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EMERGING TECH RESEARCH

Emerging Tech Braces for Impact

How today's market turmoil is affecting 11 key technology verticals

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Introduction

A potential recession will spur investors to reduce risk across their portfolios. Higher interest rates offer attractive alternatives to riskier bets and undermine the TINA (there is no alternative) mindset, which propelled capital into the riskier corners of the market for much of the past decade. Higher hurdle rates and less leverage are likely to crimp valuations. Pressure to grow at all costs should cede to a drive toward profitability for VCs and startups. We see the focus narrowing toward startups that have technology with a durable competitive advantage. Perkin's Law—solve a tough technical problem to minimize market risk—will likely be the law of the land once more.

Perkin's Law—solve a tough technical problem to minimize market risk—will likely be the law of the land once more.

This downturn is unusual, however, in that it stems in part from a number of supply shocks across the globe: crippled supply chains from the response to COVID-19 and resulting volatile patterns of demand, as well as pinched energy, food, and key raw materials due to the Russia/Ukraine war. The crimping of supply coupled with decades of easy money policies globally (and massive largesse in response to the COVID-19 pandemic) ignited inflation rates that much of the developed world hasn't seen in nearly half a century. Hopefully, the slowdown won't revive that other malady of half a century ago, stagflation. The response to these supply shocks could reorient trade and consumption patterns and alter global trade permanently. Startups that help resolve these supply shocks or have technology that hastens the watershed stand to gain. The following report provides an overview of how various technology areas are or may potentially be affected by current wide-ranging market events.

Key takeaways

- **Climate tech:** Key climate tech winners, post Ukraine, will be lithium mining service providers and new Western battery companies. Incumbent battery makers are likely to gradually cede share to new Western battery companies. Hydrogen should see incremental interest. Oil majors, flush with capital from higher oil prices, are likely to accelerate investment in renewable energy.

- **Blockchain:** Unfavorable market conditions will flush out weaker blockchain, crypto, and NFT projects, presenting an opportunity for the market to consolidate around the most practical companies.

- **Mobility tech:** An economic downturn creates a mixed bag of challenges and opportunities for mobility tech companies. Higher energy prices will accelerate electric vehicle adoption, but higher materials costs and supply chain issues will stymie production. In a recessions, a softer labor market would ease costs for companies that rely on contracted labor, namely last-mile and ridehailing, but impact demand as well. Capital intensive strategies will likely struggle for funding.

- **Supply chain tech:** Supply chain disruptions and geopolitical events are causing countries and companies to re-evaluate their dependence on pan-Pacific trade and far-flung suppliers. A downturn would likely create an opening for supply chain tech firms to offer new solutions and alternatives.

- **Artificial intelligence & machine learning:** AI-aided software development, also referred to as Software 2.0, will be accelerated to withstand the loss of software developer capacity and challenges to build software in a recession.

- **Information security:** Geopolitical instability encourages information security adoption, reinforcing the vertical's position at the top of enterprise priority lists.

- **Internet of things:** Consumer categories face risks of slower growth in 2022. Smart home led the vertical in VC funding in 2021 yet faces a low-growth outlook as pandemic-induced demand subsides and inflation forces consumer dollars to staples.

- **Foodtech:** Rising food prices are eroding consumer purchasing power, leading to compromises in-store and online. Online food delivery providers that charge a significant premium for the service may see significant churn from dollar-conscious consumers. However, digital-first providers that have invested in infrastructure to reduce fulfilment costs may triumph through the shake-out.

- **Agtech:** Record high fertilizer prices, war-borne grain shortages, and poor weather have created extraordinarily challenging conditions to meet growing global food demand. Biofertilizers, field robotics, and indoor farming technologies will be essential in overcoming these challenges in the long term.

- **Insurtech:** Insurtech companies selling risk will continue to be challenged in a downturn, while those selling enablement technologies can see strong growth as the insurance industry focuses on underwriting and claims improvement.

- **Fintech:** Consumer fintech companies could see growth impaired as spending is pared back. Fintech infrastructure is expected to continue to do well, as banks maintain or increase technology spend, yet consolidation is also likely.

