Quarterly Investment Perspective

Banking Sector Challenges, Persistent Technological Trends

BESSEMER TRUST

Holly H. MacDonald
Chief Investment Officer

Executive Summary

- **Stocks and bonds both posted gains in the first quarter despite several market and economic developments, most notably stresses in the banking system, which we discuss.**
- **We expect growth to slow and inflation to continue its decline, allowing the Fed to conclude its hiking cycle. We also expect the U.S. to avoid a severe recession and believe the combination of more stable rates and a mixed economic outlook is conducive to continued modest gains in equities and bonds for the year.**
- **Regarding portfolio positioning, we maintain a modest overweight to equities, U.S. equities in particular. Bond portfolios have a longer duration versus benchmarks, and we recommend allocations to a diversified mix of credit. We continue to find compelling investment opportunities in the public and private equity space, and in this piece, we explore opportunities in artificial intelligence.**

For all of the market and economic developments in the first quarter of 2023 — from robust growth to renewed concerns regarding Fed hiking, to acute banking stress — both bonds and stocks have posted modest gains on the year. The positive correlation between stocks and bonds that was in place for much of last year was maintained, with *lower bond yields* and *higher stock prices* more prevalent in 2023 versus *higher bond yields* and *lower stock prices* that dominated much of last year until the October lows (Exhibit 1). This dynamic has led to a sharp contrast in year-to-date sector returns versus 2022, with technology, communication services, and consumer discretionary leading and financials, energy, and healthcare lagging (Exhibit 2).

In this Quarterly Investment Perspective, we provide a brief update on the macroeconomic backdrop in the section that follows. Despite all of the moving pieces, which we address, we maintain the key tenets expressed in our year-ahead outlook in January: Growth will slow, and inflation will continue to decline, allowing the Fed hiking cycle to conclude soon. The U.S. seems able to avoid a severe recession even if the economy contracts slightly during the year, and the combination of more stable rates and a mixed economic outlook is conducive to modest gains in equities and bonds on the year, in our view.

Exhibit 1: S&P 500 and 10-Year Treasury Yield

Key Takeaway: The S&P 500 has closely tracked the moves in rates.

As of March 27, 2023. LHS is defined as left-hand side. RHS is defined as right-hand side.
Source: Bloomberg

Exhibit 2: Top and Bottom Performing S&P 500 Sectors Year-to-Date

Key Takeaway: Growth oriented sectors have outperformed more value and defensive oriented sectors year-to-date.

Top Three Sectors		Bottom Three Sectors	
Sector	**Total Return**	**Sector**	**Total Return**
Information Technology	22%	Financials	(6%)
Communication Services	20%	Energy	(6%)
Consumer Discretionary	16%	Healthcare	(5%)

As of March 31, 2023.
Source: Bloomberg

The most notable development — and newer risk — is stress in the banking system, which we address below. Policy responses to the situation as of this writing appear sufficient to allow for overall financial stability, which appeared threatened at times in recent weeks. We expect credit creation to be slower and therefore have an underweight to financial services — particularly to smaller and regional banks whose business models are vulnerable to interest rates and other macroeconomic factors (please see our March 13 Investment Update, which discusses recent regional bank volatility and portfolios). We will continue to monitor the banking situation and discuss our findings in future publications.

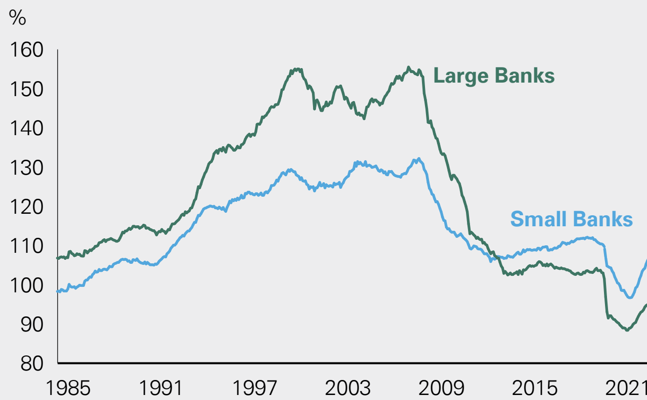
At the same time, in the absence of worst-case scenarios of either significantly higher rates on the one hand or a severe recession or bank run on the other, we think that the market again will be able to focus on longer-term opportunities. In the final section of this publication, we take the opportunity to discuss an investment theme we find particularly compelling — artificial intelligence (AI).

