



Outrageous Predictions

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Outrageous Predictions 2022: Here comes a revolution!

STEEN JAKOBSEN // CHIEF INVESTMENT OFFICER

The theme for 2022 Outrageous Predictions is Revolution. There is so much energy building up in our inequality-plagued society and economy. Add to that the inability of the current system to address the issue and we need to look into the future with the fundamental outlook that it's not a question of whether we get a revolution, but more a question of when and how. With every revolution, some win and some lose, but that's not the point—if the current system can't change but must, a revolution is the only path forward.

A culture war is raging across the globe and the divide is no longer simply between the rich and the poor. It's also the young versus the old, the educated class versus the less educated working class, real markets with price discovery versus government intervention, stock market buy-backs versus R&D spending, inflation versus deflation, women versus men, the progressive left versus the centrist left, virtual signalling on social media versus real changes to society, the rentier class versus labour, fossil fuels versus green energy, ESG initiatives versus the need to supply the world with reliable energy—the list goes on.

What's interesting for me, having done this Outrageous Predictions list for twenty years, is that all of the above issues point to a cycle ending rather than a continuation of more of the same. Post-pandemic (well, mostly) the market is hoping that things will continue as before, but as an old mentor of mine used to say, when I answered one of his questions with "I hope": "Listen, son, save hope for church on Sundays, and come back when you have something more concrete." The year 2022 is likely to see far less of what markets are hoping for and far more in the way of volatility as revolutionary movements kick into gear that challenge the status quo as we grope our way towards a new paradigm. Some of these movements will get things right, some of them will make mistakes, but we need to get started. Pretty much everything needs to change if we are to achieve zero emissions, less inequality, stable energy and importantly, more productivity.

2021 was a year in which we thought we could firmly put Covid behind us, but as 2022 rolls into view, we're simply not there yet. It was a year with unprecedented fiscal transfers, especially to lower-income households, which created excess demand in a geopolitically and supply chain-fragmented world. The physical world simply became too small to absorb the good, if misguided, intentions of politicians and central banks to keep the economy on an even keel. Now we find ourselves with an energy crisis on our hands—and that's not an outrageous call. But how we deal with it could create both policy mistakes and fundamental changes. A cold winter, for example, could spark a counter-revolution against the current alternative energy narrative, requiring that we reconfigure our expectations around how quickly we can abandon fossil fuels (Outrageous Prediction number 1 for

2022!) and even reclassifying nuclear energy as green. Doing anything else is simply not viable if we want to avoid a collapse in the real economy.

We do realise that the Revolution theme for OP 2022 can create negative associations. To many of us, the word Revolution calls forth the 1789 French Revolution with its call for "Liberty, Equality, and Fraternity", but also the Russian Revolution and its "smash the capitalists" principles.

But our intent is the broader definition of revolution: not the physical overthrowing of governments, but eureka-like moments that trigger a change of thinking, a change of behaviour and a rejection of the unsustainable status quo. Hopefully, each of the Outrageous Predictions echoes that general point, with a couple of the revolutions triggered by the "involuntary" implications of technical progress: hypersonic missiles and longevity therapy.

We need more liberty from governments in some areas, like a less heavy-handed monetary policy and the moral hazard of unproductively backstopping markets it brings. And we need more regulation in others, like avoiding the dangers of a hyper-financialised economy, too-powerful monopolies and inequality. Most urgently, we need to provide a brighter outlook for the world's young people and better cooperation among nations instead of the present trend away from globalisation and multilateral institutions.

We collaborated globally on Covid vaccines in 2020 and 2021. Now we need a new Manhattan Project--type endeavour to set the marginal cost of energy, adjusted for productivity, on the path to much lower levels while eliminating the impact of our energy generation on the environment. Such a move would unleash the most significant productivity cycle in history: we could desalinate water, make vertical farms feasible almost anywhere, enable the leap to quantum computing, and continue to explore new boundaries in biology and physics.

Remember that the world is forever evolving if at varying speeds, while business and political cycles are always finite. We are betting that in 2022 the speed of evolution kicks up a few notches into a revolutionary state as a new cycle gets under way. 'Change is good' needs to be the new mantra, or at minimum: "trial and error". Let's at least try and err some more rather than trying to forever kick the can down the road!

Finally, we must emphasise our annual caveat, that these Outrageous Predictions should not be seen as our official view on the market and politics. This year, more than ever, we're trying to provoke you and ourselves to think outside the box and to engage in discussing the important topics we raise. Let the fun, and the future, begin.