Climate tech

James Ulan
Lead Analyst, Emerging Technology

The impact of a hypothetical recession driven by energy shortages, inflation, the attack on Ukraine, and a decline in consumer confidence from these factors has led to calls for energy and supply chain independence. This is likely to spur investment in technologies related to solar, wind, hydrogen, liquefied natural gas, and nuclear energy. We also expect incremental growth in lithium battery supply chains. We are watching for more M&A from the oil industry, which is now flush with cash and needs to add renewables.

For most countries, energy independence is possible only with the addition of renewables and nuclear. These energy forms have seen growing investment due to the push for net zero, but Russia's invasion of Ukraine should accelerate the trend. The drive for independence appears to be greatest in Europe, most of which is working to wean itself off Russian oil and gas. The European Commission has even proposed increasing the EU 2030 renewables target from 40% to 45%. As a result, European startups focused on solar, wind, and hydrogen are likely to see immediate demand from governments, businesses, and consumers. Solar and wind are more mature; however, hydrogen, an emerging opportunity, could benefit significantly, especially

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as Germany seeks to phase out Russian gas. Hydrogen is viewed as a viable energy source to replace the gas used by the country's large and important manufacturing sector. European hydrogen startups to follow are HDF Energy, Lhyfe, HiiROC, and EODev, among others. Norway will be an important hydrogen hub given its large quantities of cheap and clean energy. Other important hubs include the UK, Canada, Israel, and France.

Energy scarcity, even with today's economic deceleration, has placed oil majors back in the spotlight as they generate robust profits. However, unlike their era of peak profitability in 2006-2007, majors are now being pressured to invest in renewables. As a result, they are likely to further acquire and invest in climate-related startups. Their past acquisitions provide a roadmap for future targets. Majors have concentrated on hydrogen, biofuels, electric vehicle charging, and even carbon removal. An energy driven recession—and the resulting need for capital from startups—would provide oil majors with material acquisition and investment opportunities.

With respect to today's push for supply chain independence, early winners are likely to be service and technology providers for lithium mining and extraction and, potentially, lithium battery recyclers. Lithium startups that investors should watch closely are Green Lithium, Cornish Lithium, and Lilac Solutions. In battery recycling, we are watching Nth Cycle, Redwood materials, and Ascend Elements, among others. We believe that a conflict- and energy-induced recession would fortify commitment to in-sourcing battery supply chains.

The attack on Ukraine has also shown that global conflict can still happen and that ally countries can rapidly shun an adversary and its goods and services. The invasion of Ukraine and the possibility of conflict over Taiwan in the East have catalyzed the US and many developed nations to vigorously mine more metals and build a domestic battery supply chain after decades of underinvestment.

We believe the greatest return on equity will be generated by companies that create proprietary technology for mining and batteries, whereas elements of any value chain associated with providing pure commodities, without value added technologies/services, likely won't see long-term durable profits. However, lithium prices may remain elevated for some time simply from growing electric vehicle demand. Another derivative of today's increasing demand for lithium for electric vehicle batteries is the need to improve existing battery efficiency and develop new battery technology. We think that the losers from in-sourcing will be incumbent battery manufactures, which will still grow rapidly but at a slower rate than expected. We are watching CATL, LG, Panasonic, BYD, SK On, and Samsung for any signs of share loss.

Blockchain

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Senior Analyst, Emerging Technology

Fred Ehrsam, co-founder of Coinbase and current managing partner at Paradigm, tweeted earlier this week, "Thank god the euphoria is over." The sentiment, coming from a prolific crypto investor, no less, sums up what has been an incredibly frothy period for crypto startups. Blockchain investments seemed invulnerable as they continued their frenetic pace through the first quarter of 2022, even while

venture activity overall was down, raising an incredible $23.8 billion in 2021 and $11 billion in 2022.

More recently, however, market turmoil and rapidly falling crypto prices have forced both investors and founders to embrace the reality of another "crypto winter." Both Ethereum and Bitcoin are down more than 50% from their all-time highs in November of 2021. Facing a potential recession, investors such as Ehrsam are hoping that financial austerity will push crypto innovators from hype toward practicality.

Facing a potential recession, investors such as Ehrsam are hoping that financial austerity will push crypto innovators from hype towards practicality.