Recent stress in the banking sector was particularly unnerving given that financial stability is key for many aspects of our lives and certainly for the economy to grow and markets to function. While ample liquidity and sound credit are key to a healthy banking sector, the business model of accepting deposits and lending money, by definition, requires the confidence of depositors that their funds will be accessible when needed. There were specific concerns with regard to several of the banks that experienced deposit outflows and depressed equity prices, yet for several days, the stress seemed to be spreading to otherwise solid institutions given a breakdown in this confidence loop, likely exacerbated by the quick flow of information and easy movement of capital given recent technological innovations.

Overall, we do not find the banking sector to be a particularly compelling long-term investment given its sensitivity to the overall economy, significant regulation, and challenges to asset portfolios in light of higher interest rates. That said, while particular institutions may still face significant challenges to their business models and may experience stress, we are not alarmed by the liquidity or credit characteristics of the sector as a whole. Treasury securities and bank loans as a percentage of deposits are meaningfully below historical levels, and significant capital is reserved for potential losses (Exhibits 3 and 4). While bank assets are challenged by higher rates, these assets are largely held to maturity, and as long as liquidity is ample, buoyed by implicit government support, they pose a challenge to earnings but not solvency. Bessemer portfolios hold several large banks — Bank of America and JP Morgan — given their strong balance sheets and further deposit market-share gains since the collapse of Silicon Valley Bank. One area we are watching for further stress is commercial real estate. We do not have exposure to commercial real estate debt in portfolios but note that regional banks hold the lion's share of commercial real estate loans, many of which will need to be restructured given interest rates and other factors.

Exhibit 3: Treasury Securities and Bank Loans/ Leases as a Percentage of Deposits

Key Takeaway: U.S. banks are much more liquid than in 2008.



As of February 28, 2023.

Source: Deutsche Bank Research

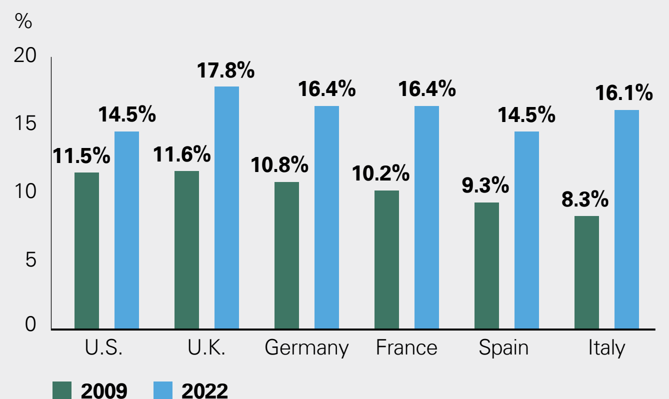
The extreme Fed hiking of last year was in a sense designed to take froth out of the economy, and the effects can be unpredictable as rate hikes make their way through the system. Weakness in cryptocurrency-related assets, special purpose acquisition companies, and other areas is consistent with froth coming out of the system, but a run on otherwise sound banks is not. Policymakers have adjusted their stance, providing implicit support for deposits even above the $250,000 threshold of FDIC insurance, and the Fed has more visibly incorporated financial stability as well as knock-on effects of tighter credit into its outlook as of last week's meeting. These steps seem sufficient as of this writing to have stemmed extreme fear in the market. However, we remain on alert as the interest rate shocks of last year continue to reverberate through the economy and can have unexpected implications.