Ole Hansen joined Saxo Bank in 2008 and has been Head of Commodity Strategy since 2010.

He focuses on delivering strategies and analyses of the global commodity markets defined by fundamentals, market sentiment and technical developments.

 [@Ole_S_hansen](https://twitter.com/Ole_S_hansen)





The plan to end fossil fuels gets a **rain check**

OLE HANSEN // HEAD OF COMMODITY STRATEGY

Summary: Policymakers kick climate targets down the road and support fossil fuel investment to fight inflation and the risk of social unrest while rethinking the path to a low-carbon future.

Realising the inflationary threat from surging commodities prices and the risk of an economic train wreck due to the unrealistic timeline for the green energy transition, policymakers kick climate targets down the road. They relax investment red tape for five years for oil production and ten years for natural gas production, to encourage producers to ensure adequate and reasonably priced supplies that bridge the gap from the energy present to the low-carbon energy future.

According to the IEA, the ambitious goal to reach net zero emissions by 2050 would require that the consumption of oil and natural gas decline 29 percent and 10 percent respectively by 2030, with further steep declines thereafter. Faced with this outlook, suppliers of these traditional energies have already begun scaling back exploration and production to such an extent that supply is already slipping relative to demand, raising prices for the energy source that still feeds the bulk of our primary energy.

This development has already jacked up prices and price volatility, not only for energy, but also for industrial

metals, most of which are needed in greater quantities for the green transformation push. On top of this, surging energy prices have spiked prices for diesel and especially fertiliser, important farming costs that raise concerns about the production of key food crops.

One of the key restraints on the investment needed to maintain, much less expand, mining and energy production has been the lack of lending interest from investors and banks. Environmental, social and governance (ESG) criteria have become an increasingly popular way for investors and banks to allocate investment capital to companies.

Faced with rapidly rising commodity prices and an increasingly impossible road to carbon neutrality, policymakers make a surprise and controversial move in 2022 to temporarily relax environmental restrictions on new upstream crude oil and natural gas investments for five and ten years, respectively. The plan is sold as the only pragmatic way to bridge the reality of our energy-consuming present with the desired low-carbon future, while also limiting the risk of social unrest caused by rising food and energy prices.

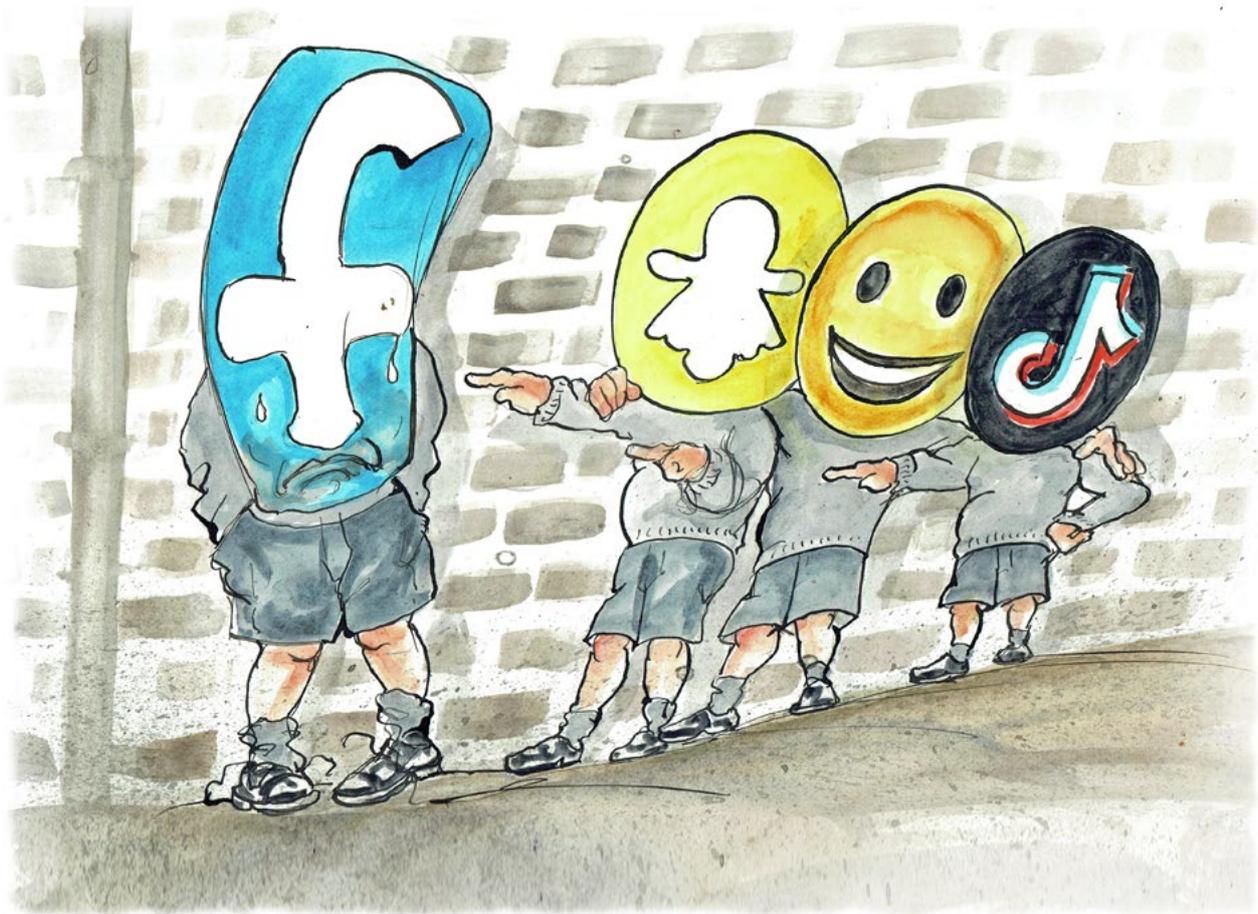
Market impact: The iShares Stoxx EU 600 Oil & Gas ETF (Ticker: EXH1:xetr) surges 50 percent as the whole energy sector gets a new lease on life



