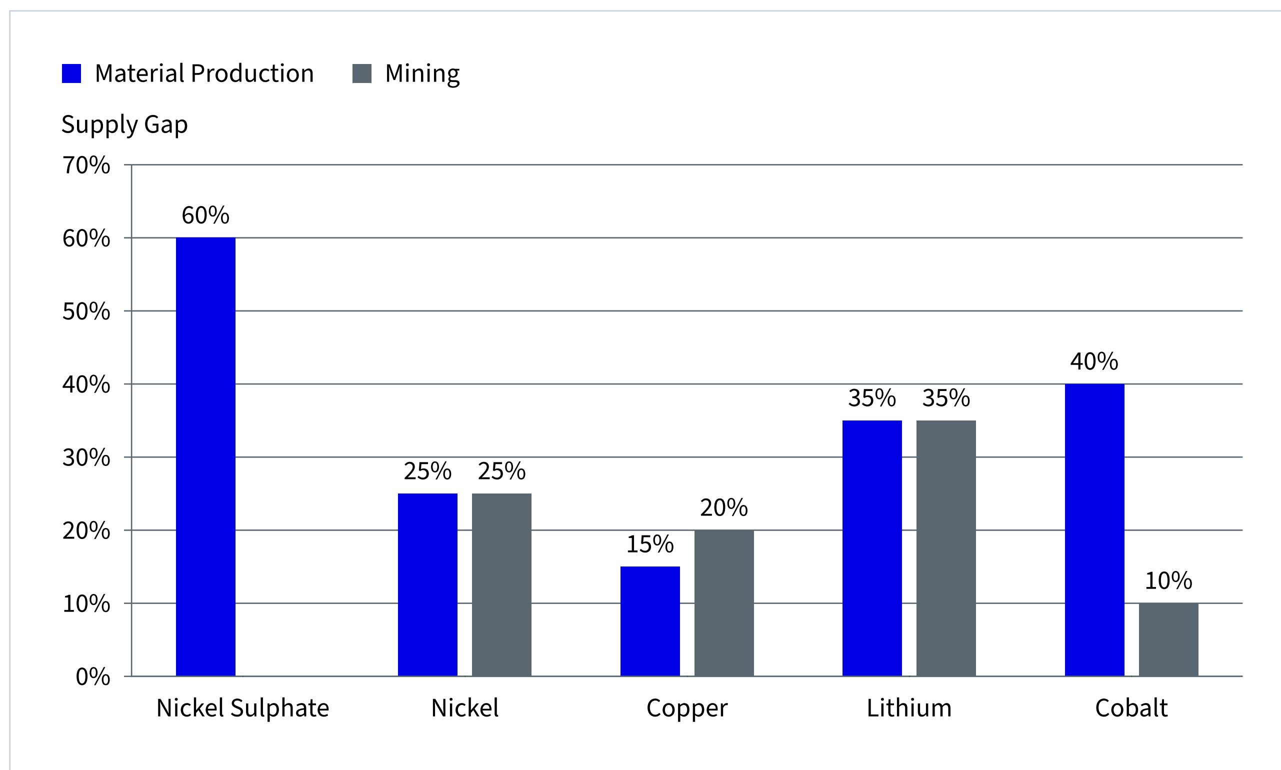


Source: WisdomTree, 'Real Commodity Prices, 1850-2020' by Professor D. S. Jacks (2020), Bloomberg Commodity Index Prices (BCOM) deflated by US inflation rates 2021–2022. **Historical performance is not an indication of future performance and any investments may go down in value.**

Energy transition

In a scenario where net zero emissions are targeted by 2050 in order to limit temperature increases to 1.5 degrees Celsius above pre-industrial levels, we should see a significant rise in demand for metals. Metals are critical for the manufacture of batteries, electrification of power energy consumption, electrolysers, heat pumps and other technologies needed for the energy transition. International Energy Agency data indicates that in a net zero emissions scenario, supplies of critical materials are going to be woefully short of demand, both in terms of mining and material production (Figure 9). Given that average lead times are more than five years in mining and two to five years in manufacturing, it is difficult to see how this gap will be closed easily. If countries seriously try to get on the net zero path, above-ground inventory will deplete quickly. Nickel sulphate—high-grade nickel used in lithium-ion battery manufacturing—could be 60% undersupplied in this scenario. The potential to convert nickel laterite ores (primarily from Indonesia) into higher-grade nickel suitable for the battery value chain is significantly more energy and greenhouse-gas-intensive. That puts the use of laterite ores as an alternative to sulphate deposits under question. The strain on sulphate supplies is likely to continue to support Class 1 nickel prices.

Figure 9: 2030 Supply Gaps consitent with Net Zero Scenario



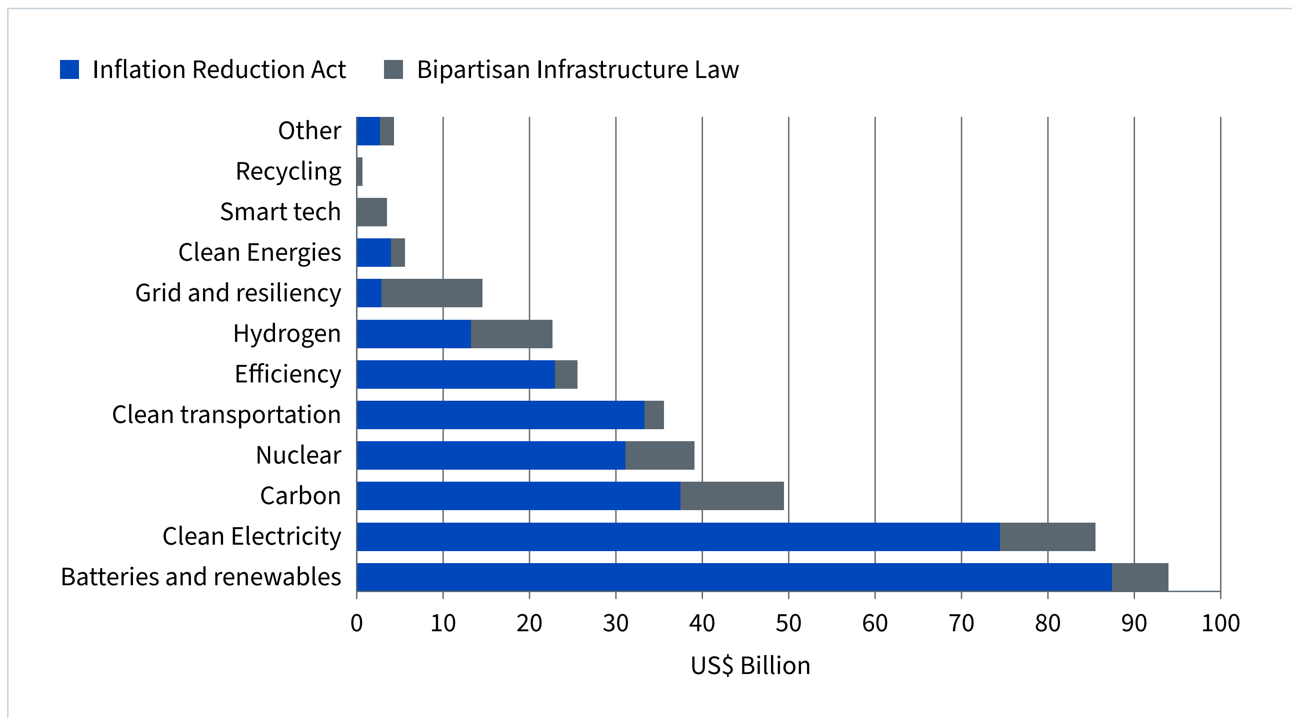
Source: WisdomTree, International Energy Agency, Energy Technology Perspectives 2023. **Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties**

Infrastructure rebound

An economic downturn is unlikely to support a significant increase in private gross capital formation in infrastructure projects in the short term. However, policy support announced in past years will continue to be developed. For example, in the US, the Bipartisan Infrastructure Bill agreed on in 2021 and backed by a US$1 trillion budget is still in the process of vetting projects. Added to that is the CHIPS and Science Act (August 2022) aimed to catalyse investments in US semiconductor manufacturing capacity with a budget of US$280 billion in spending over the next ten years. Then lastly, the Inflation Reduction Act of 2022 (IRA, August 2022) that, amongst other objectives, directs spending to reducing carbon emissions. These three Acts have partially overlapping priorities amounting to close to US$2 trillion in federal spending.

Just looking at the energy funding from the Bipartisan Infrastructure Bill and the Inflation Reduction Act, a total of US$370 billion is earmarked to be spent over the next 5 to 10 years, primarily to facilitate the clean energy transition (Figure 10). The IRA encourages the procurement of critical supplies domestically. In order to meet the supply chain requirements, we expect large infrastructure spending on mineral extraction, processing and manufacturing.

Figure 10: Energy Funding from Bipartisan Infrastructure Law and Inflation Reduction Act



Source: McKinsey: 'The Inflation Reduction Act: Here's what's in it', October 2022. **Historical performance is not an indication of future performance and any investments may go down in value**

The European Union's REPowerEU plan—designed to wean the economic bloc off Russian hydrocarbon dependency—will also require a large spend on energy infrastructure. The EU is already building liquified natural gas capacity at breakneck speed, aiming to expand capacity by one-third by 2024.[5] The EU estimates that delivering the REPowerEU objectives will require an additional investment of €210 billion between 2022 and 2027.

5 https://www.eia.gov/todayinenergy/detail.php?id=54780.

The green industrial 'arms race' takes off

After decades of underspending for the climate policy goals governments have signed up to, we may be witnessing a tipping point. Some of the protective features of IRA (regional sourcing requirements) may propel tit-for-tat policies that drive local sourcing elsewhere. Many nations recognising China's dominance in critical materials had already been designing policies to mitigate the risk of overreliance on the country. This process is likely to drive an upsurge in ex-China green infrastructure spending globally.

Conclusion

After several years of commodity market outperformance, the asset class is already experiencing cyclical headwinds. However, a China reopening is likely to mitigate some of these pressures, and we are seeing tentative evidence of China's economy rebounding. Commodities are likely to be underpinned by global policy support for an energy transition. Whilst general infrastructure spending may also face cyclical headwinds this year, green infrastructure spending is likely to lead to a new 'arms race' as countries compete to support their industries and maintain energy/ resource security.

3.

Equity Outlook: Brace for volatility as inflation meets recession

In this section

US economy is noticeably losing momentum

China's growth and policy stance pave the way for a recovery

Japan's domestic recovery to shine at last

Europe has ushered in 2023 on a stronger economic footing

UK economy to face the harsh reality of a recession in 2023

US valuations remain high vs international developed and EM equities

The battle between Energy and Technology stocks

Value vs Growth in 2023

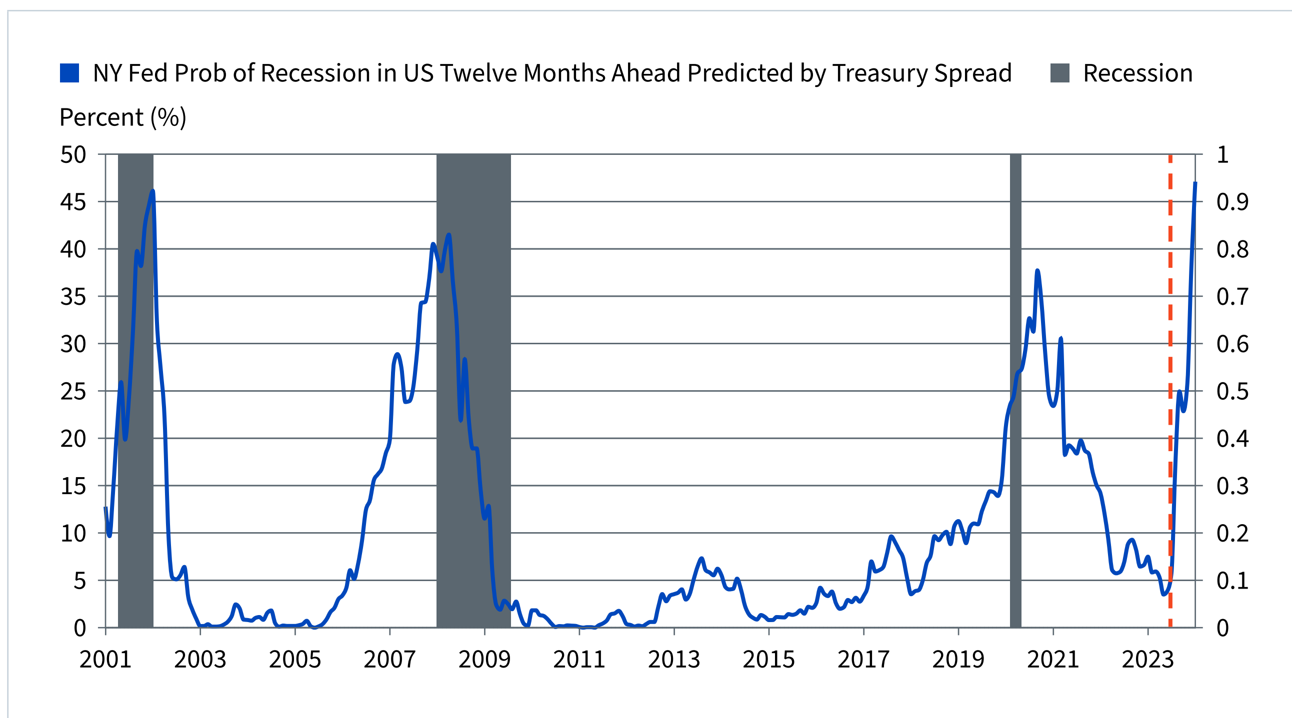
Conclusion

What a difference a year makes. 2023 has been ushered in with a rebound in pockets of equity underperformance from 2022. Signs of cooling inflation having a more benign impact on the global economy alongside the reopening of the Chinese economy have been the primary drivers of the speculative frenzy in equity markets. In its latest World Economic Outlook, the International Monetary Fund (IMF) has made a notable shift in its outlook on a global recession. The IMF now sees the global economy growing at 2.9% this year, up from its October projection of 2.7%.[6]

US economy is noticeably losing momentum

In 2023, we expect the repercussions of tighter monetary policy by the Federal Reserve and slower global growth alongside a reversal of expansionary fiscal policy will combine to put the US economy on the precipice of a downturn. On the positive side, the recent ebbing of inflation should allow the Fed to take its foot off the brakes of tighter monetary policy. However, as monetary policy works with long and variable lags, the tightening that has taken shape in 2022 will see its main negative impacts felt later this year and perhaps next year too.

Figure 11: New York Fed Probability of Recession in US twelve months ahead predicted by Treasury Spread



Source: Bloomberg, Federal Reserve (Fed) Bank of New York, WisdomTree, as of 31/12/2022. Please note: This model uses the slope of the yield curve, or 'term spread', to calculate the probability of a recession in the United States 12 months ahead. Here, the term spread is defined as the difference between the ten-year and three-month Treasury rates. **Historical performance is not an indication of future performance and any investments may go down in value.**

6 International Monetary Fund (World Economic Outlook Update) as on 31 January 2023.

Money supply (M2) is no longer growing. Credit conditions for companies are tightening, which is likely to suppress companies' ability to invest. Residential construction, a well-known interest rate-sensitive sector, has succumbed to the pressure. The decline in the number of building permits is reminiscent of the run-up to prior recessions.