Related to higher rates and banking stress, government financing generally and the debt ceiling obstacles more specifically are worrisome and likely to be a focus of the market in the coming quarters. Despite government assurances to the contrary, increased spending from the government due to the banking situation raises the possibility of the debt ceiling X date being pulled forward as the FDIC is likely to need short-term assistance from the Treasury, especially if April's tax revenue surprises to the downside. While Tax Day will give us more insight into the ultimate timing, we expect the debt ceiling debate to come into greater focus later this spring. We believe the probability of a U.S. government default is extremely low, a view that is broadly shared, yet we expect market volatility as the contentious process unfolds.

We would be remiss if we did not mention the ever present and recently heightened geopolitical risks. We view the U.S.'s increasingly tense relationship with China as a long-term issue, with near-term further escalation unlikely. The war in Ukraine, meanwhile, remains a horrific situation sadly lacking meaningful prospects for resolution. Elsewhere, we see more unexpected instability potentially coming from the Middle East in the near term, and we are spending more time analyzing developments there. Iran appears to be enriching uranium in high quantities, and Israel's normal reaction function to such situations suggests there may be more visible conflict in the coming months even as U.S. policymakers seem to be focused elsewhere. Conflict could lead to higher oil prices, and greater spending on defense internationally is one of the themes we expect to persist for this year, helping inform our overweight to the aerospace and defense industry.

Exhibit 4: Regulatory Tier 1 Capital to Risk-Weighted Assets

Key Takeaway: Regulatory capital has increased since the global financial crisis (GFC) as banks are more well capitalized.



As of September 30, 2022, for all countries aside from Italy. Italy data as of June 30, 2022. Regulatory tier 1 capital refers to the highest quality of regulatory capital, as it absorbs losses immediately when they occur.

Source: IMF

As challenges are ever present, so too are opportunities in the investment landscape. The increased focus on geopolitical headwinds provides opportunities in energy, security, and infrastructure. The uncertainty in funding markets in recent weeks has raised concerns regarding the private assets space in general, yet for the established managers with whom we have partnered, we see a still compelling opportunity set and potentially less competition with capital harder to come by. As mentioned above, we are particularly enthusiastic about the long-term potential and short-term implications of artificial intelligence, which the team discusses on page 8.

Positioning Summary

Even as portfolio managers have adjusted stock selection for the ever-changing landscape, our overall positioning has been consistent from the beginning of the year. We maintain a modest overweight to equities with the view that both equities and bonds can post modestly positive returns as the Fed is near the end of its hiking cycle and worst-case outcomes factored into the market last year are not realized. The U.S. is our favored region for equity exposure; while Europe and China have seen upside momentum given low valuations and marginally better news, we have greater confidence overall in U.S. companies given the mix of geopolitical and economic challenges overseas and fewer high-quality companies in which to invest. We are adjusting our currency exposure and regional exposure at the margin for the select opportunities we are finding, yet we expect to remain overweight the U.S. for the foreseeable future. Bond portfolios are long duration versus benchmarks, and we recommend allocations to a diversified mix of credit, which is also recovering from the shocks of last year. As ever, private assets are a core part of our recommendation for qualified clients with flexibility in liquidity need, and as the environment remains volatile, we expect hedge funds also to deliver alpha and recommend an allocation both to value creation and absolute return strategies.

Macro Overview

Bree Sterne, Senior Investment Strategist

The first quarter of 2023 saw a pendulum swing of the macroeconomic narrative. Following deteriorating economic data and recession fears that dominated at the end of 2022, the start of the first quarter was characterized by stronger-than-expected economic growth and sticky inflation, a combination that drove expectations for tighter monetary policy. At the end of the quarter, financial stability concerns emerged amid bank volatility, and markets increasingly looked for a sooner-than-expected end to the Fed's hiking cycle. Meanwhile, headwinds to credit creation appear set to slow economic activity. Looking to the rest of 2023, we expect economic growth to slow, the labor market to loosen, inflation to moderate, and the Fed to end its hiking cycle (Exhibit 5).