Peter Garrny joined Saxo Bank in 2010 and is the Head of Equity Strategy.

In 2016 he became responsible for the Quantitative Strategies team, which focuses on how to apply computer models to financial markets. He produces trading strategies and analyses of the equity markets as well as individual company stocks, applying advanced statistics and models to beat the market.

 [@PeterGarrny](#)



Facebook faceplants on youth exodus

PETER GARNRY // HEAD OF EQUITY STRATEGY

Summary: The young abandon Facebook's platforms in protest against their mining of personal information for profit; the attempt by Facebook parent Meta to reel them back in with the Metaverse stumbles.

Back in 2012, 94 percent of teens had a Facebook account, while surveys suggest that today only 27 percent of adolescents have an account. Facebook has gone from being a vibrant hub of young people, to a platform for older "boomers" as young people would say. Young people are increasingly turned off by Facebook's algorithms turning their social media experiences into that of homogenous feedback loops of identical content, or even worse, hateful and disinforming content. Facebook's own research suggests that teens spend 2 to 3 times longer on TikTok than on Instagram (which is Facebook's youngest social media asset), and that Snapchat is the preferred way to communicate with friends.

In many ways, Facebook is suddenly in the midst of a cultural war between young people under 40 and adults over 40, with young people seeing Facebook representing the evil boomer generation of fake news and greedy corporations. Facebook was like the only meaningful cigarette brand and suddenly many new brands are joining

the marketplace. These newcomers have a cooler style and a different take on data privacy and how information is controlled, without being minted in algorithms that serve highly individualised advertisement messages.

A new company name (Facebook is now called Meta) and brand identity to separate and shield Instagram (its most valuable current asset), together with creating a new product tailored towards young people, is the exact same playbook tobacco companies have used for years. But in 2022, investors will realise that Meta is rapidly losing the young generation and thus the future potential and profitability of the company. In a desperate move, Meta tries to acquire Snapchat or TikTok while throwing billions of dollars into building the creepy Metaverse, which is aimed at surveilling users more directly than ever before and getting young people back into Meta's universe of social media platforms, in the perceived wisdom that being a first mover is always best in technology. The plan struggles to take off as the young generation fails to sign up.

Market impact: Facebook parent company Meta struggles, down 30 percent versus the broader market and is urged to spin off its components as separate entities, shattering Zuckerberg's monopolistic dreams.



John Hardy joined Saxo Bank in 2002 and has been Head of FX Strategy since 2007.

He focuses on delivering strategies and analyses in the currency market as defined by fundamentals, changes in macroeconomic themes, and technical developments.