In this climate, non-fungible token (NFT) transaction volumes should fall precipitously. The vast majority of NFT projects are highly speculative in nature, aspiring toward an undefined and unclear "metaverse" that has yet to emerge in any coherent form. These projects depend on favorable market conditions that allow for a large degree of ambition over utility, conditions that are quickly evaporating. Nonetheless, use cases such as digital art and collectibles will remain viable, but with less overall activity. Blockchain gaming, still in its infancy and far less reliant on inflated crypto valuations, also remains an area that could see meaningful innovation over the next 12 months as startups get closer to demonstrating utility via novel NFT infrastructure. Look for old and new video game studios alike to partner with blockchain infrastructure startups such as Forte and Fractal.

Crypto hype still abounds. Yuga Labs, famous for its cartoon "bored apes," which have come to symbolize crypto exclusivity, managed to sell $300.0 million in virtual land deeds via their aspirational metaverse project, "Other side."[1] But startups such as Yuga are the exception in how they've cultivated a loyal following of crypto-enthusiasts and mastered crypto marketing. These projects, which are built entirely upon the expectation of future value—not present utility—will fade as most startups find themselves unable to generate the same degree of hype as stalwarts such as Yuga.

Mobility tech

Jonathan Geurkink
Analyst, Emerging Technology

Within mobility tech, the energy shock from the Russia/Ukraine war is something of a double-edged sword. The desire to delink from Russian energy represents a potential boon to battery makers, as they are fundamental to an electrified transportation future as well as a necessary storage component of almost any renewable energy system. Unfortunately, Russia also dominates the production of key lithium-ion (Li-ion) battery raw materials such as nickel, so many battery makers and electric vehicle producers are being forced to rethink strategies and technologies around this key component. Startups such as Group14, Amprius, and Sila have developed lithium silicon technology that promises to boost the energy capacity of state-of-the-art Li-ion batteries significantly. Most still rely on nickel on the cathode side, however. All three are driving toward commercial production with recent funding. One battery chemistry that seems to be disrupting the electric vehicle market is lithium iron phosphate (LFP). Cheaper, but with just one half to two thirds the energy density of state-of-the-art NMC, LFP is suddenly appealing because of the relative abundance of its raw material components. Tesla reported

1: "Bored Ape Creator's Next Windfall: Selling Land in an 'Open' Metaverse," Financial Times, Tim Bradshaw and Cristina Criddle, May 9, 2022.

half of its cars produced in Q1 had LFP batteries, VW expects 30% of its electric vehicle production will be LFP, and Rivian recently announced all of the 100k delivery vans it is building for Amazon will use LFP.

Electric vehicle makers should obviously also benefit from the acceleration away from fossil fuels. A big constraint, however, is the capital involved to compete with the incumbents. With growth-stage investors such as Softbank and Tiger Global pulling back and reorienting, as well as a series of troubled public SPAC debuts among electric vehicle makers, raising the billions needed to build electric vehicle production lines may prove challenging going forward. Capital intensity is a factor across the vertical, likely affecting startups in segments such as advanced air mobility as well.

Depending on the severity of the downturn and what happens to the unemployment rate, ridehailing and last-mile delivery startups may see their potential pools of contracted labor swell and costs ease; however, demand for their services is likely to be impacted as well. Late-stage companies in the space such as Bolt, which completed a significant series F round at the beginning of the year, may be at an advantage as funds for upstart competitors wane.

Among autonomous vehicle and advanced driver assistance systems (ADAS) technology segments, demand for unique low-cost sensors from more established startups such as TriEye, as well as early stage companies such as Lumotive and Voyant, should keep development vibrant. Companies across the vertical with standout performance/cost ratios for their technology should continue to attract attention.

The pullback is likely to focus attention on startups with distinct technological advantages; marginal and me-too competitors are likely to find the environment challenging. Capital for growth at any cost will likely fade over the medium term, and startups will have to start operating with an eye toward margins and profitability.