Economic Growth

Current landscape: Despite widespread fears of an imminent recession entering the year, economic data in the first quarter of 2023 was largely stronger than anticipated. Before the emergence of bank volatility that rattled markets at the end of the quarter, strong economic data signaled a rebound rather than near-term recession risk. The Atlanta Fed's real GDP estimate for the first quarter stood at 2.5% as of March 31, 2023, signaling above-trend growth. While the manufacturing sector has seen weaker growth, the services side of the economy remains robust, supported by a still-strong consumer. Armed with over $1 trillion in additional savings relative to before the pandemic, consumer spending remains resilient. Furthermore, household and corporate balance sheets are strong, and default rates remain at historic lows.

Exhibit 5: Key Metrics and Outlook

Key Takeaway: Although the macroeconomic narrative has been rapidly shifting, some areas of the economy are improving.

	Year-End 2022	1Q23	2023 Outlook
Economic Growth	Fear of Deterioration	Unexpected Strength	Slower Growth
Labor Market	Tight	Hot	Rebalancing
Inflation	Elevated but Cooling	Stickier	Easing
Fed	Nearing Cycle End	Higher for Longer	Pause
Europe	Recession Fears	Better Than Feared	Policy Impact Uncertainty
China	Post-COVID Optimism	Slower Reopening	Mixed

Source: Bessemer Trust

Our view: With an eye toward what lies ahead, we expect emerging headwinds for credit growth, such as slower credit creation at regional banks, to hinder economic growth in the coming quarters. While we could see additional impacts from the Fed's aggressive hiking cycle, we believe the policy response is sufficient to contain the banking sector issues. Even though the effects of tighter monetary policy and tougher credit conditions are likely to slow economic growth, consumer and corporate strength should mitigate severe economic downside.

Labor Market

Current landscape: The labor market remains strong with the unemployment rate at record lows and job openings at record highs (Exhibit 6). Despite layoff announcements by prominent technology companies making newspaper headlines, the number of workers being let go is dwarfed by the number of employees that were hired during pandemic-fueled growth. While current labor market data is strong and wage pressures are still elevated relative to history, evidence is emerging that moderation likely lies ahead.

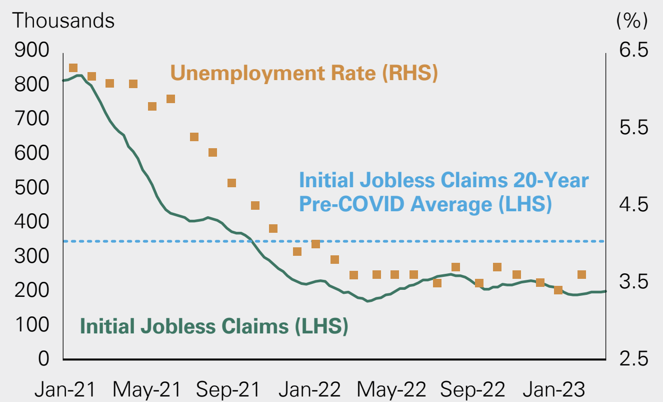
Our view: We expect further rebalancing of the labor market to help wage pressures moderate and, in turn, temper core services inflation. Given the Fed's dual mandate of price stability and maximum employment, a softening labor market should allow the Fed additional flexibility to loosen monetary policy as needed.

Inflation

Current landscape: While inflationary pressures continue to show signs of abating, the pace of disinflation appears to be moderating. In recent months, headline annualized Consumer Price Inflation (CPI) has come down to 6%, a notable decline from the peak of

Exhibit 6: Initial Jobless Claims and Unemployment Rate

Key Takeaway: Although layoff announcements are rising, initial jobless claims and unemployment remain low as labor demand remains strong.