Yet the resilience of the labour market will be an important guide to the intensity of the expected recession. We expect this recession to be mild by historical standards as there aren't major imbalances that need fixing, unlike those witnessed during the great financial crisis. However, during the course of the recession, if unemployment begins to rise meaningfully, we expect the Fed's focus to shift back to its dual mandate of stable prices and full employment. When recession occurred in the 70's, 90's, and '00's rates fell even when inflation was high. In fact, in 1974 and 2008, interest rates fell before inflation peaked and inflation was still running above 5%.

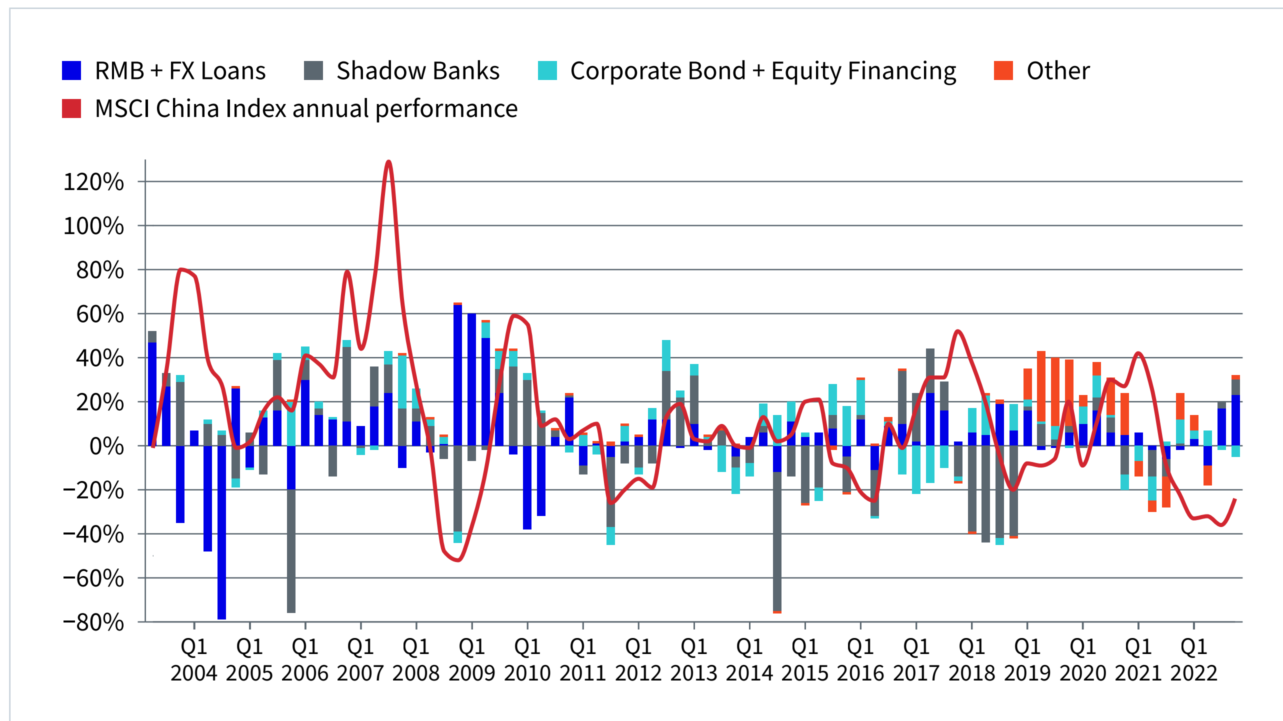
China's growth and policy stance pave the way for a recovery

Chinese equities have rebounded 15.8% since October 2022, around the time of the 20th National Congress of the Chinese Communist Party (CCP).[7] Since the 20th Party Congress, China has altered its policy stance on COVID-19 and the property sector. This has helped improve the growth outlook for 2023. The January Politburo meeting re-affirmed the pro-growth policy tilt. The main policy goals are centered around domestic demand expansion via consumption, private sector industrial investment and strengthening the property sector.

Normality is returning to the country following the re-opening of the economy. Yet the current economic slump is deeper than previously assumed, which raises the need for more aggressive macroeconomic support. Unlike the rest of the world, inflation has not been a problem for China. In fact, the People's Bank of China (PBOC) continued to ease monetary policy last year. Chinese households have accumulated a significant amount of excess savings since the start of the COVID-19 crisis, which should enable private demand to improve sequentially. This should help offset the weakness in exports amid the global slowdown. China is likely to rely on further fiscal stimulus via investment projects to spur growth until we see the benefits of its withdrawal from its Zero-COVID policy.

7 Source: Bloomberg, performance of CSI 300 Index from 25 October 2022 to 10 February 2023.

Figure 12: China's total social financing rebounded in Q3 and Q4



Source: Bloomberg, WisdomTree, as of 31/12/2022. RMB is Chinese Yuan. **Historical performance is not an indication of future performance and any investments may go down in value.**

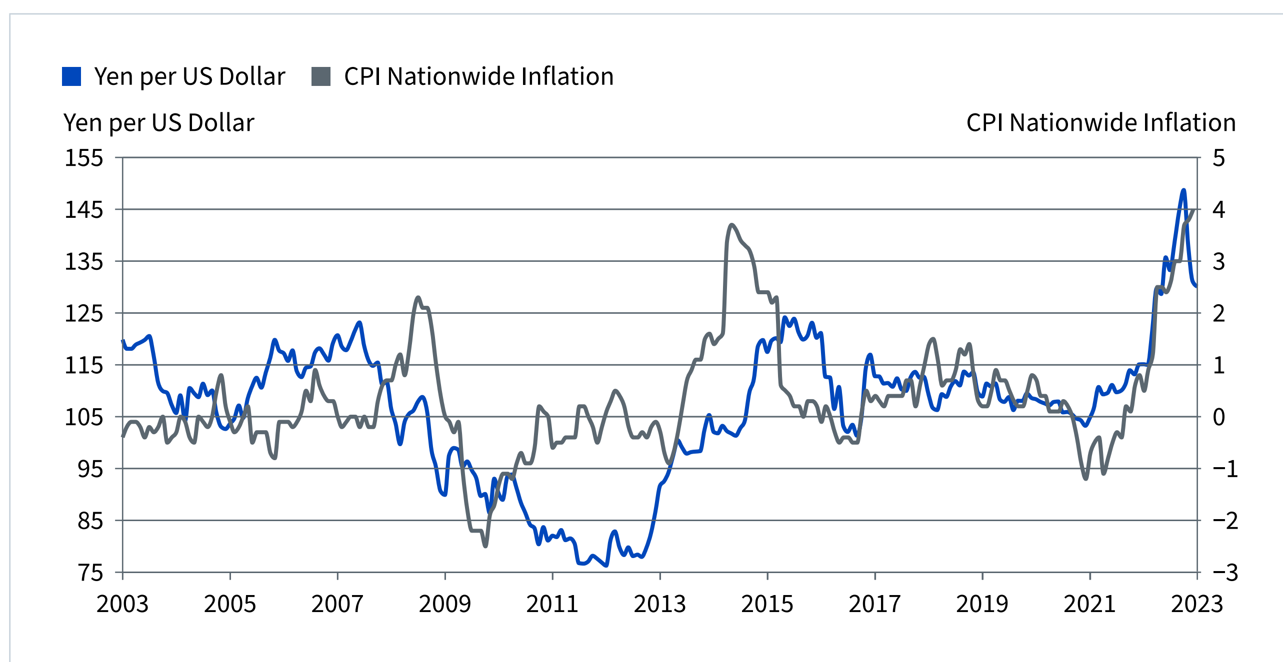
The housing market benefitted from the unveiling of the 16-point plan by Chinese authorities at the end of last year. The lauch of the "three arrows" to support developed liquidity via bank loans, bond issuance, and equity fundraising signals an important shift by China to support its property sector. Yet the support measures announced are aimed at supporting high quality developers. These targeted measures are likely to lead to a slower yet more sustainable recovery in the property sector.

Japan's domestic recovery to shine at last

Japan welcomes 2023 as an outlier among developed markets in terms of its economic growth, monetary policy and inflation. Japan's economic cycle is largely synchronised with the global economy, so a turnaround in China's growth story will support the Japanese economy. Yet at the same time, the potential recession in the US economy leading to greater expectations for a Fed rate cut could delay recovery to H2 2023. The deterioration in the global outlook is currently offsetting the benefits of the domestic economic reopening announced in October 2022.

Similar to China, inflation has been fairly muted in Japan, owing to the delayed reopenings for most of 2022. However, inflation is beginning to rise owing to the weak Japanese yen and high global energy and food prices. Japanese equities were amongst the more resilient stock markets in 2022 (-5.1% versus global equities -20%,[8] as the weak yen benfitted Japan's large export market. In addition, growing capex alongside rising shareholder payouts from Japanese companies, continue to attract flows into Japanese equities.

Figure 13: Steep decline of the Yen versus US Dollar fuelling inflation



Source: Bloomberg, WisdomTree, as of 31/12/2022. **Historical performance is not an indication of future performance and any investments may go down in value.**

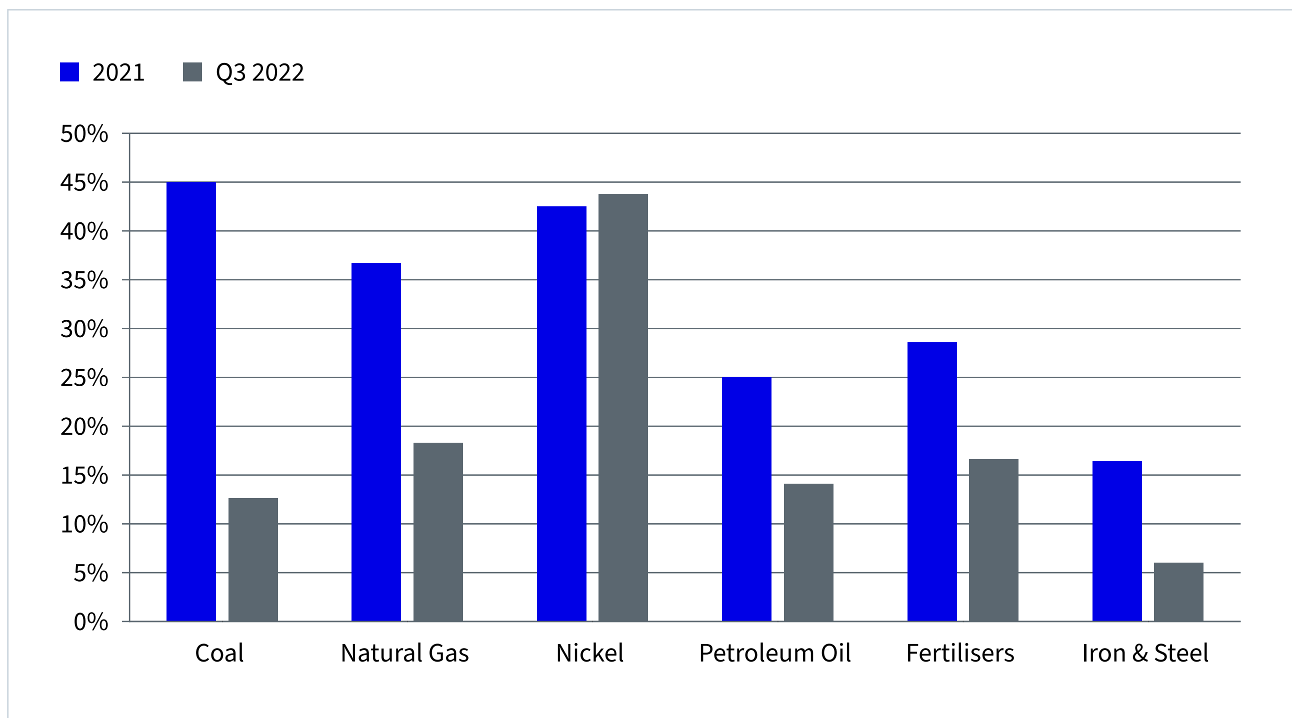
The wide interest rate divergence between the US and Japan resulted in the yen weakening to a 24-year low in 2022. The yen's decline pushed Japanese corporate profits to their highest level since 1954. We expect the current elevated inflation in Japan to be transitory, cost-push, and imported. Now that markets are expecting a slowdown in the pace of rate hikes, the pressure on the yen has eased. The gradual fall in global bond yields should allow for a modest yen appreciation. Wage growth is unlikely to reach 3%, which would be commensurate with the Bank of Japan's (BoJ) 2% inflation target. This should allow the BoJ to maintain its accommodative stance on monetary policy with no change to its yield curve control policy in 2023.

8 Source: Bloomberg Performance of Topix Index and MSCI World Index from 30 December 2021 to 30 December 2022.

Europe has ushered in 2023 on a stronger economic footing

The confluence of the reopening of the Chinese economy and prudent management of energy storage during the winter, alongside signs of peak inflation, have helped the eurozone economy. So far, Europe has been successful in winning its energy war against Russia. But complacency is not an option for European policy makers. As we can't always rely on favourable weather, a continuation of measures—shoring up gas reserves and rationing energy demand across industry and households—will need to continue as Europe weans itself from Russia's commodity supply.

Figure 14: Russia's share in EU imports for selected products



Source: Eurostat, WisdomTree, as of 31/12/2022. **Historical performance is not an indication of future performance and any investments may go down in value.**

Most high-frequency indicators seem to show that we are moving past the trough, and whilst activity is improving, it remains weak. Supply chain stress has eased, helping producers in Germany (Europe's largest economy). Employment growth also gathered momentum as firms prepared for a better-than-expected year. However, the cost of high inflation is being felt in weaker private consumption, which is likely to remain a drag on growth this year.

Inflation releases in H1 2023 are likely to be extremely volatile owing to a number of government measures and technical adjustments to the Harmonised Index of Consumer Prices (HICP). The annual adjustment in the HICP weights will increase the share of the energy component, thereby reflecting the relative rise in energy consumption in 2023, signalling upside risks to energy inflation. So, whilst energy inflation has begun to peak, there remains uncertainty as to how fast prices will fall. China's reopening alongside the domestic eurozone import ban on Russian oil does remain an upside risk for oil prices.

The ECB raised its key interest rates by 250 bps over the course of 2022. President Lagarde has signalled that this is far from the end of the road. Given the more resilient recent macro data, we expect the ECB to continue tightening policy until May, with a peak of 3% for the deposit rate. We expect the tightening of credit conditions to eventually slow down the economy, with the usual time lag likely dampening the current European equity rally. We view the restrictive monetary policy by the ECB alongside the stronger euro as the main headwinds for European equities in 2023.

UK economy to face the harsh reality of a recession in 2023

2023 is set to be a challenging year for the UK economy. Forecasts for a drop in UK real GDP between 0.4% (the Confederation of British Industry estimate) and 1.4% (the Office for Budget Responsibility estimate) point to a shallow recession, as inflation and higher interest rates take their toll on consumers and businesses. Whilst the terms of trade shocks caused by the global energy markets begin to recede, constrictive financial conditions underpinned by the Bank of England's (BOE) restrictive policy continue to remain a headwind for the UK economy.

2022 saw the sharpest drop in household incomes on record, owing to the surge in inflation. It's unlikely to start rising again until the second half of 2023. On the positive side, inflation has begun showing signs of easing. However, inflation is likely to be structurally higher and stickier on the upside, owing to higher wages and supply chains. The UK is facing acute labour shortages, which is placing workers in a strong pay bargaining position. Whilst nominal earnings will rise by around 7% this year, real incomes are likely to be sharply negative, with inflation hovering well above 10%.[9]

The sharp fall in household disposable incomes will inevitably suppress consumer spending. Despite the fact that households have accumulated close to £250bn in excess savings, the additional cost of higher interest rates, electricity and gas are likely to dip into their savings unless the UK government continues to shield households facing the cost-of-living crisis. One silver lining is that the sharp fall in wholesale energy prices should help households' annualised energy bills to drop by around £2.6k in July from £3k in Q2 and trend lower over the upcoming quarters.