Supply chain tech

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The supply shocks of the past couple years and, in particular, Q1 have made many companies begin to reconsider their supply chain strategies. An economic downturn may hasten their plans. Just-in-time supply lines stretching across the Pacific that have built up over the past several decades provided a cost efficient and competitive stance for companies under relatively normal operating conditions. The impact of COVID-19 and the dramatic volatility of demand exposed the underlying fragility of this approach, however. Further, the notion that countries that trade together and are economically intertwined won't go to war with each other was sadly cast aside with the Russian invasion of Ukraine. Diversification, reshoring, near-shoring, and, recently, "friend-shoring" (coined by Treasury Secretary Janet Yellen)[2] are the new mantras.

Diversification, reshoring, near-shoring, and, recently, "friend-shoring" are the new mantras.

2: "Remarks by Secretary of the Treasury Janet L. Yellen on Way Forward for the Global Economy," US Department of the Treasury, April 13, 2022.

Although challenges abound for startups managing through economic downturns, corporate customers' rethinking supply chain strategies creates an opening for new technology and innovation. Diversification of supply chains amplifies complexity, cost, and the number of trading partners. Companies such as Flexport that provide real-time tracking, multi-modal booking, and deep integration across partners have an edge. Any effort to delink pan-Pacific supply chains, whether it is reshoring or friend-shoring, will likely see significantly higher labor costs. As such, focus on labor productivity is paramount. Warehouse automation solutions from startups such as Exotec and Ox offer unique approaches to boost productivity while also accelerating throughput and response. Kargo provides internet of things (IoT) smart-tracking solutions at key nodes in the distribution chain to reduce costs and minimize shipping errors.

A global downturn often does greater damage to developing nations, and soaring prices for energy, fertilizer, and staples such as wheat are likely to threaten food security in the Middle East and Africa. Egypt, the world's top wheat importer, gets 70% of its supply from Russia and Ukraine, and for Tunisia it's 80%.[3] Syria has already started rationing wheat, and Yemen looks to be particularly stressed. It is unlikely supply chain tech will be able to alleviate any of these issues in the near term, but again, the experience is likely to spur calls for greater diversification and resilience in supply chains, an area where startups can add considerable value. Moreover, startups such as ElasticRun and Reshamandi in India and Chari in Morocco are using mobile technology to enhance supply chains in rural areas, improving access to goods and credit, as well as helping farmers boost quality and earn stronger pricing.

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Artificial intelligence & machine learning

Outsized expectations for artificial intelligence (AI) companies are meeting economic realities during the stock market slowdown. Public AI companies that enjoyed high valuation premiums during the COVID-19 pandemic face challenging market conditions as technology valuations have regressed below pre-pandemic multiples. During the market downturn, public AI companies have become the target of short sellers aiming to expose inflated claims around future contract value. In one case, a short seller found that C3.ai fluctuated its estimates of its total addressable market in enterprise AI by more than $100 billion over the course of two months and shifted the target for its total addressable market to reach $250.0 billion by four years in different announcements.[4] Outlandish forecasts for the future of AI are unlikely to hold up to scrutiny in this market environment.

AI-aided software development, also referred to as Software 2.0, will be accelerated to withstand the loss of software developer capacity and challenges to building software in a recession. The Russian invasion has affected more than 250,000 software developers across Russia, Belarus, and Ukraine. Many of these developers are operating below full capacity in their roles for outsourcing firms and pushing enterprises to find contract labor in other countries in an already overstretched labor market. To respond to this gap, deep learning can be used to create software

3: "Middle East Faces Severe Wheat Crisis over War in Ukraine," DW, Dario Sabaghi, March 9, 2022.
4: "Real Intelligence: Sell C3.ai," Spruce Point Capital Management, February 16, 2022.

applications that perform specific tasks without any human coding. By using the matrix multiplications of neural networks instead of scripts and binary code, machine learning (ML)-powered software can become more reliable and malleable than today's software applications.

Both research organizations and startups are making breakthroughs applying deep learning to software development, including OpenAI's Copilot and startup Builder.AI. Copilot relies on OpenAI Codex, a model that recommends software code based on natural language processing. Builder.AI uses conversational AI to recommend blocks of software for app developers, creating a low-code alternative to software development. This application has become practical at a time when organizations need software support.