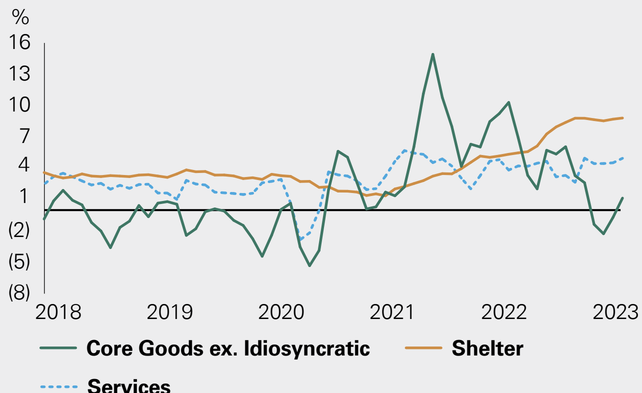


As of March 24, 2023. March 24, 2023 for initial jobless claims and February 28, 2023 for unemployment rate. Initial claims look at four-week moving average. Pre-COVID defined as looking back from December 31, 2019. LHS is defined as left-hand side. RHS is defined as right-hand side.

Source: Bloomberg

Exhibit 7: Main Components of Core Inflation

Key Takeaway: While goods prices have helped to improve the inflation backdrop, services and shelter have led to sticky inflation.



As of February 28, 2023. Core goods basket excludes idiosyncratic items including pharmaceuticals, tobacco, and jewelry. Services exclude energy services and shelter prices. All data reflect 3 month SAAR (seasonally adjusted annualized rate).

Source: Bureau of Economic Analysis

over 9% last June but still well above the Fed's 2% target for core inflation. Within the main components, goods prices have continued to fall, while shelter and services prices have remained sticky as consumer demand has shifted from goods to services (Exhibit 7). While shelter prices continue to be the largest contributor to the high inflation readings, we believe it is important to note the shelter component's lagged nature in CPI data as well as evidence that real-time rent prices are falling, which should contribute to easing shelter price pressure in the coming months. We are closely monitoring the extent to which service costs remain elevated given a tight labor market, still robust consumer savings, and ongoing demand for services-oriented experiences missed during the pandemic, such as travel and dining out.

Our view: With forward-looking indicators pointing toward a continued downtrend in inflation and the Fed's interest rate hikes continuing to permeate the economy, we expect the inflation trends to improve. Softening shelter prices should begin to appear in the official data, but services costs will likely remain sticky until we see further loosening in the labor market. We remain mindful that the path of disinflation is unlikely to be linear and core inflation is likely to remain above the Fed's 2% target in the coming quarters.

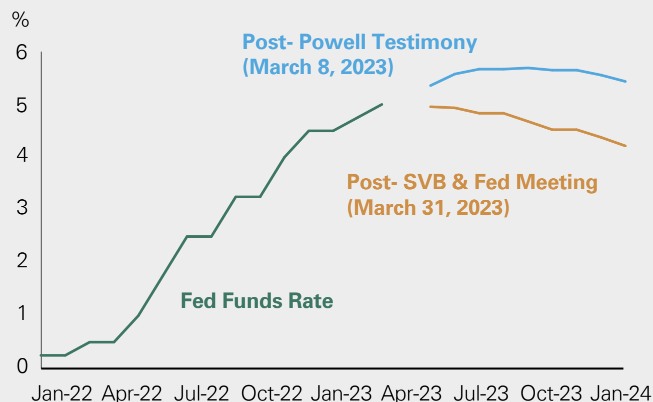
Fed

Current landscape: A resilient growth and inflation backdrop has presented a challenge for the Fed amid recent banking sector volatility, highlighting the tension between the Fed's financial stability and inflation-fighting objectives. During the end of the first quarter, market expectations changed quickly from "higher rates for longer" to investors increasingly pricing in interest rate cuts before the end of this year (Exhibit 8).