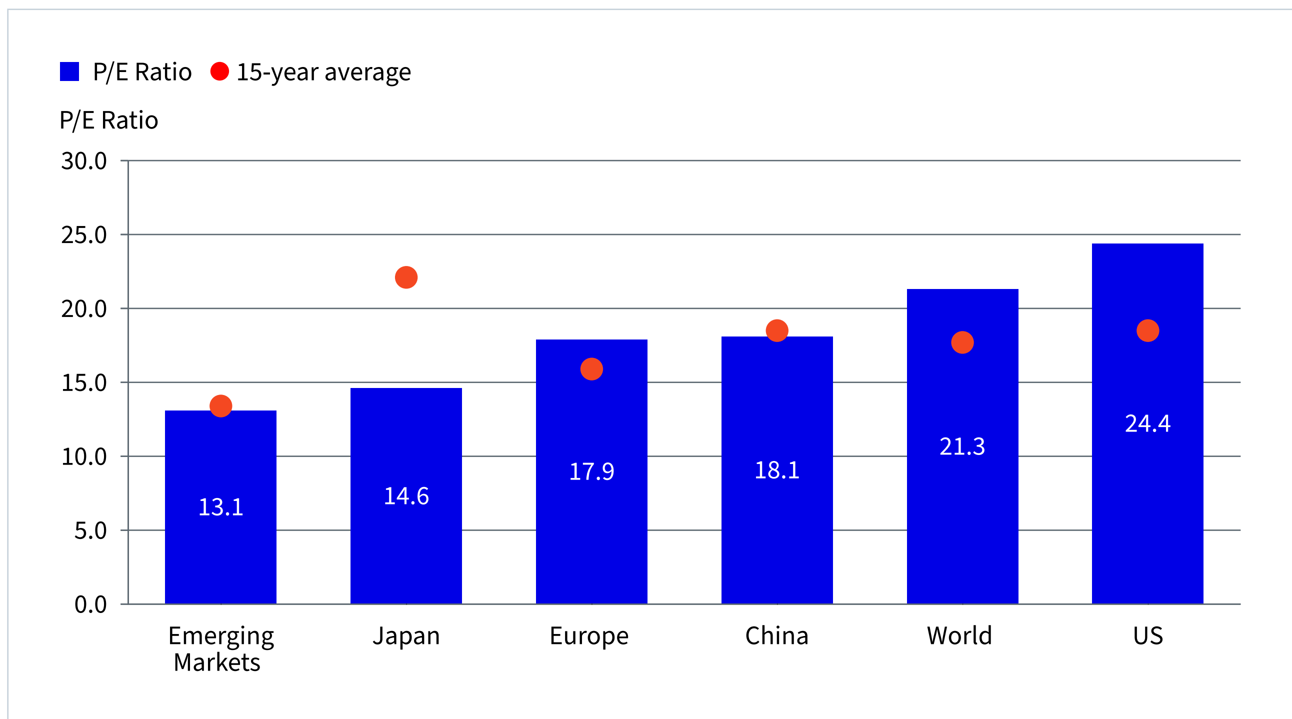
9 Office for National Statistics as of 31 January 2023.

Business surveys remain consistent with job losses in H1 2023 as firms endeavour to reduce costs in the face of higher financing costs. Given that nearly 80% of corporate bank loans are floating rate, the increase in the bank rate would have raised their debt servicing costs. We expect the BOE to raise the bank rate to 4% in February and hold that level for the rest of the year. Most of the slack in the economy should accumulate in the labour market, allowing a sustained slowdown in core inflation.

US valuations remain high vs international developed and EM equities

The rate hiking cycle is maturing. We are closer to the end in the US. US equity markets valuations from a price-to-earnings (P/E) ratio remain high, whilst Japan continues to trade at a steep 23% discount to its 15-year average. Amidst the recent rally, European valuations at a 17.9x P/E ratio have already priced in the China reopening trade alongside its prudent energy management as its 35% discount to its 15-year average a month back has completely eroded.

Figure 15: Global equity market valuations



Source: Bloomberg, WisdomTree, as of 31/01/2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

So, the European equity momentum should fade in the interim. However, given the favourable valuations across EM, Japan, China and Europe, we expect investor positioning in 2023 to lead in international markets ex-US. ETF flows since the start of 2023 resonate this trend with international ETFs garnering US$15.2bn in net flows, and developed market ETFs receiving only US$6.2bn in net flows.

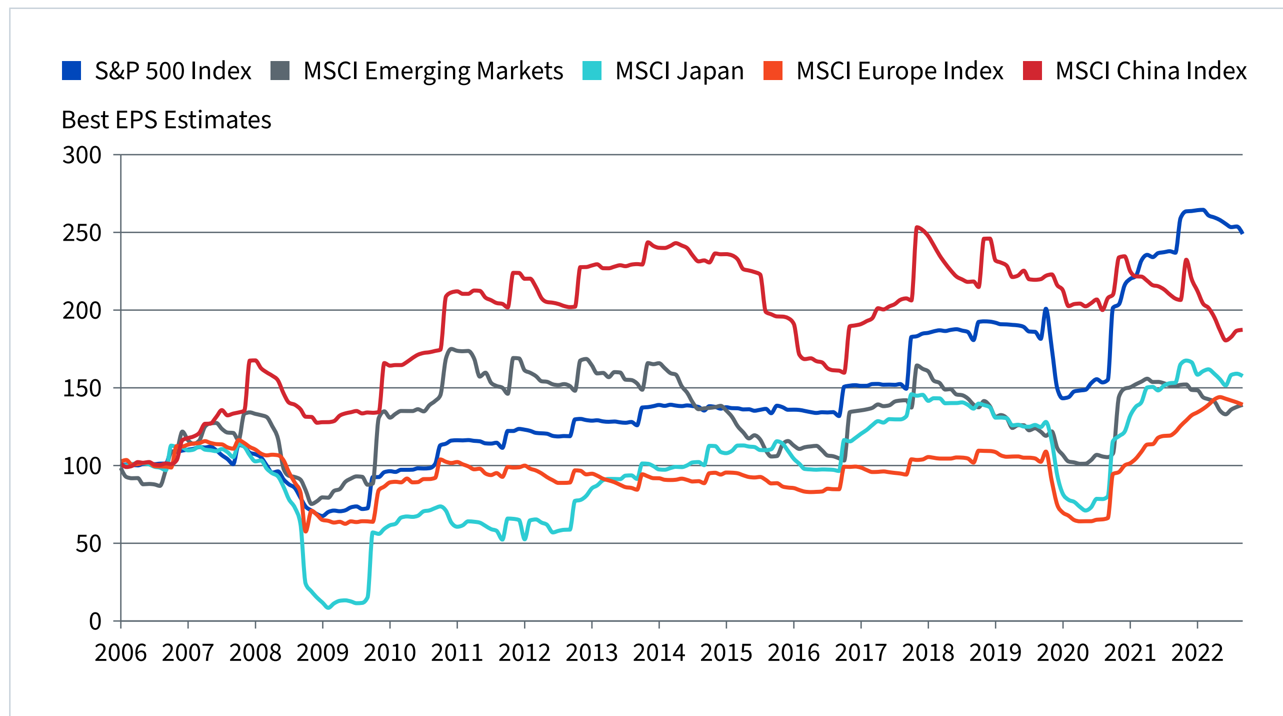
Figure 16

	US	International Markets ex- US			
Metrics		China	Japan	Europe	Emerging Markets
Performance	7%	6.1%	5.1%	7.8%	6.0%
ETF net Flows (Year to Date)	-0.4	4.5	1.3	7.2	11.3

Source: Bloomberg, WisdomTree as of 10 February 2023. Net ETF flows are in billions, US dollar. **Historical performance is not an indication of future performance and any investments may go down in value.**

Looking back over the past decade, US companies have led international stocks in two main drivers of equity price appreciation: earnings and valuation. Earnings remain the key driver for equity markets over the long term. If we try to think about what lies ahead, we can see that earnings revision estimates are displaying a marked turnaround for China, Japan and EM, whilst the US and Europe are poised to see further earnings contractions. China's recovery remains the important swing factor that could enable its economy, alongside EM and Japan, to outperform global equities in 2023. At 8% of sales, Europe has the second highest exposure after Asia-Pacific (ex-Japan) to China. Yet it's important to bear in mind that European companies earn twice the amount of revenue from the US than from China. So, a soft landing in the US will be vital for Europe to continue its cyclical rally.

Figure 17: EPS Estimates for China and Emerging Markets remain strong



Source: Bloomberg, WisdomTree, as of 31/01/2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

The battle between Energy and Technology stocks

The Energy sector is coming off a strong year, as tight supplies and rising demand drove energy prices higher in 2022. These dynamics are expected to continue into 2023. We expect earnings results for energy companies and their stock performance across the spectrum—including oil, gas, refining and services—to maintain momentum in 2023. Whilst investment in oil and gas production has been rising, it will still take multiple years for global supply to meet demand, which continues to support the narrative of higher energy prices.

Refining capacity continues to look tight this year, given the reduced capacity and long lead time required to bring new capacity online. We expect this to support another strong year for the profitability of refining operators. At the same time, energy service companies should also benefit as spending on exploration and production continues to gather steam. The biggest risk to the sector remains if demand for energy falters in the face of a severe recession. However, as we expect most economies to have a modest recession, this risk is less likely for the Energy sector.

Figure 18: Performance comparison of sectors in the S&P 500 Index in 2023 versus 2022

Factors	Tickers	Sectors	Start of 2023	2022
Value	S5FINL Index	Financials	6%	-12%
	S5INDU Index	Industrials	4%	-7%
	S5ENRS Index	Energy	3%	59%
	S5CONS Index	Consumer Staples	-2%	-3%
	S5UTIL Index	Utilities	-4%	-1%
Blend	S5HLTH Index	Health Care	-3%	-4%
Growth	S5TELS Index	Communication Services	13%	-40%
	S5INFT Index	Information Technology	13%	-29%
	S5RLST Index	Real Estate	9%	-28%
		Materials	6%	-14%
	S5COND Index	Consumer Discretionary	14%	-38%

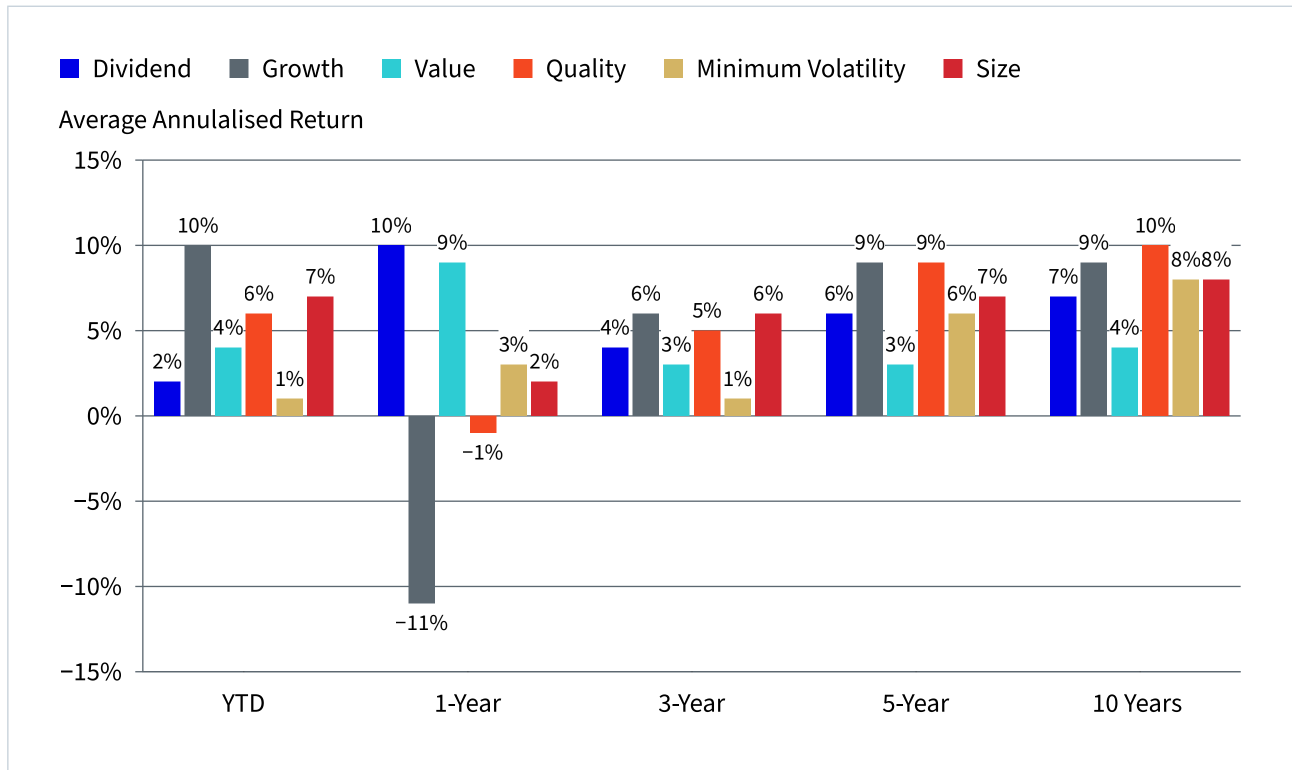
Source: Bloomberg, WisdomTree as of 10 February 2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

Meanwhile, higher interest rates were the key driver of the underperformance of the Technology sector last year. We continue to see weakness in the Technology sector amidst rising risks of peak globalisation, weaker earnings and the potential for more regulation. Despite the recent layoff announcements by technology firms, they still appear inflated, with employee growth in recent years 20% too high relative to real sales growth. The COVID-19 pandemic had accelerated the demand in software and technology spending with the rise of remote work and social distancing. However, companies today are more likely to cut their technology spending to offset the higher costs of energy, travel, wages and other factors. The key risk to our view remains that valuations have come down, and if rates do begin to peak, selective technology companies could benefit from the growth generated by their cost-cutting initiatives.

Value vs Growth in 2023

Value stocks tend to be positively correlated with higher inflation. In 2022, high inflation was a result of rising commodity prices, labour shortages and fiscal stimulus provided by Western economies, whilst Growth stocks were penalised for their lofty valuations. Value-based stocks flourished on commodity supply constraints and cheaper valuations amidst a rising rate environment. Much of this is now priced into Value stocks. Most Value stocks' earnings growth and valuation re-ratings rely on higher commodity prices or interest rates or a factor outside of their control. Owing to this, we still believe there are opportunities where constrained supply in the absence of falling demand will continue to support higher prices.