 [@Johnjhardy](#)



The US mid-term election brings constitutional crisis

JOHN HARDY // HEAD OF FX STRATEGY

Summary: The US mid-term election sees a stand-off over the certification of close Senate and/or House election results, leading to a scenario where the 118th Congress is unable to sit on schedule in early 2023.

The chaotic 2020 US Presidential Election was a scary moment for many US institutions. The sitting president Donald J. Trump initially refused to concede defeat in the election and complained that the election was stolen, a claim that was never seriously challenged in a court of law but one which had widespread sympathy among the Trump base. A crowd of hard-core believers in the stolen election conspiracy was encouraged by the President's rhetoric to a sufficient degree to storm Capitol Hill and "stop the steal", i.e., to prevent the election result from being made official on January 6, 2021, in a scene unprecedented in US history.

Prior to this, and then again later in the hotly contested Senate run-off elections in Georgia, dedicated election officials—many of them Republican—were doing their duty to tally the real results while risking their life amidst threats—even death threats—from extremists. In 2022, the Republicans ensure that no such traditional duty-bound officials are in the "wrong" place, with all election-

related positions filled by toe-the-line partisans ready to do anything to tilt the results to suppressing voter turnout. The unpopular and tone-deaf Democrats, meanwhile, wage an ineffective campaign of fearmongering that fails to gin up a popular brushback against the response as they are also not trusted due to their progressive cultural positions, a better-than-thou attitude to the masses, and incoherent support of populist causes while key Democrats are clearly in the pockets of lobbyists.

In the wake of the 2022 election, a handful of key Senate and House races come down to the wire and one or both sides move against certifying the vote, making it impossible for the new Congress to form and sit on its scheduled first day of January 3, 2023. Joe Biden rules by decree and US democracy is suspended as even Democrats also dig in against the Supreme Court that was tilted heavily by Trump. Indeed, as 2023 gets underway the stand-off sees a full-blown constitutional crisis stretching over the horizon.

Market impact: extreme volatility in US assets, as US treasury yields rise and the USD drops on hedging against the existential crisis in the world's largest economy and issuer of the world's reserve currency of choice.

Christopher Dembik joined Saxo Bank in 2014 and has been the Head of Macro Analysis since 2016.

He focuses on delivering analysis of monetary policies and macroeconomic developments globally as defined by fundamentals, market sentiment and technical analysis.

 [@Dembik_Chris](https://twitter.com/Dembik_Chris)





US inflation reaches above 15% on wage-price spiral

CHRISTOPHER DEMBIK // HEAD OF MACRO ANALYSIS

Summary: By the fourth quarter of 2022, US CPI inflation reaches an annualized 15% as companies bid up wages in an effort to find willing and qualified workers, triggering a wage-price spiral unlike anything seen since the 1970's.

At the end of the 1960s, the US Federal Reserve and the Fed chair then, McChesney Martin, misjudged how hot they could run the US labour market without fanning inflation. The miscue paved the way for inflation expectations getting out of control and a massive wage-price spiral the following decade. The official US CPI reached a peak at 11.8% in February 1975. It wasn't until the recession of 1980-82 and brutal policy rate increases to levels as high as 20% that inflation was finally killed.

In 2022, the Federal Reserve and Fed chair Jerome Powell repeats the same mistake all over again as the post-Covid outbreak economy and especially the labour market are severely supply constrained, making a mockery of the Fed's traditional models. Powell believes millions of Americans will return to work and fill some of the 10.4 million open job positions as Covid-19 fades. But this is plain wrong. Some have retired early due to the crisis and thus have permanently left the US workforce. The

Federal Reserve Bank of St. Louis estimates the exodus of older workers to be about 3 million people. Others aren't returning to poorly paid jobs after seeing huge handouts during the pandemic and seem to be waiting for better jobs and pay.

The big difference between today and yesterday is that the pandemic has fuelled a great awakening of workers. Across sectors and income classes they realise they are now more empowered than ever. They demand a better experience: better job conditions, higher wages, more flexibility and a sense of purpose from work. Coupled with persistent inflationary pressures coming from the production side, the energy crisis and labour shortage, this results in unprecedented broad-based double-digit annualised wage increases by Q4. As a consequence, US inflation reaches an annualised pace above 15% before the start of 2023, for the first time since WWII. This prompts the Federal Reserve into a too-little, too-late move to tighten monetary policy faster in a desperate effort to tame inflation. But the central bank has lost credibility; it will take time to regain it.