Brendan Burke
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Information security

Geopolitical instability encourages information security (infosec) adoption, reinforcing the vertical's position at the top of enterprise priority lists. Numerous surveys of chief information officers find that information security is the highest IT priority for this year, both in terms of new investment and maintenance of current investments. Geopolitical uncertainty has reinforced this commitment, with 72% of European chief information security officers (CISOs) feeling the need to strengthen their cyber resilience as a result of the conflict.[5] We do not expect economic uncertainty to significantly slow infosec growth even though VC investment may slump.

We expect many enterprises to reconsider their IT budgets given constrained spending plans and shift toward mission-critical cyber hygiene. High-growth categories that may suffer from repositioning include Web3 security, data privacy, and passwordless authentication. Web3 security relies on increased institutional investment in cryptocurrency, which we expect to moderate in a low-growth environment. Data privacy and passwordless authentication rely on long integration cycles with databases and directories, meaning they may go unfinished due to cost-cutting. Categories that should benefit from short-term pressure include vulnerability assessment, extended detection & response (XDR), access management, IoT/OT security, and secure networking.

High-growth categories that may suffer from repositioning include Web3 security, data privacy, and passwordless authentication.

Some enterprises may consider vendor consolidation, which is a tailwind for vendors offering holistic solutions across specific segments. Growth-stage companies with higher costs of capital may reconsider their spending on a variety of security point solutions. Consolidation of toolchains was already a priority for CISOs with increased interest in integrated product suites across network, endpoint, and identity. Managed security services can offer blanket coverage and may be asked to cover wider swaths of cloud and identity management. Managed security services startups benefiting from this trend include BlueVoyant, Arctic Wolf, and Expel, all of which have established competitive market positions in the critical function of managed detection & response.

5: "War in Ukraine Drives Expanded Security Impact Across Europe," IDC, Mark Child, et al., April 2022.

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Internet of things

IoT remains a cyclical theme that is disproportionately affected by end user budget constraints relative to other fields of data analytics. The COVID-19 pandemic forced a focus on return on investment (ROI) that has led many general-purpose IoT technologies to languish. Supply chain constraints and high input costs render new IoT device deployments untenable in many cases. The current inflationary environment further suppresses long-term investments in complex device deployments and encourages focus on short-term ROI. We believe this focus will further push investment toward use-case-specific applications rather than holistic IoT platforms.

Consumer categories face risks of slower growth in 2022. Smart home led the vertical in VC funding in 2021 yet faces an outlook of low growth as pandemic-induced demand subsides and inflation shifts consumer dollars to staples. Thinning margins in manufacturing make advanced anomaly detection and process automation solutions less appealing. And municipalities must weigh smart cities initiatives against more essential public services. Categories with less consumer budget exposure include healthcare, commercial real estate, and energy & utilities.

High energy costs compound existing trends in IoT adoption for the energy & utilities subsegment. We already tracked higher investment in discrete IoT devices for oil & gas monitoring applications than clean energy given the oil & gas industry's need to extract additional efficiencies in a low-price environment. High energy prices will encourage scaling of proven technological solutions. High-growth startups including Andium and Augury stand poised to benefit from this trend given their existing relationships with oil majors. Augury recently announced a major acquisition for manufacturing process automation startup Seebo, demonstrating the industry consolidation likely to occur in favor of scaled analytics vendors with proven ROI metrics.

Alex Frederick
Senior Analyst, Emerging Technology

Foodtech

The COVID-19 pandemic brought unique challenges and opportunities to agrifoodtech. Food delivery received a massive boost in adoption and sales as consumers sheltered at home. The agtech industry saw investment activity surge in nearly every category due to various pandemic-related failings that highlighted food system vulnerabilities and heightened interest in models supporting healthy and local food supply.

New and potentially long-term macroeconomic events are creating additional challenges for agrifoodtech businesses. Inflation, war, and economic volatility have concerning implications for food supply, consumer purchasing behavior, and adoption of practices that address climate change.

One of the most evident shifts affecting consumers is rising food prices. In the US, the Consumer Price Index for food rose 9.4% YoY in April.[6] Consumers have proven to be sensitive to the pricing changes and have shifted shopping habits by switching

6: "Consumer Price Index: April 2022," US Bureau of Labor Statistics, May 11, 2022.