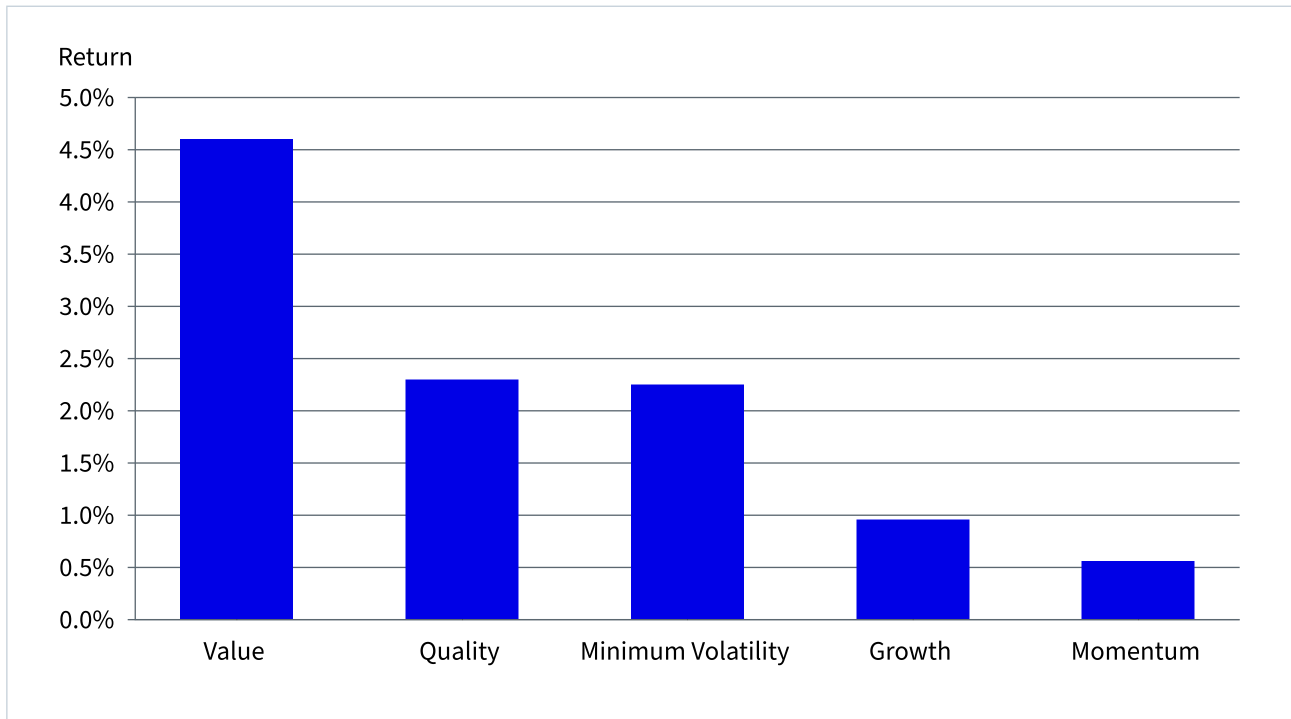
Figure 19: Sharp reversal of factor performance in 2023 versus 2022



Source: Bloomberg, WisdomTree as of 10 February 2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

There are significant prospects in Europe and Asia where discounts remain wide and a sizeable valuation gap exists across sectors. Europe's energy sector accounted for two-thirds of Europe's EPS growth in 2022. The continuing trend of capital discipline, resilient earnings and high shareholder returns should keep attracting flows into the sector in 2023. We expect Value stocks to be in better shape to withstand the global economic slowdown. Historically, the Value factor has demonstrated resilience during periods of interest rate volatility.

Figure 20: Factor performance during periods of above average interest rate volatility



Source: WisdomTree, Bank of America Securities, Bloomberg, data from 01/01/1990 to 31/01/2022; annualised relative performance versus an equal-weighted index. **Historical performance is not an indication of future performance and any investments may go down in value.**

Conclusion

There is considerable uncertainty about how 2023 will unfold. As the key focus moves from inflation to a recession in 2023, it opens up the possibility of several outcomes for central banks and interest rates. Keeping this in mind, 2023 may well be a tale of two halves, with higher interest rates in the first half, followed by lower rates in the second half as a global recession takes centre stage.

4. Thematic Outlook: When the economics makes sense, megatrends take off

In this section

On our way to a greener future – the energy transition

The economics of industry

On our way to a more connected future – the digital transition

AI is getting smarter

The growing need to be secure

Conclusion

‘Let’s go invent tomorrow instead of worrying about what happened yesterday.’ – Steve Jobs

What if I told you that this outlook, including this opening sequence, has been written by ChatGPT? Will it make you admire the technology and encourage you to embrace it? Or will it make you worry about artificial intelligence taking over the world? Will it increase or decrease the credibility you assign to research from WisdomTree?

In his bestselling book *Sapiens*, historian Yuval Noah Harari argues that whilst the agricultural revolution enlarged the sum of food at the disposal of humankind, it did not improve the diet or life for everyone. Foragers who became farmers replaced their varied diet with a much narrower one. They ate wheat, rice or potatoes from the fields they cultivated, whilst meats and exotic fruits from distant lands were reserved for the elite.

The lesson here is that innovation alone does not solve all problems. What matters is how societies structure themselves to benefit from those innovations, and that is not an easy pursuit. Especially today, when a multitude of megatrends are evolving in parallel and often intersecting one another.

One common denominator underlying most trends is economics, which often determines the direction things move. Investors, therefore, have a crucial role in this process not only so they can make informed decisions for their own finances but so they can influence the discourse and make a positive impact on the world.

In this outlook, we highlight two megatrends that are evolving rapidly enough to warrant close attention.

On our way to a greener future – the energy transition

The energy transition boils down to this—the world is looking to recreate in a few years what was done in over a century and, this time, do it much more sustainably. But when turning back is not an option, the only way is forward. Is the energy transition accelerating?

The Inflation Reduction Act of 2022 in the US, which includes US$369 billion for energy and climate change initiatives, is perhaps the most significant climate bill in US history. In addition to the support it extends to clean technologies like renewables, energy storage and green hydrogen, it aims to build more localised supply chains within the US and its free trade agreement partners. In other words, energy security has become synonymous with the energy transition. In still other words, geopolitics and economics are catalysing meaningful climate action.

The question now is how other countries might respond. In January 2023, at the World Economic Forum in Davos, European Commission President Ursula von der Leyen pledged unprecedented investment in clean technologies to rival US subsidies. It is possible that we will see healthy competition from major players in the clean energy space take shape quickly this year. And whilst we may see blocs like the US, Europe and China emerging, their paths will inevitably intertwine. But in the meantime, they will all seek to build themselves to positions of strength.

For consumers who wish to make climate-friendly choices, the economics need to make sense as well. Take electric vehicles (EVs) as an example. According to the International Energy Agency, lifetime emissions of electric vehicles are roughly half those of internal combustion engine vehicles.[10] If a consumer is sold on the environmental credentials of EVs, they still need to ascertain the economic viability.

Fortunately, consumers have an ever-expanding menu to choose from. The number of electric vehicle models in the market worldwide has risen from 159 in Q4 2017 to 551 in Q4 2022.[11] The more affordable electric vehicles become for the mass market and the more sustainably the industry grows, the more easily the world will decarbonise road transportation.

The number of electric vehicle models in the market worldwide has risen

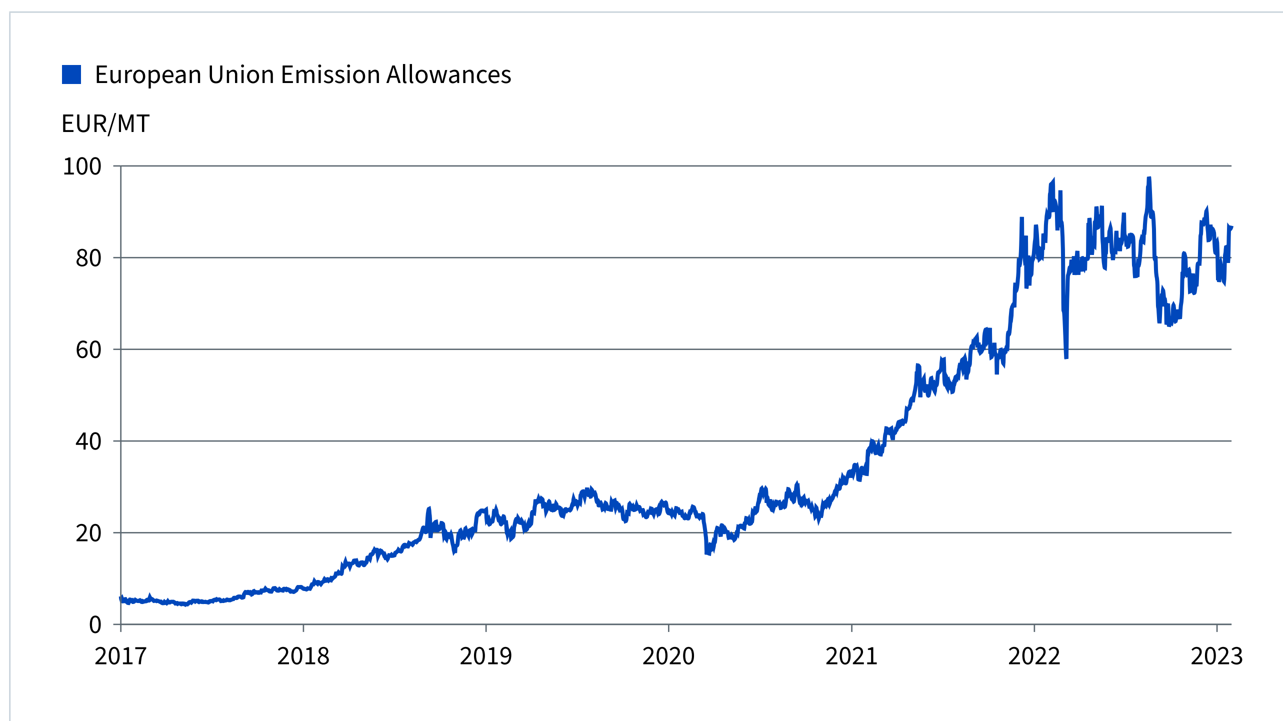
10 https://www.iea.org/data-and-statistics/charts/comparative-life-cycle-greenhouse-gas-emissions-of-a-mid-size-bev-and-ice-vehicle.

11 Source: Bloomberg New Energy Finance, data as of 21/12/2022. Includes battery electric, plug-in hybrid and fuel cell vehicles.

The economics of industry

Europe is introducing the Fit for 55 legislation, which aims to achieve a 55% reduction in greenhouse gas emissions by 2030.[12] A key pillar of the legislation is the Emissions Trading Scheme (ETS), which is designed to incentivise pollution abatement by pushing up the price of European Union Allowances, that is, the price of carbon emissions (see Figure 21 below).

Figure 21: The price of emitting greenhouse gases is on the rise



Source: WisdomTree, Bloomberg, data as of 31/01/2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

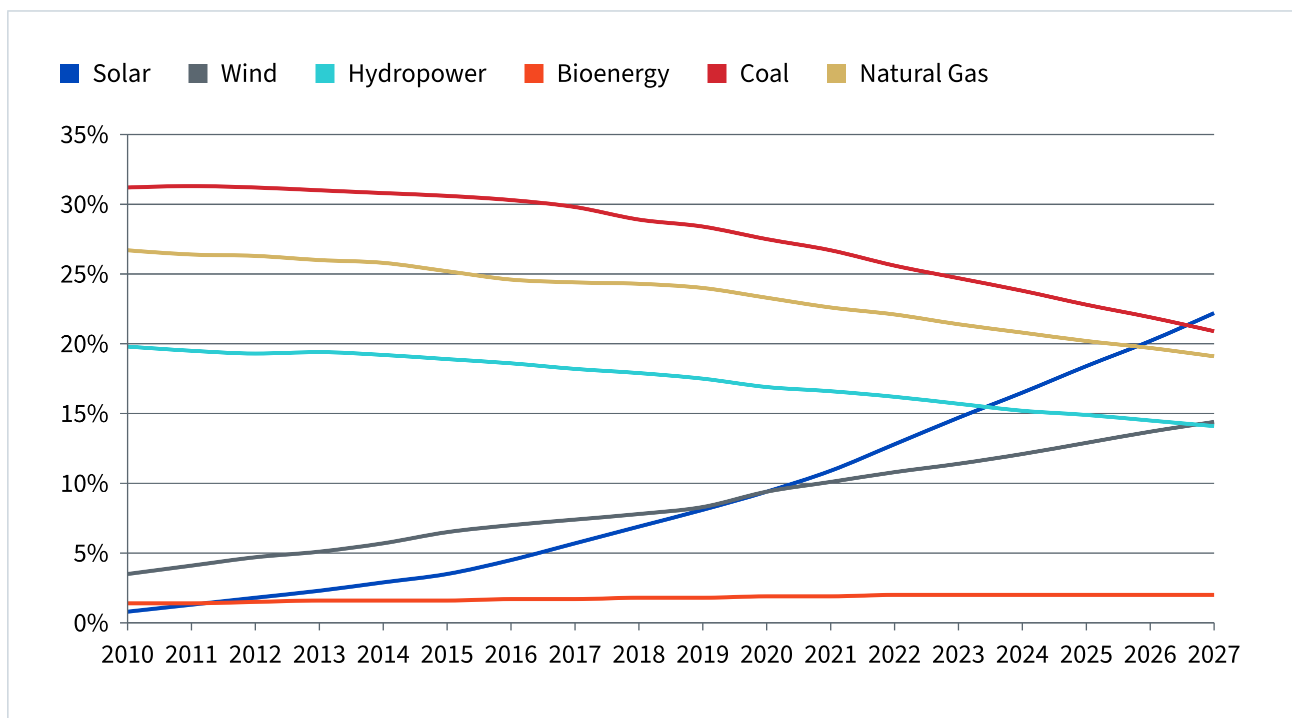
The solution for many industries is to switch towards renewables. But this is not always straightforward for energy-intensive industries like steel manufacturing. For such sectors, carbon capture promises a viable alternative to not only avoiding punitive carbon emission prices but also doing the right thing for the environment. With investors increasingly challenging the sustainability credentials of businesses, the biggest cost of not doing so could be reputational.

12 https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/.

According to Bloomberg New Energy Finance, seven gigatons of carbon dioxide will need to be captured annually by 2050 to achieve net zero. This is the equivalent of today's power sector emissions from Europe, China and India combined. Similarly, hydrogen production will need to become green and rise to 500 million metric tons annually in 2050, a fivefold increase from today's levels.[13]

In the meantime, the installed capacity for renewables continues to grow rapidly, with solar power expected to outgrow natural gas by 2026 and coal by 2027 (see Figure 22 below).