Market impact: extreme volatility in US equity and credit markets. The JNK high-yield ETF falls as much as 20% and the VIXM mid-curve volatility ETF soars as much as 70%.

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 [@Dembik_Chris](https://twitter.com/Dembik_Chris)





EU Superfund for climate, energy and defence announced, to be funded by private pensions

CHRISTOPHER DEMBIK // HEAD OF MACRO ANALYSIS

Summary: To defend against the rise of populism, deepen the commitment to slowing climate change, and defend its borders as the US security umbrella recedes, the EU launches a bold \$3 trillion Superfund to be funded by pension allocations rather than new taxes.

The security umbrella provided by the US during the Cold War and afterwards over much of Eastern Europe is rapidly fading and threatens to fail entirely in the years ahead as the US looks east at far more serious economic and military rivals. Signs of this were already clear with the popular and withering attacks on NATO allies by former president Donald Trump and his demand for them to pay more. Then the AUKUS submarine deal stifled France's attempt to sell new submarines to Australia, as post-Brexit UK, Australia and the US moved into a new security arrangement that left a very cool feeling down the back of continental Western Europe and the EU.

The EU knows it needs to move fast on all fronts to bolster its defences and is also looking for a way to jump-start flagging economies buffeted by the energy and power crisis of 2021–22. French President Macron, backed by Italian Prime Minister Draghi moving to stave off Italy's

own rise of the populists, rolls out a vision for an “EU Superfund” that will address the three-fold priorities of defence, climate and the related clean energy transition. Given the EU's aging population and heavy tax burdens, policymakers know that it will be impossible to finance the Superfund with higher taxes on incomes or other traditional tax revenues. Instead, France has a light-bulb moment as it seeks to overhaul its pension system and looks at Europe's enormous pensions. It decides that all pensions for all workers above the age of 40 must allocate a progressively larger portion of their pension assets into Superfund bonds as they age. This allows new levels of fiscal stimulus in the EU even with the sleight-of-hand trick of hiding the spending in inflation and negative real returns on low-yielding Superfund bonds that are actually EU bonds in disguise. At the same time the younger generation enjoys a stronger job market and less unfair tax burdens as the system proves such a success that income taxes are lowered progressively.

Market impact: Bond yields harmonise across Europe, leading to German Bunds underperforming. EU defence, construction and new energy companies are some of the best performers.



Althea Spinozzi joined Saxo Bank in 2017, and serves as Fixed Income Strategist.

Althea produces Fixed Income research and works directly with clients in order to help them select and trade bonds. Because of her background in leveraged debt, she is particularly focussed on high yield and corporate bonds with attractive risk and return.

 [@Altheaspinozzi](https://twitter.com/Altheaspinozzi)



Women's **Reddit Army** takes on the corporate patriarchy

ALTHEA SPINOZZI // FIXED INCOME STRATEGIST

Summary: Mimicking the meme stock Reddit Army tactics of 2020-21, a group of women traders launch a coordinated assault on companies with weak records on gender equality, leading to huge swings in equity prices for targeted companies.

Saving and investing has become a crucial topic among female communities. Many realise that because women's life expectancy is longer, they need more long-term savings. However, they might have missed the opportunity to invest in the longest bull market in history due to the wage gap. On average, women earn 20% less than men in the same positions, thus have less disposable income to invest. Making things worse, the Covid crisis aggravated the gender inequality crisis, as it was disproportionately women who left their jobs to take care of children during the lockdowns. Because of the pandemic, it will now take 135.6 years to close the gender pay gap, versus 99.5 years before Covid, according to the World Economic Forum.

Women are not willing to wait any longer. Tired of the lack of progress, 2022 sees a massive grass-roots effort based on social media platforms to force companies that break civil rights laws to address unfair and sexist, racist,

ageist and ableist practices. Although women have been struggling with lower salaries they have higher saving rates than men. Those savings will now come in handy as they decide to take the situation into their own hands and throw their considerable influence around in a #metoo movement in financial markets.

In contrast to the often-nihilistic original Reddit Army, the Women's Reddit Army will be more sophisticated, with women traders coordinating a long squeeze by shorting stocks of selected patriarch companies. At the same time, they will direct funds to companies with the best metrics on female representation in middle management and among executives. Instead of condemning the development, politicians worldwide welcome and support their cause, putting even more pressure on companies with outdated patriarchal attitudes, poor gender equality in pay, and under-representation of women on boards and in management to address the errors of their ways.