Plant-based foods such as Impossible Foods, Ripple, and Beyond Meat may prove to be a casualty of this upheaval as they sell foods priced at a premium to the products they seek to mimic.

to lower-cost alternatives or reducing the number of items purchased. Plant-based foods such as Impossible Foods, Ripple, and Beyond Meat may prove to be a casualty of this upheaval as they sell foods priced at a premium to the products they seek to mimic.

Price hikes could negatively impact third-party food delivery providers such as Instacart that already charge various fees and inflate prices, leading to elevated churn as consumers forgo the convenience of home delivery and instead shop in-store. Conversely, digital-first grocers such as Weee! and Picnic have established infrastructure and operational efficiencies that may allow them to continue providing delivery services at prices competitive with in-store chain grocers.

Rising fuel costs, due in part to the Russian invasion of Ukraine, will be a significant hurdle for food businesses with a delivery model, especially restaurant and grocery delivery providers. Third-party food delivery providers such as Uber Eats, DoorDash, and Instacart have faced churn, push back, and even strikes from gig workers demanding fair wages. Rising fuel prices will make the delivery wage equation even less palatable. DoorDash recently rolled out initiatives to offset rising fuel costs, such as a 10% cashback debit card for fuel costs and a weekly gas bonus for employees tallying up 100+ miles weekly.[7] These initiatives will help retain delivery drivers but will likely compress already-thin margins.

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Agtech

The agriculture industry is witnessing record high fertilizer prices that are boosting the cost of wheat, palm oil, and other agricultural commodities, which have hit 10-year highs. Three key types of fertilizer were up between 150% and 250% YoY prior to the war in Ukraine.[8] Prices have since continued to surge as fertilizer exports from Russia have been severely curtailed. Agricultural yields forecasts were already at a six-year low due to extreme weather conditions, including unseasonably wet weather that has delayed plantings in the US and a heatwave in India. Russia's invasion of Ukraine has piled on to the dreary outlook by severely curtailing exports of wheat and other agricultural goods.

Many farmers are responding in the near term by attempting to limit fertilizer applications without harming yields. However, several agtech solutions may prove more effective if prices remain elevated long-term. Microbial biofertilizers provide eco-friendly alternatives to synthetic fertilizers. These products by providers such as Indigo Agriculture, Pivot Bio, and AgBiome have characteristics that make them less precise and more challenging to handle than synthetic fertilizers but are slowly becoming more capable. Government grants and partnerships with major food companies are helping incentivize adoption by farmers, and continued elevated fertilizer prices may make it essential.

On the hardware side, field robotics by providers such as Augmenta, Verdant Robotics, and Rowbot use computer vision, machine learning, and other precision

7: "Announcing Gas Rewards Program for Dashers to Offset Rising Costs at the Pump," DoorDash, March 15, 2022.
8: "Fertilizer Prices Spike in Leading US Market in Late 2021, Just Ahead of 2022 Planting Season," USDA, February 9, 2022.

A radical solution to extreme fertilizer prices is transitioning ag operations to indoor farming facilities. Techniques such as aeroponics and hydroponics can use up to 98% fewer nutrients, water, and other inputs.

Robert Le
Senior Analyst, Emerging Technology

technologies to accurately apply treatments, reducing the use of inputs by as much as 90%. Robotics providers are increasingly shifting to hardware-as-a-service models, reducing major upfront capital expenditures.

Lastly, a radical solution to extreme fertilizer prices is transitioning ag operations to indoor farming facilities. Techniques such as aeroponics and hydroponics can use up to 98% fewer nutrients, water, and other inputs. The massive input cost savings are countered by the significant startup costs and ongoing operational expenses from lighting and other high-energy usage technologies. Additionally, indoor farms tend to grow a small range of produce such as leafy greens, herbs, berries, and tomatoes. This is partially because larger crops such as maize are not well suited for indoor growing. Indoor farmed crops tend to be highly perishable and sell at a premium that can provide sufficient ROI for indoor farm operators. Rising food prices may shift the equation, making an entirely new range of indoor-grown produce profitable.