Figure 22: Share of cumulative power capacity by technology

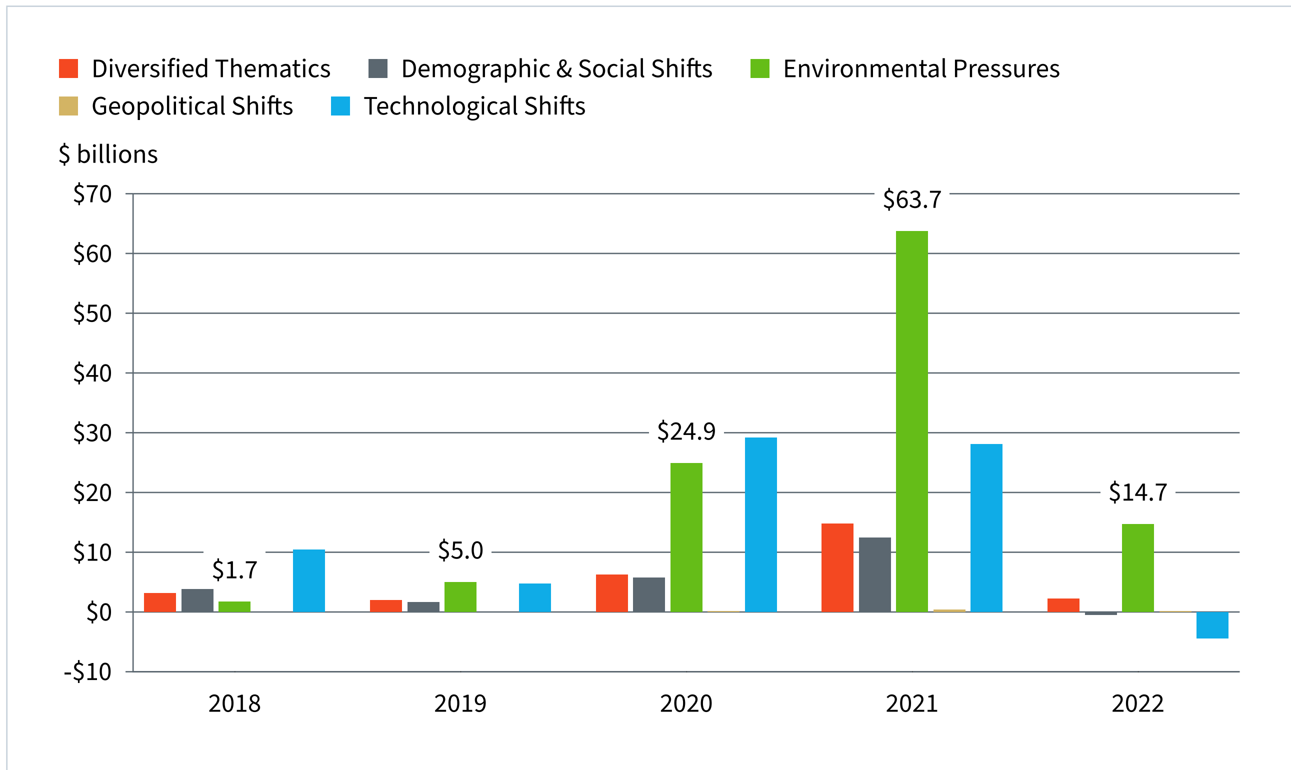


Source: IEA, 'Share of cumulative power capacity by technology, 2010-2027'. https://www.iea.org/data-and-statistics/charts/share-of-cumulative-power-capacity-by-technology-2010-2027. Licence: CC BY 4.0. Last updated 05/12/2022. **Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties.**

In our conversations with investors in recent months, one thing has become clear: everyone agrees that getting to net zero will require us to employ all possible solutions. No wonder, therefore, that investors continued to deploy capital to environmental themes in 2022 despite the challenging macro backdrop. Moreover, the rapidly increasing menu of options available to investors means more choices to express their convictions and make an impact (see Figures 23 and 24 below).

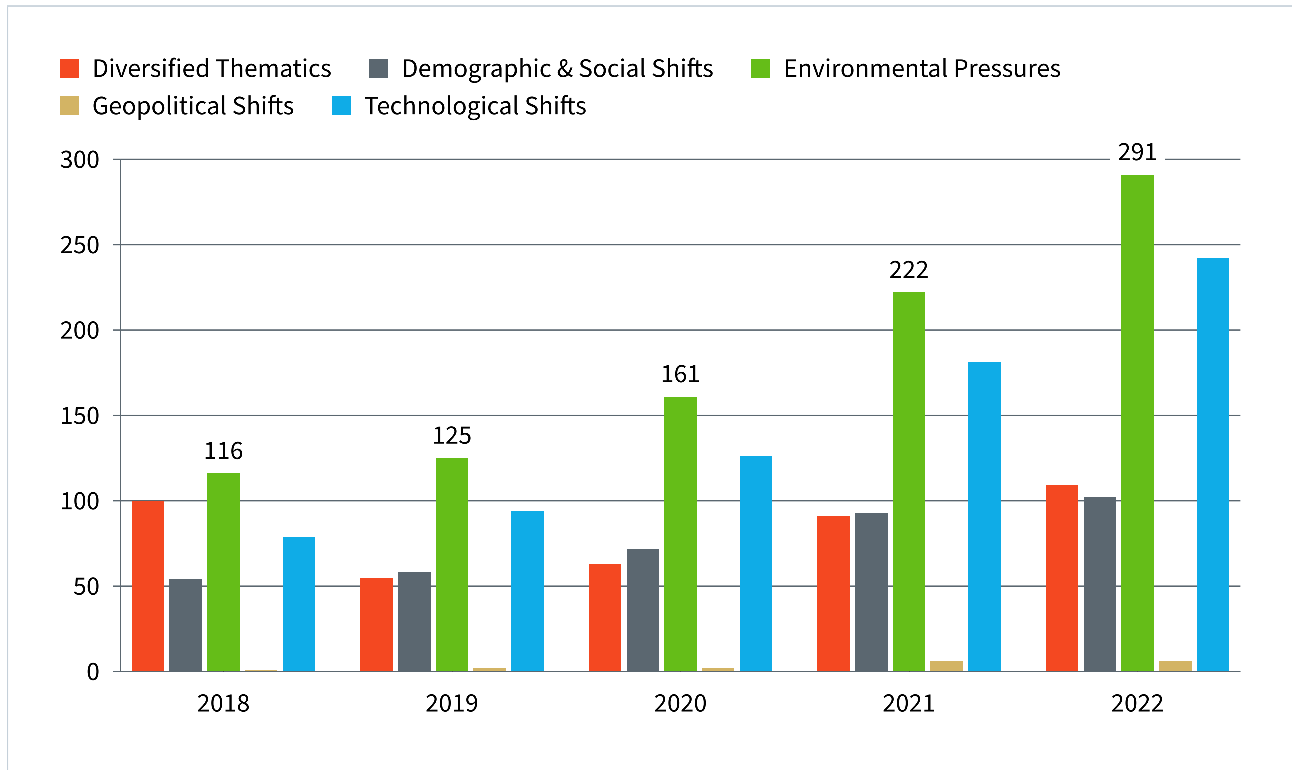
13 Bloomberg New Energy Outlook 2022.

Figure 23: Flows into thematic strategies in Europe by Clusters



Source: WisdomTree, Morningstar, Bloomberg, period from 31/12/2018 to 30/12/2022. See our quarterly thematic report and our thematic universe paper for more details on the WisdomTree Thematic Classification and the definition of the different clusters.
Historical performance is not an indication of future performance and any investments may go down in value.

Figure 24: Number of Europe-domiciled ETFs and open-ended funds by Clusters



Source: WisdomTree, Morningstar, Bloomberg, period from 31/12/2018 to 30/12/2022. See our quarterly thematic report and our thematic universe paper for more details on the WisdomTree Thematic Classification and the definition of the different clusters.
Historical performance is not an indication of future performance and any investments may go down in value.

The combination of renewables like wind and solar, complemented by battery technology, is of paramount importance. But where batteries might not be able to decarbonise sectors like aviation and shipping, hydrogen and biofuels may come in. Where renewables can't be deployed, carbon capture will have a crucial role. And to ensure we build everything sustainably, we must also recycle and design our products for a circular economy that minimises waste and maximises the efficient use of resources. At WisdomTree, we believe all promising emerging green technologies will warrant consideration in 2023, especially those that are beginning to achieve economies of scale.

We believe all promising emerging green technologies will warrant consideration in 2023

On our way to a more connected future – the digital transition

In case the question has been gnawing at you, no, this outlook has not been written by ChatGPT. But at WisdomTree, we are excited by the developments in artificial intelligence (AI), nonetheless. Microsoft is looking to commit US$10 billion to OpenAI, the company behind ChatGPT, in addition to its initial investment of US$1 billion in 2019. Arguably, nobody yet knows what use cases will emerge from the technology and how it might be monetised—not even Microsoft, or ChatGPT itself, for that matter. But the buzz created by it means that artificial intelligence could be on the verge of mass acceptance. Getting people excited is, of course, the key to getting them to embrace something.

AI is getting smarter

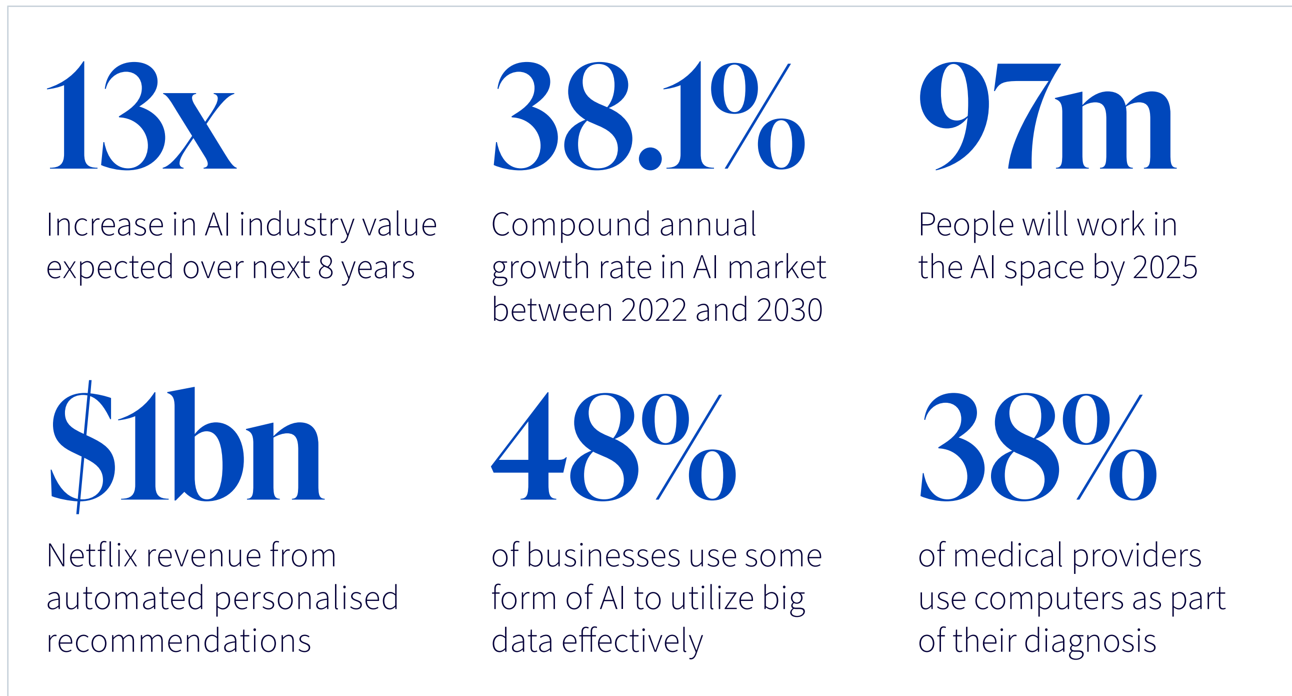
In December 2022, DeepMind announced that its game-playing AI DeepNash had learnt to master Stratego, a much more complex game than chess and Go, by playing itself. Stratego is more complex for AI to master because of an additional element of imperfect information. In Stratego, the two players start with 40 pieces that are initially hidden from their opponent. This means that, unlike chess, players don't have access to the same knowledge throughout the game. This makes the number of possibilities much greater than with chess or Go.[14]

Applications of such AI can extend beyond gaming to things like autonomous driving. An autonomous car dealing with the imperfect information of how humans on the road might behave will benefit from this additional layer of intelligence. And even if passenger cars don't become fully autonomous soon, they are progressing in that direction. In December 2022, Tesla said 285,000 Tesla owners in North America had bought its 'full self-driving' software package that automates mundane tasks but requires drivers to keep their eyes on the road. Similarly, applications like last-mile distribution will increasingly utilise autonomous technology in the coming years. According to Allied Market Research, the autonomous last-mile delivery market is projected to reach US$90 billion by 2030, at a compound annual growth rate of 24.1% between 2021 and 2030.[15]

14 DeepMind, as of 01/12/2022. https://www.deepmind.com/blog/mastering-stratego-the-classic-game-of-imperfect-information.

15 Source: Allied Market Research, February 2022.

Figure 25: The market size of AI is poised to grow



Source: Grand View Research (summarised by explodingtopics.com), January 2023. **Forecasts are not an indicator of future performance and any investments are subject to risks and uncertainties.**

AI has exciting applications in health care, too. In January 2023, JP Morgan's annual health care conference in San Francisco was attended by notable names in the pharmaceutical and biotech industries and the chipmaker Nvidia. According to Nvidia, 80% of the company's medical sales come from radiology systems and surgical robots, while around 20% come from AI approaches to drug and genomic discovery.[16] The core function of semiconductor chips is to perform lots of computations very quickly. Artificial intelligence is, therefore, not just a software concept but a hardware one too. And once those two things complement each other, the applications can extend to any industry.

Artificial intelligence is, therefore, not just a software concept but a hardware one too

16 Source: Barron's, 15 January 2023.

The growing need to be secure

In October 2022, Zoetop Business Company, the firm that owns fast fashion brands SHEIN and ROMWE, was fined US$1.9 million by the state of New York after failing to disclose a data breach that affected 39 million customers.[17]

Now, US$1.9 million may not be a huge price to pay for a large business. But when it comes to cybersecurity, fines are the least worrying for businesses. The reputational damage is the main thing to anguish over. It is a risk that businesses just cannot afford to take in the digital age.

But it appears that digitalisation is outpacing digital preparedness. In 2022, there was a 38% increase in cyber-attacks worldwide compared to 2021.[18] For the UK, this was a 77% increase, whilst, for the US, it was 57%. In the past, when people mostly worked together in the same workplace, and data was stored on physical hard drives onsite, there were fewer points of entry to breach the organisation's guardrails. Now, with people often working remotely and collaborating using multiple digital tools, the attack surface has widened, allowing criminals to be more agile and creative with how they conduct their attacks.

In our recent blog post, 'Cybersecurity should remain a top focus in 2023', we explain why cybersecurity will remain a relevant trend this year. Among the reasons is a growing recognition that cybersecurity is not optional. We cite Gartner's October 2022 survey of 2,200 chief information security officers, in which 66% of the respondents said they planned to increase their investment in cybersecurity.[19]

Digitalisation is happening, undeniably. Even policy makers are recognising it. The European Commission has termed the 2020s as Europe's digital decade, with the aim of making Europe fit for the digital age. NextGenerationEU, announced in 2021 in response to the pandemic, aims to transform economies and societies. Contained within it is a EUR250 billion boost to digitalisation efforts.[20] Europe will not be alone in paving the way for a sustainable digital transition. Across the globe, this trend will continue to accelerate this year.

> In 2022, there was a 38% increase in cyber-attacks worldwide compared to 2021

17 Source: cshub.com, 09/12/2022.

18 According to Check Point Research, January 2023.

19 Source: Steven Rosenbush, 'Cybersecurity Tops the CIO Agenda as Threats Continue to Escalate', Wall Street Journal, 17/10/2022.

20 Source: European Commission, January 2023. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age_en.

Conclusion

One thing we have not mentioned in this section is the macro backdrop. Arguably, the two megatrends discussed are expected to relent regardless of what central banks do this year. But their path is unlikely to be linear. This is for two reasons. The first is monetary policy. Thematic investments aligned with megatrends have a strong growth tilt and, therefore, high sensitivity to what central banks do. And given that timing the market to perfection is difficult, the best one can hope for is to identify reasonably attractive entry points (see Figure 26 below).