Market impact: The movement gets real results as the broader market catches on to the theme and joins in, forcing targeted company prices sharply lower, which sees companies scrambling to change their ways. It marks the beginning of a gender parity renaissance in markets.

Steen Jakobsen first joined Saxo Bank in 2000 and has served as both Chief Economist and Chief Investment Officer since 2009.

He focuses on delivering asset allocation strategies and analysis of the overall macroeconomic and political landscape as defined by fundamentals, market sentiment and technical developments in the charts.

 @Steen_jakobsen





India joins the Gulf Cooperation Council as a **non-voting** member

STEEN JAKOBSEN // CHIEF INVESTMENT OFFICER

Summary: The world's geopolitical alliances will lurch into a phase of drastic realignment as we have an ugly cocktail of new deglobalising geopolitics and much higher energy prices.

Countries reliant on imports for the majority of their energy inputs in a rapidly deglobalising world will need to move fast to strategically reorientate strategic alliances and secure long-term energy supplies. One such alliance could involve India, with its mighty technology sector, joining the Gulf Cooperation Council (GCC) as non-voting member, or in some sort of free trade zone. This alliance would see a reduction in India's energy insecurity as it secures long-term import commitments. On the other hand, India's incredibly strong technology platform and deepening capital markets could attract the excess savings generated in the GCC region, through lower friction access.

There is ample history linking these two parties. Many Indian companies are de facto running out of GCC member countries, and likewise India is seen as a "must-have" investment destination, not only for Middle East investors, but also globally as the world becomes far more multipolar, with the US, China and EU increasingly pursuing independent agendas and the rest of the world

seeking to keep as many options open as possible.

Historically there has been an attempt already to change the GCC mandate of the regional, intergovernmental political and economic union to a more formal Gulf Union in 2011. We see new alliances being formed globally, all with a view to avoiding too close a commitment to either China or the US.

Interregional trading zones will secure "closer to home" production and investment, combined with the security of reliable supplies from India's point of view, and a reliable destination market from the GCC's point of view. The alliance helps lay the groundwork for the GCC countries to plan for their future beyond oil and gas and for India to accelerate its development via huge new investments in infrastructure and improvements in agricultural productivity together with fossil fuel imports, bridging the way to a post-carbon longer-term future.

Market impact: The Indian rupee proves far more resilient than its EM peers in a volatile year for markets. The bubbly Indian stock market corrects with other equity markets in early 2022, but proves a strong relative performer from the intra-year lows.

Mads Eberhardt joined Saxo Bank in January 2021 as Cryptocurrency Analyst, and he is primarily conducting detailed analyses of the cryptocurrency market both from a trading perspective, as well as from the technical side.

Prior to joining Saxo Bank, Mads founded one of the biggest Danish crypto-brokers, which was later acquired. Following that, he worked as a trader for one of the world's biggest cryptocurrency brokers in "Crypto Valley" - Zug, Switzerland. His hands-on experience with the crypto industry gives Mads a broad understanding of the world of cryptocurrencies.





Spotify **disrupted** due to NFT-based digital rights platform

MADS EBERHARDT // CRYPTOCURRENCY ANALYST

Summary: Musicians are ready for change as the current music streaming paradigm means that labels and streaming platforms capture 75-95 percent of revenue paid for listening to streamed music. In 2022, new blockchain-based technology will help them grab back their fair share of industry revenues.

Non-fungible tokens, or NFTs, are unique digital assets, the ownership of which can be established and stored on a digital ledger via blockchain tech. And 2021 was the year of the rise of NFTs as out of nowhere they gained traction. Investors wildly bid up things like uniquely generated character images from CryptoPunks and illustrations by the former unknown artist Beeple, one of which sold for a record \$69M in March.

While the early days of NFTs have looked chaotic and dangerous for asset buyers, the outlook is bright for NFT technology. Not only does an NFT-based platform offer a new way to verify the ownership of rights, but also a way to distribute rights without intermediaries, i.e., a completely decentralised system obviating the need for a centralised platform.

The use case for NFTs could prove particularly compelling in the next step for the technology for content generators in the music industry as musicians feel unfairly treated by the revenue sharing models of the current streaming platforms like Spotify and Apple Music. These models

don't guide individual subscribers' fees to the actual music an individual subscriber listens to. Rather, all subscription fee revenues are aggregated and distributed based on every artist's share of total streams. In addition, the platforms take a substantial cut, which together with the cut paid to labels is some 75 percent or more of the total revenue.