Insurtech

The impact of high inflation, sanctions, rising interest rates, and a potential recession on global insurance markets will be multifold. The increase in prices for automobiles, home and commercial property repairs, and medical costs will lead to greater severity of losses on insurance claims. Sanctions stemming from the Russia-Ukraine war will cause business loss as insurers pull out from banned countries. Further, loss claims are expected to increase with a Swift ban in place—particularly around trade credit insurance—which covers non-payments for companies that have sold goods and services. Rising interest rates will shift insurance assets to fixed income products, a reversion back to the historical norm. However, investment income will nonetheless be undermined in a recession scenario for insurers who manage roughly $24 trillion in global assets.[9] We believe these confounding factors will compel insurers to significantly increase premiums while simultaneously seeking new methodologies to improve underwriting and claims efficiency to mitigate combined ratio increases.

This current backdrop will have mixed impacts on insurtech startups. Those companies selling risk products—and competing directly with incumbent carriers—will continue to struggle in this environment. This has been evidenced over the past 12 months, when stock prices of many newly listed insurtech companies who mostly sell insurance are down more than 75%.[10] These companies have yet to establish pricing models that can effectively underwrite insurance profitably. However, it is possible that startups selling cyber insurance could enjoy growth in this environment. As the war continues in Ukraine and the risk of cyber warfare increases, the demand for cyber protection and insurance will continue growing. This could benefit startups such as Coalition and Corvus, which sell insurance packaged with cybersecurity services.

9: "2021 Global Insurance Report," BlackRock, 2021.
10: PitchBook insurtech IPO index

Underwriting startups such as Envelop Risk and QOMPLX, which provide risk data and analytics to cyber insurers, could benefit as demand for cyber insurance continues to jump.

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Insurtech companies selling enablement software will also likely benefit as traditional carriers seek technologies to improve underwriting and claims processes. During recessions in the past, reduced investment incomes have forced insurers to double down on underwriting improvement and claims efficiency. Underwriting startups such as Envelop Risk and QOMPLX, which provide risk data and analytics to cyber insurers, could benefit as demand for cyber insurance continues to jump. Insurers looking to continue cutting costs could look to claims startups such as Carpe Data, which provides automated technologies across the entire claims process.

Fintech

While the global financial crisis was a recession that originated within and severely impacted the financial services sector, the current environment portends a recession related to inflation, rising interest rates, and war. We believe financial services are more insulated from the impact of the current climate because banks and other financial institutions have shored up balance sheets over the last few years. The current fintech boom is a byproduct of the last recession in which many innovative companies have created significant value to consumers and businesses through more convenient services, higher approvals, decreased fraud rates, and lower fees. With the threat of a recession, however, we believe there will be a bifurcation of the market: Consumer and small and mid-sized (SMB) fintech companies will be negatively impacted while enterprise and infrastructure fintech companies will remain at strength.

During an economic downturn, consumers and SMBs tend to spend less money, which will affect fintech companies that are serving this space. Companies such as alternative lenders, buy-now-pay-later companies, and mortgage origination platforms that underwrite customers will see their pricing and risk management models challenged for the first time. These companies will be pressured to adjust their underwriting models in real time if delinquencies and defaults start to creep up. We are seeing some signs of this. Affirm, for instance, has seen its delinquencies increase to 6.3% in Q1 2022 from 4% in Q2 2021. Credit card delinquency rates have remained well under 3% over the past decade. However, in a rising interest rate environment, a small group of bank-chartered fintech companies such as SoFi and Varo can earn net interest income and use their deposits to lend more cheaply, giving them an advantage relative to non-bank lenders that rely on asset-backed security funding, high-cost warehouse facilities, and/or origination fees. Lastly, trading and investment apps will also be severely impacted as consumers pull back on purchasing stocks, options, and crypto.

Fintech companies with contract-based recurring revenues from enterprises, banks, and other financial institutions will likely continue to do well in a downturn, especially more established fintech companies. We don't expect banks and large

corporations to significantly scale back technology spending, and some will increase spending to remain competitive. Citi, for instance, increased technology spending by 12% in Q1 2022. In recent years, there has been an uptick in consolidation of financial infrastructure providers. Visa acquiring Tink (after failing to acquire Plaid) and SoFi acquiring Galileo and Technisys are examples. We expect considerable consolidation in a recessionary climate as more established fintech companies and financial institutions seek to acquire technology assets at a discount. Middle-tier companies such as MX, Divido, MANTL, and Lithic, which have proven technologies and business models but less established market shares, could become attractive acquisition targets.