Our view: We believe that the Fed is close to completing its hiking cycle and will remain highly flexible regarding the path of rates, considering both economic and financial data in addition to the depth and length of recent bank volatility. The Fed's reaction to the banking stress has been to continue hiking rates while softening forward guidance and recognizing that tightening is likely to come through tighter financial conditions given weaker credit growth. We found it especially notable that Fed Chair Powell acknowledged that tightening financial conditions in response to the banking crisis are in essence doing the work of tighter monetary policy, implying a lower terminal rate will be needed for inflation to moderate given the impact of tighter credit conditions on growth and inflation. The Fed appears ready to move in an incrementally dovish direction as soon as either the banking situation or a loosening labor market and further disinflation will allow.

Exhibit 8: Fed Funds Rate and Market Implied Pricing

Key Takeaway: Expectations for rate hikes have declined as financial stability risks have tempered rate hike expectations.



As of March 31, 2023.

Source: Bloomberg

Europe

Current landscape: A combination of unseasonably warm weather and resilient industrial production despite lower gas consumption took the worst-case scenario off the table for Europe this winter. After grim economic data and widespread fears of recession heading into the winter, recent economic data has surpassed expectations, with composite PMI data indicating a tentative return to growth after several months of decline. While the manufacturing PMI remains in economic contraction, Europe has seen a rebound on the service side of the economy as strong household income, aided by social benefits, supported European households through the recent energy crisis. Inflation in the eurozone appears to have moved past the peak of 10.6% in October given declining energy prices, though core inflation is still running over 5%, well above the European Central Bank's target of 2%. The ECB, similar to the Fed, has moved to be fully data-dependent, emphasizing confidence in the banking system but also monitoring the extent to which credit conditions will tighten.

Our view: While macroeconomic trends for Europe have improved considerably since the start of the year, we remain mindful of the powerful and lagged impact of the ECB's previous hikes, a hiking cycle that began four months after the Fed's, and the full extent of which is likely to still be felt in the coming months. We increased exposure to Europe during the quarter as the economic backdrop improved while maintaining our overall underweight to the region. Some European luxury retail companies, such as LVMH Moet Hennessy Louis Vuitton, have benefited from the strength of the higher-end consumer. Additionally, DSV, a Danish transport and logistics company, appears well positioned given the pandemic's impact on supply chains.

China

Current landscape: The long-awaited Chinese reopening after years of severe COVID restrictions finally arrived at the start of 2023. Chinese PMIs rebounded into positive territory in January with consumer services bouncing back faster than goods sales. High-frequency data has revealed a sharp rebound in mobility, but some measures, especially related to discretionary spending, remain below normal levels. While both road congestion and subway usage are now elevated relative to pre-pandemic levels, car purchases remain depressed, cinema revenues appear weak, and online searches for terms related to unemployment are still higher than average. On the policy front, the government's moves to ease real estate regulations and efforts to stabilize the property market appear to finally be yielding results. Still, policymakers seem to be refraining from large measures that might meaningfully boost growth as they remain committed to policies centered around "common prosperity," a focus that can create unease for foreign investors. Meanwhile, the geopolitical backdrop remains highly uncertain with the ongoing tension between China and the U.S. evident in the spy balloon incident as well as China's ambiguous relationship with Russia.

Our view: We are monitoring the reopening to see to what extent momentum may moderate after the initial reopening boost, especially given lackluster stimulus. While the consumption recovery may be slow to materialize given the large number of people who were likely sick early in the year and the cautious approach many may be taking after three years of strict lockdowns, early signs point to the potential for the consumption story to underwhelm relative to what was seen during reopenings elsewhere in the world. While the backdrop for Chinese equities remains mixed, it is important to note that they have been trading at a discount relative to international markets, and therefore marginal improvements in macroeconomic conditions or policy have the potential to spur sharp asset price increases. China's reopening is likely to provide a tailwind to global growth given the impact of pent-up demand on the earnings of multinational companies.