But by leveraging NFTs, more specifically via "smart-contract" blockchains, artists could distribute music directly to listeners without centralised intermediaries taking a cut, while tracking their income in real-time—even getting paid in real-time—with listeners enjoying the knowledge that the money they are paying is going straight to the artist.

In 2022, an NFT-based service takes hold and begins offering music from notable stars – perhaps the likes of Katy Perry, The Chainsmokers and Jason Derulo, all of whom have recently backed an effort to create a new blockchain-powered streaming platform. Other well-known artists begin pulling their music from the now "traditional" streaming platforms, which suddenly find themselves terminally disrupted. Investors see the eventual writing on the wall for podcasts, movies and other forms of digitisable contents as well.

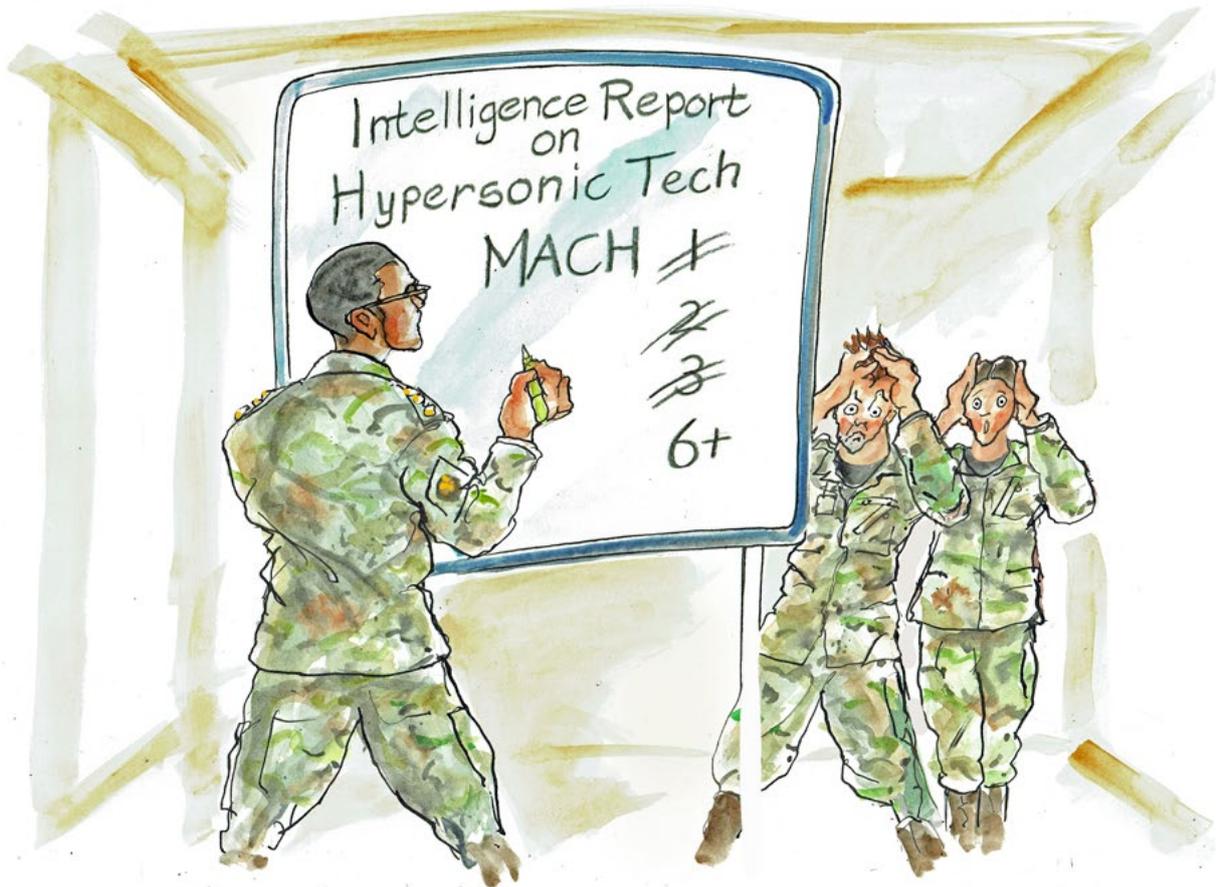
Market impact: Investors recognise that Spotify's future is bleak, sending its shares down 33 percent in 2022.