Figure 26: Compression of the price-to-sales multiple for select thematic strategies

Theme	03-Jan-22	31-Jan-23	Multiple compression
E-commerce	1.93x	1.27x	-34.1%
Internet of things	3.52x	2.78x	-20.8%
Robotics & automation	3.34x	2.50x	-25.0%
Cybersecurity	10.82x	6.50x	-40.0%
Cloud computing	12.02x	4.98x	-58.6%
AI	4.16x	1.98x	-52.5%
Digital payments	4.08x	3.46x	-15.2%
Blockchain	2.56x	1.70x	-33.5%
Semiconductors	7.82x	5.39x	-31.1%

Source: WisdomTree, Bloomberg. Historical price-to-sales ratio data is from Bloomberg. Please see appendix for the theme mapping to indices. Indices used are E-commerce: Solactive E-commerce Index, Internet of things: Indxx Global Internet of Things Thematic v2 Index, Robotics & automation: ROBO Global Robotics and Automation UCITS Index, Cybersecurity: WisdomTree Team8 Cybersecurity Index, Cloud computing: BVP Nasdaq Emerging Cloud Index, AI: Nasdaq CTA Artificial Intelligence Index, Digital payments: Solactive Digital Payments Index, Blockchain: CoinShares Blockchain Global Equity Index, Semiconductors: MVIS US Listed Semiconductor 10% Capped ESG Index. **You cannot invest directly in an index. Historical performance is not an indication of future performance and any investments may go down in value.**

The second reason is technological change. The topics driving the energy transition today and the innovations shaping the digital transition will not remain static. Just imagine where we were 20 years ago. People had only just started using the internet en masse. Google existed but was still a noun and hadn't yet become a verb. The first smartphone was still four years away. Could anyone have accurately predicted the success of companies like Apple and Netflix when the technologies that carry them today hadn't even been created back then? Can anyone predict today whether ChatGPT might also be a verb in 20 years? Or might it be quickly superseded by something even more superior? Remember DVDs?

Any investment approach in these spaces must therefore be prepared to evolve with the themes. This is by no means a simple endeavour. At WisdomTree, we believe associating credibility with expertise is a reasonable approach. That is why we strive to learn from the best in each of these domains. We promise to keep doing so this year.

We see investors doing the same by becoming more knowledgeable about these megatrends, the technologies and how their capital can impact the world. Outcomes can never be guaranteed. But informed decisions can certainly be made. We look forward to lots of challenging questions and engaging discussions.

5.
Crypto Outlook: Central bank liquidity driving crypto prices

In this section

Tokenisation democratising access to private assets

Healthy software developer activity despite price declines

Benchmark yield emerging for digital assets

Useful use cases will determine layer 1 winners

Layer 2s help to address the scalability issue

Digital USD tokens emerging as a potential major use case

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Privacy protections and digital identity paving the way for Web3

Binance rises to become a critical liquidity provider

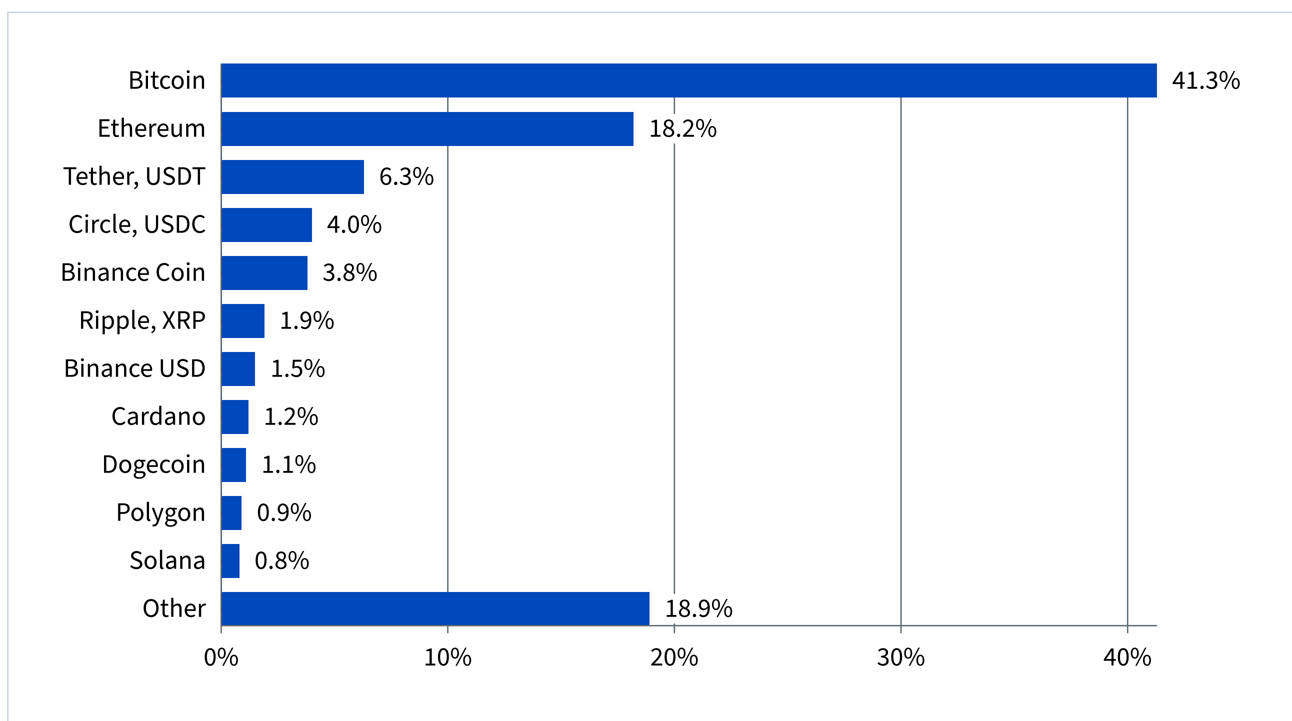
Clarity of regulation needed

Conclusion

2023 started with a bang for crypto assets. Bitcoin's price was up 44% in January, Ethereum rose 40% and some illiquid alternative tokens (alt-coins) increased by more than 100% (Bloomberg). Bullish sentiment emerged across the board, benefitting crypto the most. It has historically often been the case that the crypto market anticipates where the rest of the market will go later. Future price action depends greatly on inflation expectations and the resulting central bank action.

We saw a sharp uptick in crypto prices when the US Consumer Price Index (CPI) declined to an annual 6.5% increase in January. In addition to positive investor sentiment, crypto benefitted from trader positioning. A meaningful number of traders had short positions in crypto, expecting more contagion from FTX; when the market turned against them, these traders experienced a short squeeze and had to liquidate their positions, pushing the prices even higher. The market seems to be expecting a Fed pivot later in the year as economic data becomes weaker and inflation subsides.

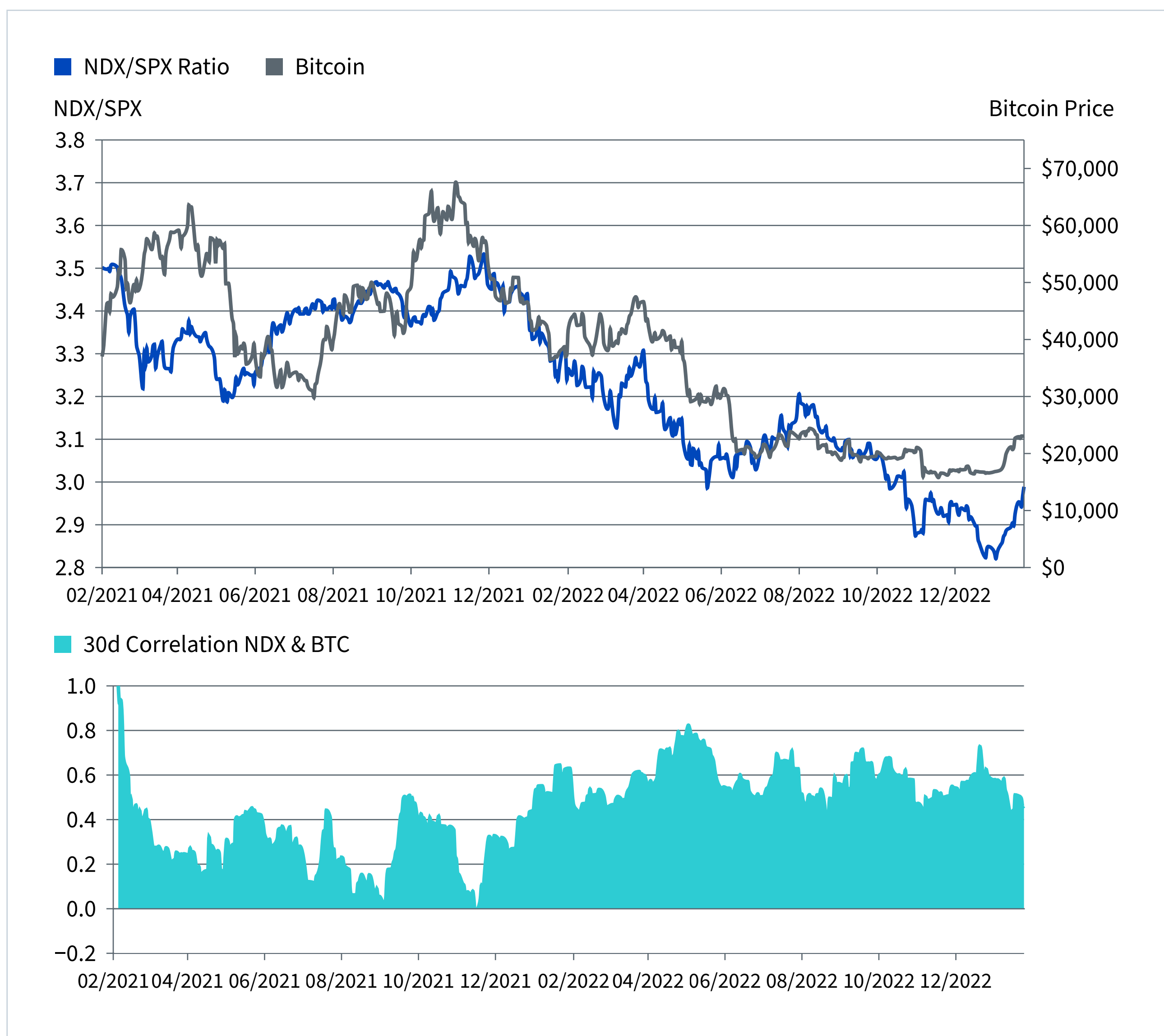
Figure 27: Cryptocurrencies, Total Market Capitalisation Dominance as of Jan 26, 2023



Source: WisdomTree, Nomics, CoinGecko, Messari, as of 26/01/2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

Bitcoin continues to be the leading blockchain with more than 40% market share, followed by Ethereum with an 18% market share. Our main thesis for bitcoin is that it is an anti-fiat asset and could be treated as a long-term store of value or digital gold. We have seen that some traders use bitcoin as an expression of risk on/off, and hence, it could be more affected by central bank liquidity than alt-coins. The correlation between Nasdaq and Bitcoin is still very strong (see Figure 28 below). Smaller tokens/coins with much less liquidity have more idiosyncratic price behaviour that is more dependent on the potential and usefulness of the actual protocol/ application.

Figure 28: Nasdaq and Bitcoin Correlation



Source: WisdomTree, Yahoo Finance, Nomics, as of 27/01/2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

If inflation fears re-emerge, and the Fed continues to raise rates and keeps its hawkish rhetoric, this will most likely put pressure on an upward move in crypto prices. If, however, the Fed pivots and starts lowering interest rates, this will likely lead to a bullish environment for the crypto market.

Tokenisation democratising access to private assets

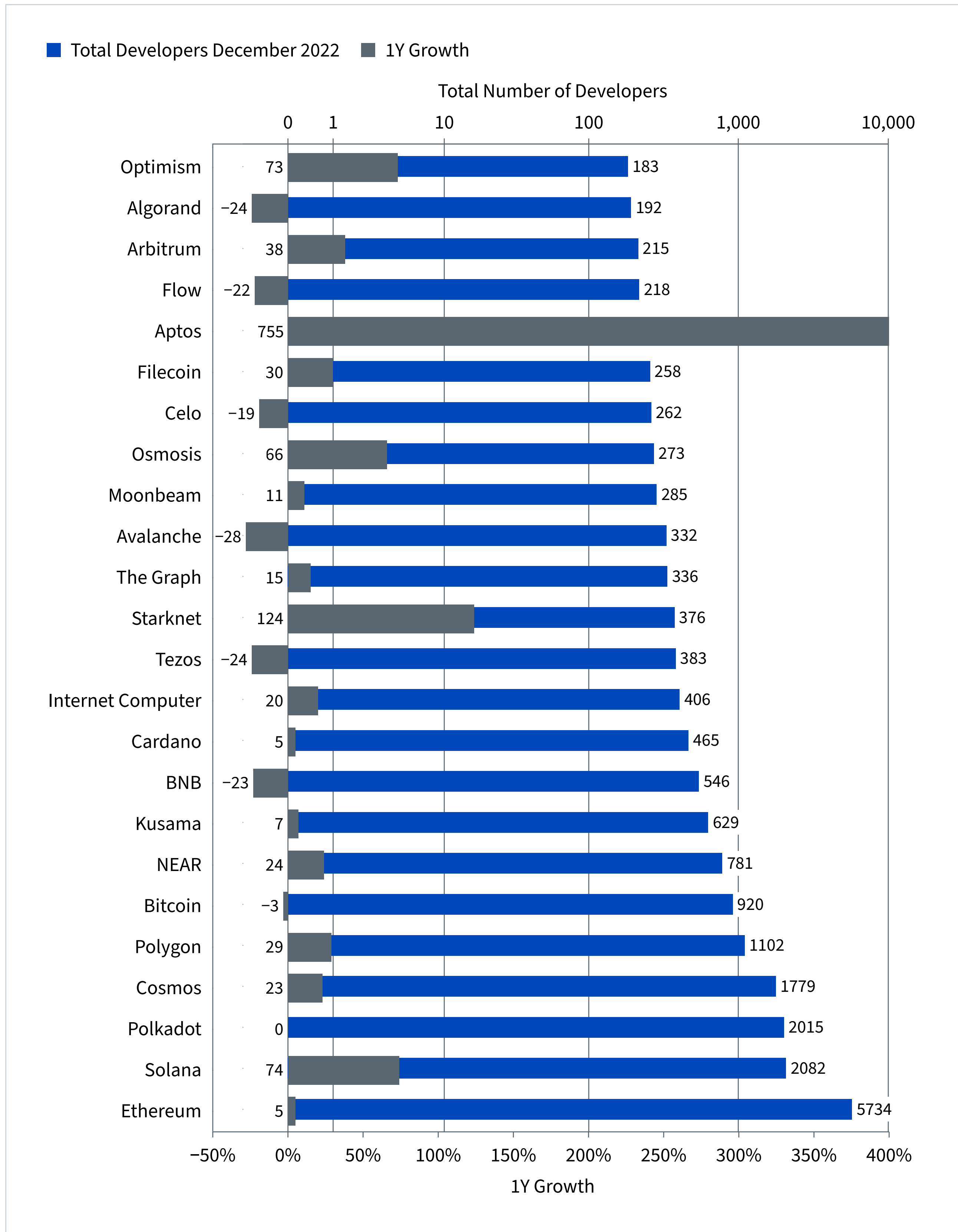
Last year we saw several alternative asset managers starting to tokenise their private equity funds. These companies include Apollo, KKR and Hamilton Lane. This is significant because most of these private funds were previously only accessible to large institutions. For example, Hamilton Lane has opened up its flagship equity Fund, Equity Opportunities Fund V, to individual investors via a Securitize feeder fund tokenised on Polygon blockchain but fully compatible with the Ethereum ecosystem. The minimum investment has dropped from US$5 million to US$20,000.

For an individual investor, access to historically high-performing asset classes via tokenisation is a significant positive development; for an asset manager, tokenisation offers meaningful cost reduction and administrative benefits. We expect more alternative funds and increasingly also other asset managers to start tokenising their traditional products and bringing them to a wider investor base.

Healthy software developer activity despite price declines

Despite the more than 70% price decline in crypto assets last year, the number of monthly active software developers actually grew by 5% over the previous year (Electric Capital, 2022 Developer Report), and this number does not even include the private crypto code developers.