John Hardy joined Saxo Bank in 2002 and has been Head of FX Strategy since 2007.

He focuses on delivering strategies and analyses in the currency market as defined by fundamentals, changes in macroeconomic themes, and technical developments.

 [@Johnjhardy](#)



New hypersonic tech drives space race and new cold war

JOHN HARDY // HEAD OF FX STRATEGY

Summary: The latest hypersonic missile tests are driving a widening sense of insecurity as this tech renders legacy conventional and even nuclear military hardware obsolete. In 2022 a massive hypersonic arms race develops among major militaries as no country wants to feel left behind.

In the summer of 2021, China tested a hypersonic vehicle that could enter low orbit and later re-enter the atmosphere to then cruise toward its target. The test was said to shock top US military officials, with chairman of the Joint Chiefs of Staff Mark Milley even willing to say that this was close to a “Sputnik moment” for the US. That was a reference back to the successful Soviet launch of the Sputnik satellite in 1957, which served as a wakeup call to the US on superior Soviet rocketry and space capabilities, and an event that marked the beginning of the space race, the most iconic part of the US-Soviet cold war rivalry. In 2022, it is clear from funding priorities that hypersonics and space are the heart of a new phase of the deepening rivalry between the US and China on all fronts—economic and military. Other major powers with advanced military tech join in as well, likely including Russia, India, Israel and the EU.

Hypersonic capabilities represent a game-changing threat to the long-standing military strategic status quo,

as the technology brings asymmetric new defensive and offensive capabilities that upset the two massive pillars of military strategy of recent decades. The first is the potential for devastating hypersonic tech defence against the conventional attack capabilities of long-range bombing aircraft, as well as the so-called “deep water” navy of ships that can bring the fight to any corner of the globe without refuelling. Billion-dollar surface ships risk proving sitting ducks without a chance to defend themselves against a hypersonic attack that arrives at multiples of the speed previously possible—perhaps as high as Mach 10. The second pillar of the old Cold War era was the principle of mutually assured destruction (MAD) in the event of nuclear war, under which it was pointless to launch a nuclear war as long as there was still time for the opponent to launch an equally destructive ICBM counterattack from land- and submarine-based ballistic missiles. But the speed and agility of hypersonic tech introduces the belief that superior defence could thwart an attack entirely and even allow for new first-strike capabilities.

Market impact: massive funding for companies like Raytheon that build hypersonic tech with space delivery capabilities and underperformance of “expensive conventional hardware” companies in the aircraft and ship-building side of the military hardware equation.

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 @Steen_jakobsen





Medical breakthrough extends average life expectancy 25 years

STEEN JAKOBSEN // CHIEF INVESTMENT OFFICER

Summary: Young forever, or for at least a lot longer. In 2022, a key breakthrough in biomedicine brings the prospect of extending productive adulthood and the average life expectancy by up to 25 years, prompting projected ethical, environmental and fiscal crises of epic proportions.

In search of slowing the natural process of aging, researchers have been studying the processes at the centre of how we age from multiple angles and with a growing arsenal of advanced technologies, from therapeutics to “prime editing” at the DNA level. The year 2022 sees a major breakthrough from a multi-factor approach, as a cocktail of treatments is put together that tweaks cell-level processes in order to extend their life and thus the life of the organism composed of those cells. It's not cheap, but it's effective and has already been demonstrated on laboratory mice containing human DNA, extending their lives some 30% and more. The implication for humans is the possibility that average life expectancy can be extended by 25 years or more, and with it the incredible prospect in the future that age 80 will be the new 50. Not only that, but this future is open to older humans too as the new fountain

of youth treatment can slow and even rejuvenate already old cells.

Not only do life expectancy improvements come via longer life, but also through reduction and even elimination of most human diseases—from heart disease to neurodegenerative disorders—many of which are responsible for the decline in health and productivity as we age. This is made possible by the prime editing of DNA approach, which doesn't rely on new cells via division but actually rewrites existing cells.

The prospect of a massive leap in human quality of life and life expectancy are huge wins for mankind, but bring an enormous ethical and financial quandary. Imagine that almost everyone can look forward to living to an average age of 115 and more healthily. What would this mean for private and government pensions, or even the ability or desire to retire? And what about the cost to the planet if it is set to support billions more people, not to mention whether or not there is enough food to go around? And then there is the ethical question of whether it is humane to not make the cocktail available to everyone. In short, how would our value systems, political systems and planet cope?

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