Figure 29: Developer Growth Among Most Active Ecosystems



Source: Electric Capital, 2022 Developer Report. **Historical performance is not an indication of future performance and any investments may go down in value.**

An increase in developer activity exhibits healthy development, as software developers are the ones creating the use cases and killer applications of the future. There are now more than 23,000 monthly active open-source code developers, which is a more than 120% increase over three years ago (Electric Capital, 2022 Developer Report).

Ethereum is leading the way by a wide margin, with 1,873 monthly active full-time developers and more than 5,700 total developers, solidifying its presence as the most popular smart contract blockchain community. Bitcoin has less than 1,000 total developers, but this is not concerning to us as Bitcoin has an established use case. It is most often used as an anti-fiat store of value and, in the future, potentially, as a payment platform.

It is interesting to note that 72% of monthly active developers work outside the Bitcoin and Ethereum ecosystems. Blockchains such as Solana, Polkadot, Cosmos and Polygon are experiencing a rapid increase in developer activity.

An interesting observation is that developers are still active around Solana despite a dramatic -97% decline (Bloomberg) in the token price, although, more recently, the token has risen rapidly in price. This gives us confidence that the developers around Solana remain engaged and active.

Benchmark yield emerging for digital assets

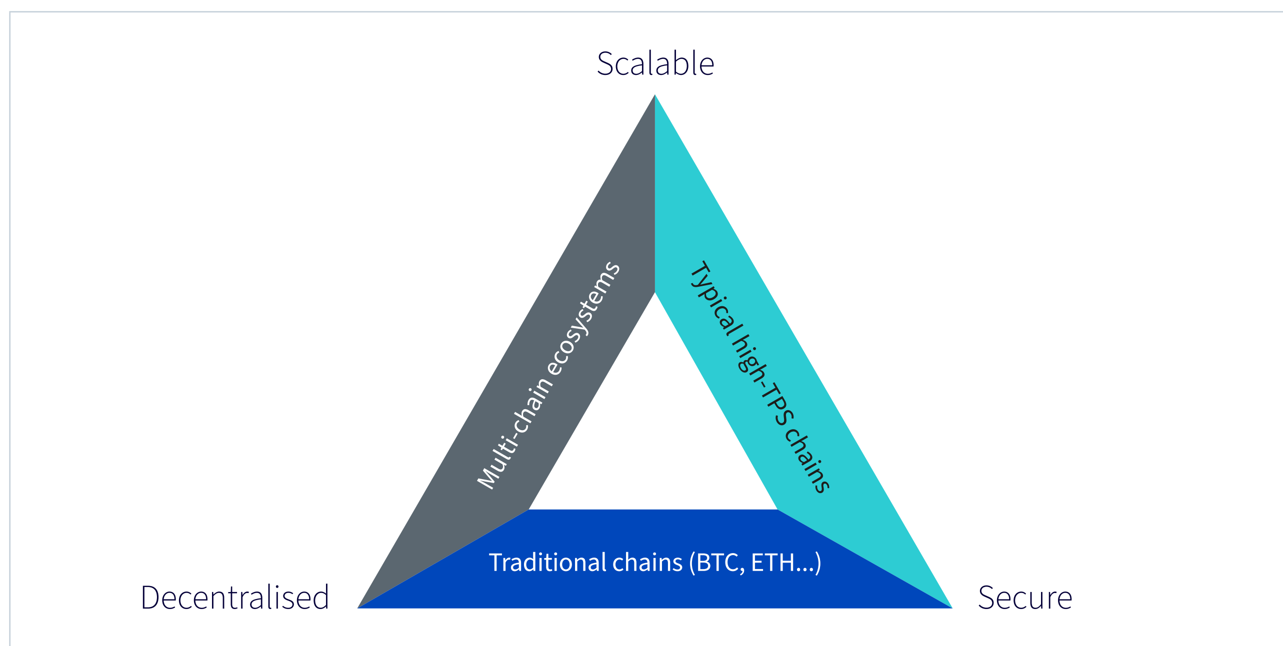
After Ethereum moved from a proof of work to a proof of stake consensus mechanism last November, it has been possible to stake one's ether into a smart contract and accrue interest by doing so. It has not yet been possible, though, to withdraw this yield, but this is expected to be enabled in March 2023 with the Shanghai upgrade. Once holders of ether can withdraw their interest, this will create a benchmark yield, currently estimated at around 4%–6%, against which all other staking yields can be compared. There are some other protocols currently offering staking, such as Solana, but a yield in the largest smart contract platform is a significant development.

Ethereum also became deflationary at the end of last year. According to Ethereum Improvement Proposal EIP-1559, implemented in 2021, part of the Ethereum transaction fees is burned—that is, they will be sent to a wallet with no access key. This will remove part of ether from circulation and limit its supply. This could potentially be positive for the Ethereum price, provided demand stays the same or increases.

Useful use cases will determine layer 1 winners

After the collapse of offshore exchange FTX, the layer 1 networks have been treading water. Solana was closely linked to FTX, and questions have been raised about the transparency and viability of other layer 1 networks, which all compete with each other in terms of security, scalability and speed. For example, a blockchain that provides faster transaction transmission might not be as secure as a slower network. In the following graph, Vitalik Buterin, the founder of Ethereum, describes his view of the 'blockchain trilemma'.

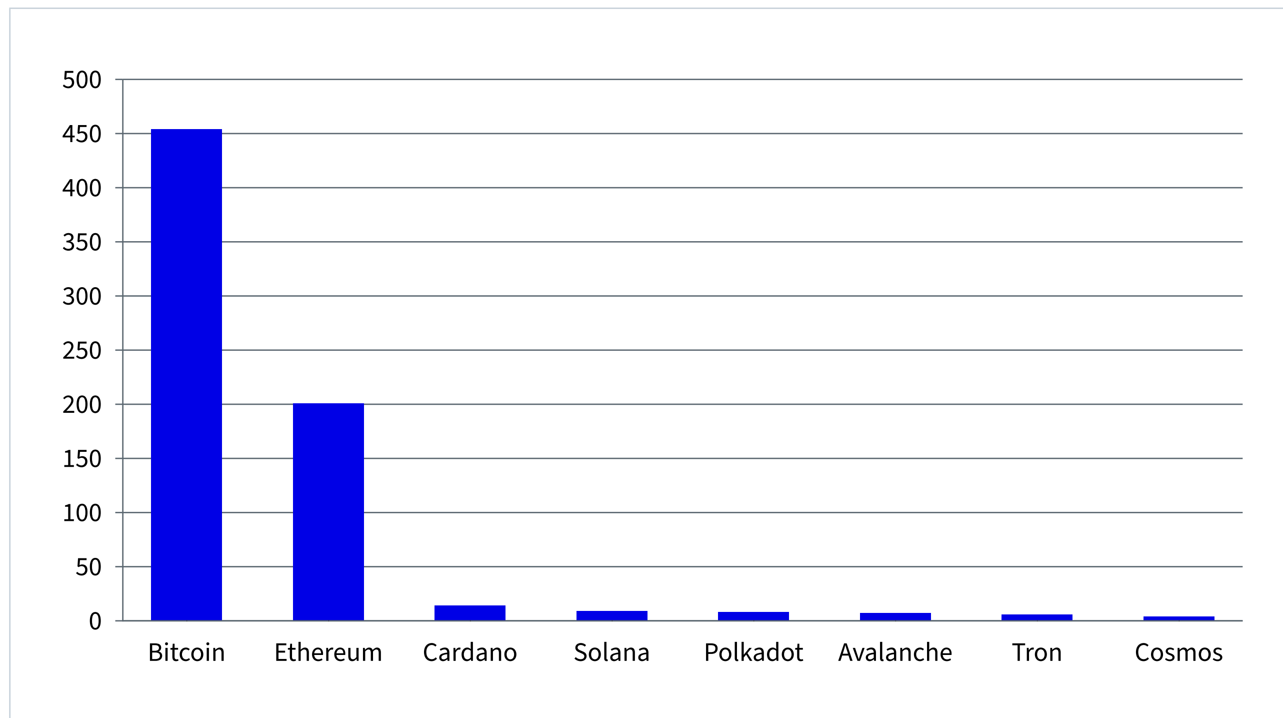
Figure 30



Source: Vitalik Buterin (https://vitalik.ca/general/2021/04/07/sharding.html). **Historical performance is not an indication of future performance and any investments may go down in value.**

In the last bull market, as Ethereum's gas/transaction prices rose to prohibitive levels, many other layer 1s offered a cheaper option to transact. Higher gas prices were due to congestion in the Ethereum network. Whilst scalability improvement is one of the upgrades we expect to see in Ethereum later this year, in the end, it will be the actual use cases that determine the winning blockchains. The end user is not interested in the technology but in the benefit they can derive from the application. These use cases are actively being developed. We expect a slightly slower funding environment for competing layer 1 networks, as venture capitalists are likely to scrutinise the on-chain activity more thoroughly and pay more attention to token issuance and insider distribution.

Figure 31: Market cap of layer 1 networks in USD (billions)



Source: WisdomTree, Coinmarketcap.com, as of 03/02/2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

One layer 1 network that garnered a lot of attention last year was Solana, which continues to attract an active developer community. This could be because the network has some unique features, such as high transmission capacity, fast settlement, and fast throughput: features that are currently not being offered by the Ethereum Virtual Machine (EVM) programming environment. These features make Solana appealing for developers looking for fast transmission speeds and fast settlement times. Whilst the blockchain has benefits, it also suffers from a lack of stability and outages, and in the next coming months, we expect to see meaningful product improvements to address these weaknesses.

Layer 2s help to address the scalability issue

Another way to provide scalability is to use a layer 2 network on top of the original layer 1 blockchain. Both Bitcoin and Ethereum have suffered from a lack of scalability and relatively high transaction costs. Layer 2 networks aim to solve this problem by moving transactions off-chain, rolling them up and bundling multiple transactions into one single transaction, thereby providing faster throughput, faster settlement and lower prices. As there is no need to change the layer 1 structure, the security and stability of the original layer 1 blockchain remain unaffected. The most prominent layer 2 network for Bitcoin is the Lightning Network, and for Ethereum, there are two main types of layer 2 solutions: optimistic rollups and zero knowledge rollups (ZK rollups). Some layer 2 networks include Polygon, Optimism and Arbitrum.

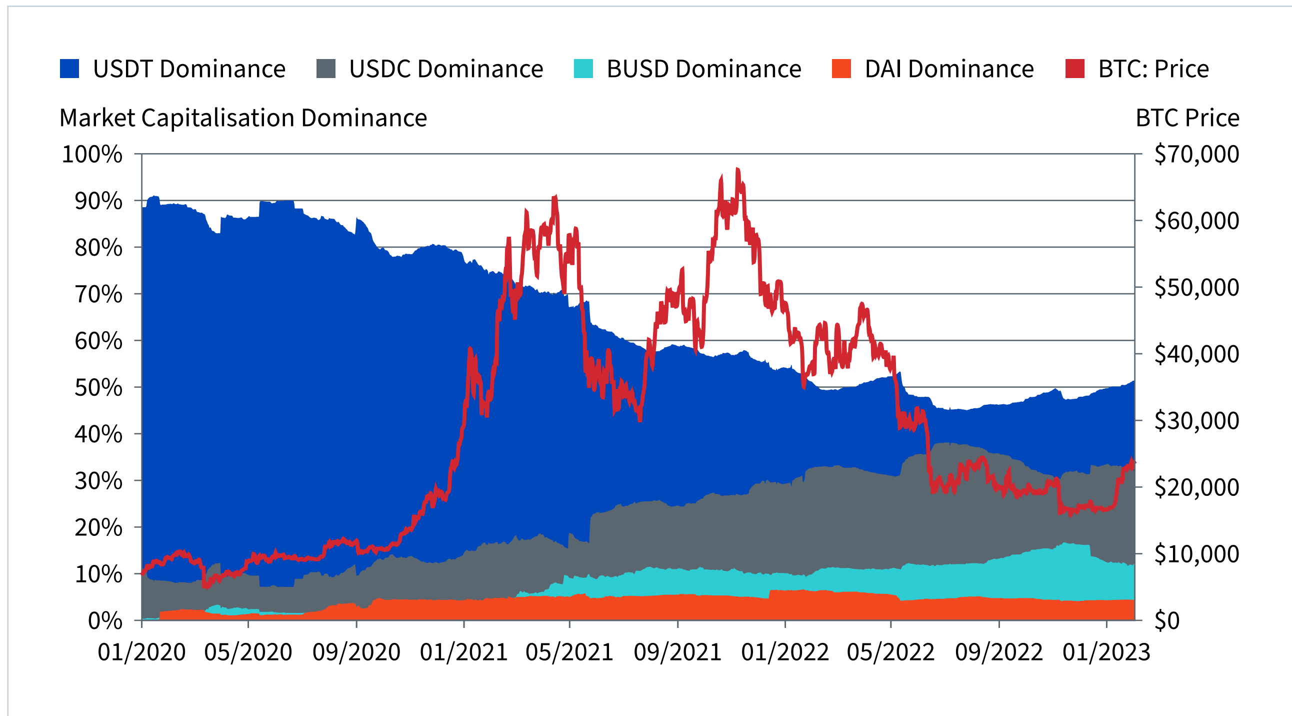
Digital USD tokens emerging as a potential major use case

Stablecoins are digital tokens issued on public blockchains that track an underlying asset, such as a currency (USD, euro) or a commodity (gold). The ‘stabilisation’ is achieved via reserve assets that, with a currency token, should be in the form of short-term government debt and cash. Circle has rapidly become the dominant digital USD token issuer with its USDC token. The USDC token was first launched in September 2018 on the Ethereum blockchain as an ERC-20 token but has since expanded to other blockchains as well, including Solana, Algorand and Stellar. USDC is 80% backed by short-term US Treasuries and 20% by cash.

The world’s first stablecoin, Tether’s USDT, was launched in 2014 and still maintains its leading stablecoin position, particularly in Asia. However, Tether has a somewhat questionable history in terms of its reserve assets. Historically, a large part of its reserve assets was backed by commercial paper, which is not always very liquid. Tether has reduced the portion of commercial paper in its reserves, but questions remain about the liquidity of its asset base.

What is noteworthy to mention is that, in the past three years, Tether’s dominance has dropped from 90% to 51%, USDC’s market share has increased from 8% to 33% and Binance’s BUSD has grown 40x from 0.3% to 12%. The largest decentralised stablecoin, Dai, has doubled its market share to 4% (Glassnode).

Figure 32: Stablecoin Supply Dominance (Relative)



Source: WisdomTree, Glassnode, as of 27/01/2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

Stablecoins were initially used in crypto asset trading and interexchange settlement but are increasingly used in remittances and payments. Digital currency tokens have medium exchange properties as their value is supposed to be stable, as opposed to bitcoin or ether, the value of which is more volatile. We have observed, for example, that in some developing countries, regular people are keeping their money in digital dollar format instead of leaving it in their country's own currencies, which are rapidly being inflated away.

Seamless stablecoin transactions across different blockchains would be very helpful for the growth of the industry. To make this happen, Circle has introduced a Cross-Chain Transfer Protocol, a product feature that enables software developers to build seamless user experiences across blockchains. Today, transferring USDC across blockchains is very complicated, and we expect this protocol to be embedded in many new applications, from trading and payments to NFT (non-fungible token) transactions and gaming.

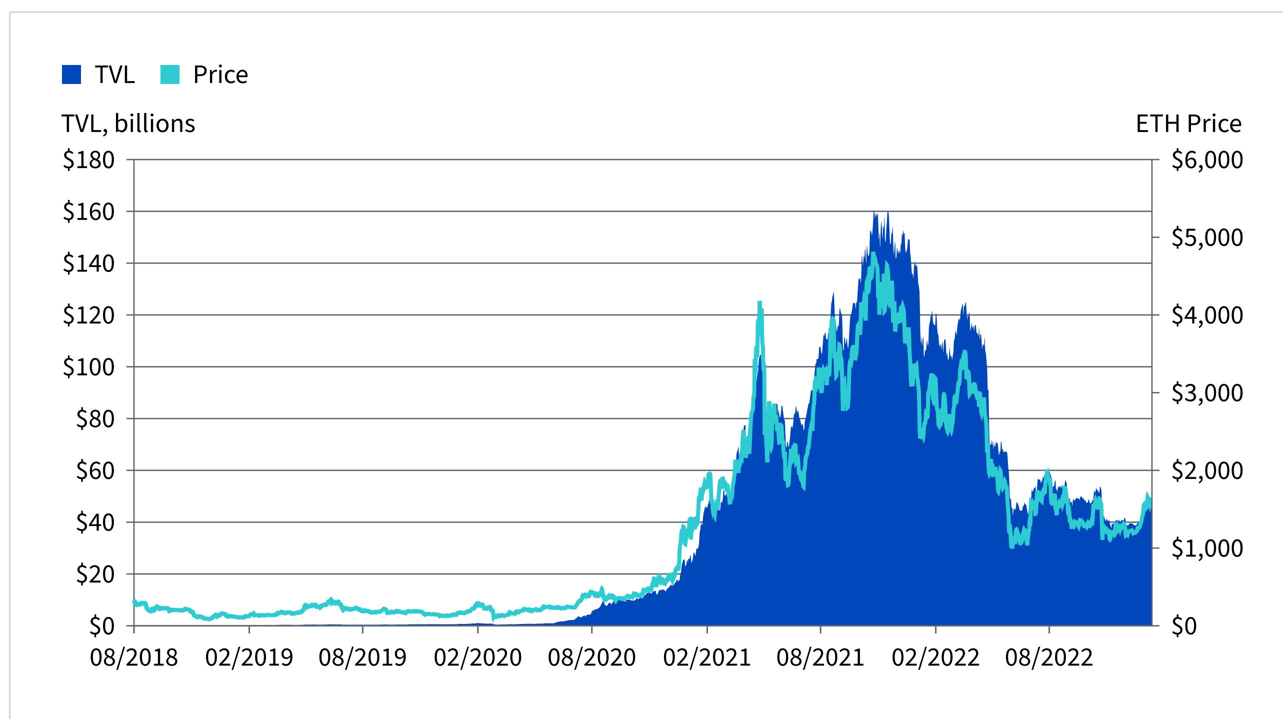
Re-emergence of DeFi this year?

Whilst several centralised crypto lenders and a major centralised offshore exchange went bankrupt last year, decentralised finance applications worked flawlessly. The blow-ups were a result of bad business decisions made by a handful of individuals who took excessive leverage and hid behind opaque business practices. One of the main benefits of decentralised finance is transparency, where anyone can investigate and test the quality of the open-source code. There is no single company or individual to trust but a decentralised network where actions are written in code.

During the last bull market in decentralised finance (DeFi) (spring 2021 to spring 2022), there was a lot of focus on which company could provide the highest yield. This has become more difficult as liquidity has evaporated and US short-term Treasuries offer a 4%–5% risk-free yield.

For the next coming months, we believe the greatest beneficiaries in DeFi will be those companies that have built a 4–5-year track record, have demonstrated an ability to take appropriate risks during the bull run, have survived the bear market and are willing to continue building a better user experience. Some of those companies might include firms like Compound, Aave and Maker.

Figure 33: Ethereum total value locked (TVL) in DeFi



Source: WisdomTree, Glassnode, as of 27/01/2023. **Historical performance is not an indication of future performance and any investments may go down in value.**

In early February 2023, the total value locked (TVL) in DeFi applications was US$50 billion. When the TVL rises, it leads to an increase in liquidity on the platform and attracts more users. We are cautiously optimistic that this year could see a slow uptake in DeFi applications.

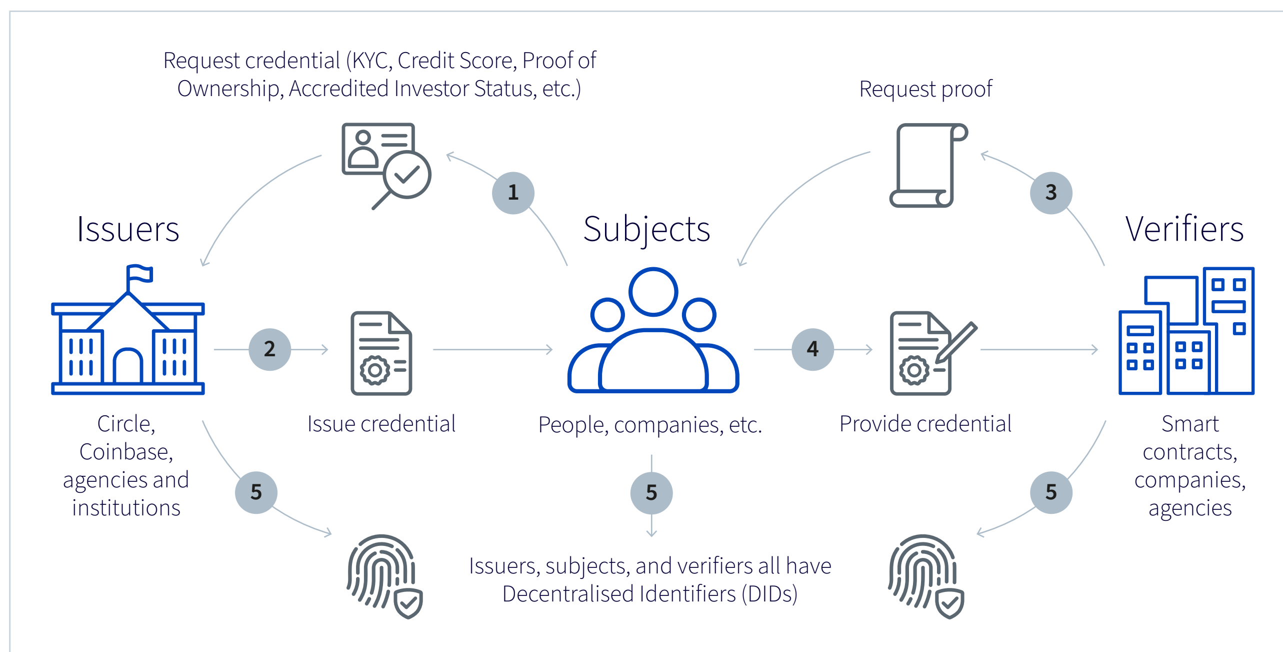
Privacy protections and digital identity paving the way for Web3

A main feature of public blockchains is that they are open for everyone to see and participate in. There are situations, however, where participants might not want to reveal the exact details of their transactions. Some attempts have already been made to obfuscate the identity of the user and the source of funds. One of them is Tornado Cash, a mixing protocol, but this smart contract code was banned by the US Office of Foreign Assets Control (OFAC) in 2022.

We believe that letting users have more control over their privacy and identity will be instrumental in creating the new Web3 economy. One of the technologies that could be utilised is zero-knowledge (ZK) proof technology, which relies on cryptographic algorithms that take data as input and return ‘true’ or ‘false’ as output. With ZK technology, the prover is able to prove the validity of a statement without revealing the actual data to the service provider, thereby eliminating the need to keep vast databases with highly sensitive personal information. We expect to see this technology be developed further this year. Another initiative launched just recently was the idea of Vitalik Buterin, the founder of the Ethereum blockchain, in which a ‘stealth address system’ could be created to protect the privacy of blockchain transactions.

Another major impediment to the usage of crypto applications has been the lack of industry standards in how to prove KYC (know your customer) and AML (anti-money laundering) data, for example. To move the industry forward in this respect, Circle, Coinbase and the Centre Consortium introduced Verite, a set of open-source, decentralised identity protocols to enable privacy-preserving digital identity attestations. This protocol could be used to facilitate compliance in KYC and AML, accredited investor status, DeFi collateral requirements and NFT provenance tracking without the need for participants to disclose personal data. These credentials can easily be stored in digital asset wallets and are cryptographically secured.

Figure 34



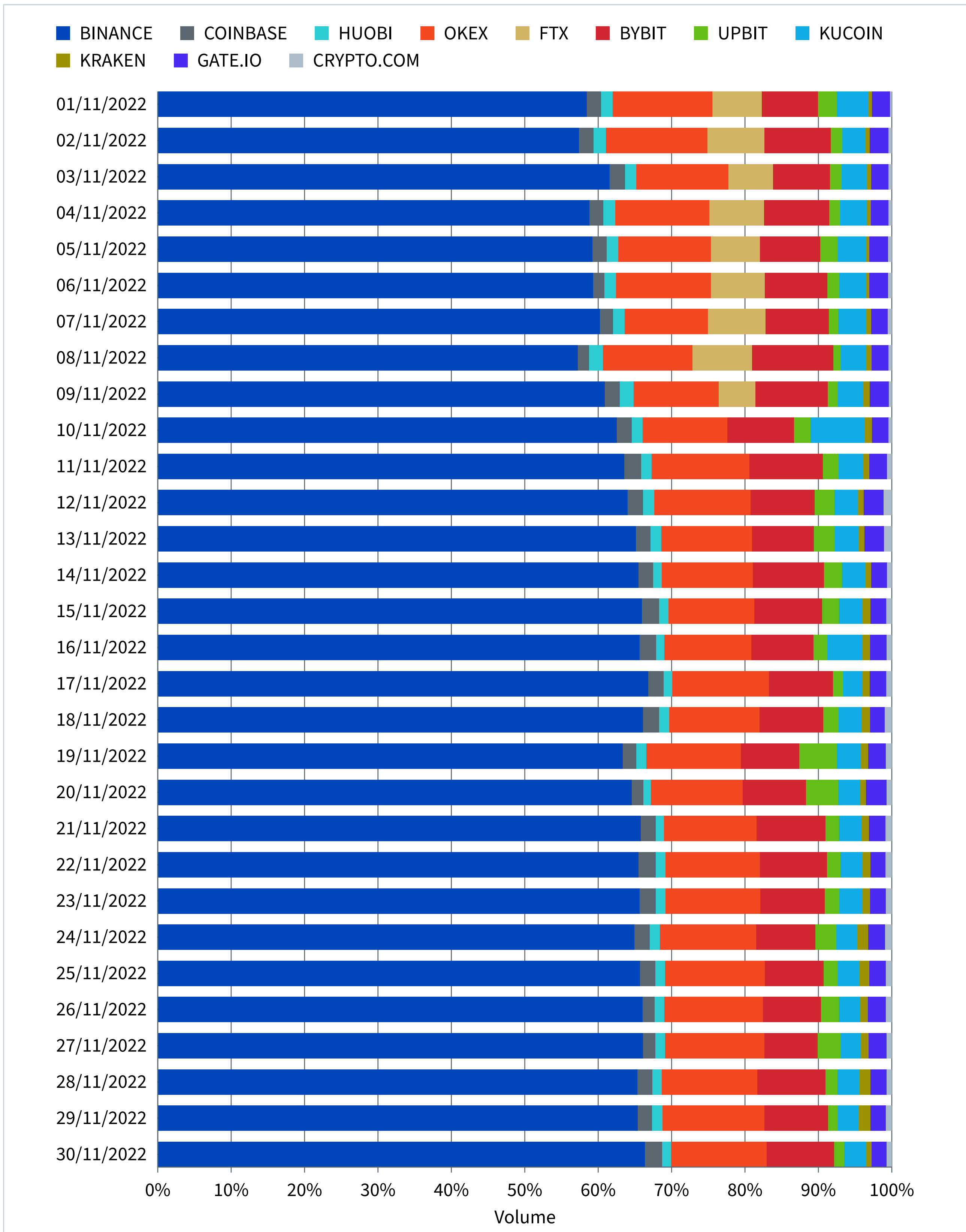
Source: Centre.io.

Binance rises to become a critical liquidity provider

Last year, Binance was the greatest beneficiary of the FTX collapse. The market share of the world's largest centralised exchange rose to 67%. This development took place whilst the total market volume of centralised exchanges fell by 46% (CryptoCompare).

Today, the majority of the crypto spot and futures trading pairs are set at the Binance exchange. The dominance of Binance and its activities needs to be monitored closely, as we estimate the CEO of Binance, Changpeng Zhao or CZ, owns at least a third of the company's BNB tokens, the market cap of which was close to US$49 billion on 1 February 2023. When the company had an initial coin offering (ICO) in 2018, 40% of the coins went to the founding team, 10% to angel investors and 50% to ICO buyers (Binance). The company is, therefore, very centralised and does not have official headquarters anywhere. Binance has also been investigated by the US Securities and Exchange Commission (SEC) due to its ICO and whether it violated the securities laws by not registering the BNB token as a security.

Figure 35: Top crypto exchange volume dominance (incl. derivatives)



Source: Coingecko as of 15 February 2023. Not all exchanges allow derivatives trading. Derivatives trading volume included when relevant. **Historical performance is not an indication of future performance and any investments may go down in value.**

Binance has provided some information on its proof of reserves, that is, those assets they hold in custody for users. This can be proved by reading the data on the blockchain. It is important that centralised exchanges provide evidence and proof that they hold assets 1:1 and that this information is audited by an independent audit firm. So far, however, we have not seen traditional audits on the proof of liabilities, that is, those assets the exchange owes to clients. This would be the sum of all the customer account balances. We believe a traditional form of auditing is required for liabilities, as there could be off-balance sheet liabilities or contracts that cannot be traced on the blockchain.

Another factor we'll keep a close eye on is the introduction of Chinese central bank digital currencies (CBDCs). Tether's USDT is widely used in China despite China's cryptocurrency ban implemented in September 2021. In our view, any crackdown on Tether would have a meaningful impact on the global cryptocurrency market.

Clarity of regulation needed

The European Union's Markets in Crypto-assets (MiCA) bill is expected to set a precedent for global crypto regulation. The final vote has been postponed and is currently expected to take place in April 2023. The bill is expected to focus on stablecoin regulation and fractionalised non-fungible tokens and set stringent reserve and transparency requirements for stablecoin issuers. At the moment, digital euros (= euro-denominated stablecoins) account for less than 0.5% of global digital currency transactions, whilst the euro makes up 40% of global SWIFT payments and close to 20% of global foreign exchange payments (MiCA bill).

Our belief is that regulation is needed to give clarity to the space, particularly in determining which tokens/coins are regarded as commodities, which are considered currencies and which are considered securities. A uniform global framework would be beneficial to eliminate global arbitrage opportunities.

Conclusion

This year started with a risk-on sentiment in crypto. Despite dismal price action last year, the number of crypto software developers actually grew, showcasing the true health of the ecosystem. The number of active Bitcoin addresses has started increasing again, and Ethereum will undergo a major upgrade in March, enabling the unlocking of Ether rewards. This will create a benchmark yield for the crypto space. Layer 2 solutions are finally coming into their own and addressing the lack of scalability of the Bitcoin and Ethereum networks. Stablecoins are emerging as a major use case and are increasingly used for digital payments and remittances. We are cautiously optimistic about the outlook for DeFi this year and expect privacy and decentralised digital identity to become necessities before Web3 can become a reality. Some crypto regulation is expected this year, and the first ones to be regulated are likely to be stablecoins and fractionalised non-fungible tokens.

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