Artificial Intelligence Overview: Interest Soars in Recent Months

Dartagnan Howell, Investment Strategies Analyst

Artificial intelligence (AI) has become increasingly important in our technology-centric world. From self-driving cars to voice assistants and movie recommendations, AI is transforming the way we live and work. It has also captured the public's interest over the past few years, and particularly over the last several months (Exhibit 9). The current enthusiasm for AI was initially sparked by the release of ChatGPT to the public by OpenAI (an artificial intelligence research laboratory) last November. ChatGPT's simple interface and ability to generate an answer to almost any question posed fascinated the public, and it became the fastest consumer application to reach 100 million users in history. Moreover, it shined a light on the abilities of artificial intelligence, and specifically generative AI. Generative AI refers to artificial intelligence models that are designed to generate new content, such as new text or images, from a requested input by learning patterns and features from a set of data. ChatGPT is an application of generative AI because it uses large amounts of web data to provide humanlike responses to questions in a conversational manner.

Exhibit 9: U.S. Artificial Intelligence Interest Over Time

Key Takeaway: Interest in artificial intelligence boomed in recent months with the release of ChatGPT.

As of February 28, 2023. Numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular. A score of 0 means there was not enough data for this term.

Source: Google

However, ChatGPT was created as a result of decades of advances in AI research fueled by progress in computing power, data availability, and machine learning techniques. AI capabilities are now expanding across a wide range of sectors including retail, agriculture, finance, and more. Although generative AI has allowed retail consumers to utilize AI technology in the palms of their hands, generative AI is only one component of the vast AI landscape that companies and researchers have been working on for years. Amazon, for example, uses AI in its recommendation system to suggest products to customers based on their browsing and purchase history. Meanwhile, John Deere has created an autonomous tractor that uses cameras, processors, and artificial intelligence to sort images and assess road safety for drivers.

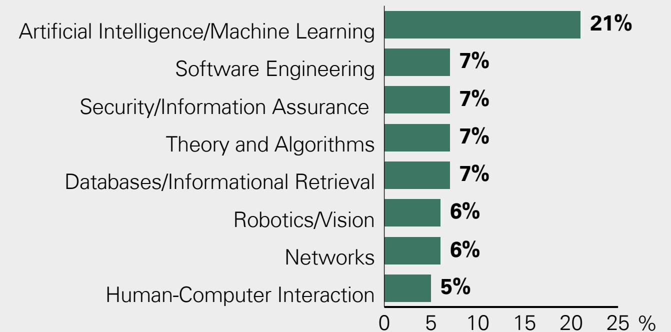
Though the capabilities of the technology are fascinating, AI is still in the early stages of its development, and there are limitations. AI relies heavily on the data it is provided with to make predictions, and if that data is unreliable, the results may be inaccurate or biased. Moreover, AI systems lack the ability to think abstractly and may not be transparent in how they uncover solutions. However, demand for education in AI is rising, which should lead to further improvements in the space. According to Stanford's latest Artificial Intelligence Index Report, in 2020, one in every five computer science students who graduated with Ph.D. degrees specialized in artificial intelligence/machine learning, and it has become the most popular discipline among new computer science Ph.D.s over the past decade (Exhibit 10).

The trajectory for AI development is positive and expanding as many businesses, universities, and investment strategies are committed to innovating this technology. In their most recent earnings calls, Nvidia, Google, and Microsoft mentioned "AI" 76, 59, and 27 times, respectively, an average increase of 122% compared to the previous quarter.

As we invest globally, we are looking for innovative applications of AI across both our public and private portfolios as we believe this technology will be an increasingly important and pervasive component across sectors and industries.

Exhibit 10: New Computer Science Ph.D.s (% of Total) in the U.S. by Specialty

Key Takeaway: Artificial intelligence has become an increasingly popular discipline among computer science Ph.D.s.



As of December 31, 2020. Excludes specialties that are below 5%.

Source: The AI Index 2022 Annual Report by Stanford University

Artificial Intelligence in Public Equity at Bessemer

Bobby Jan, Associate Portfolio Manager

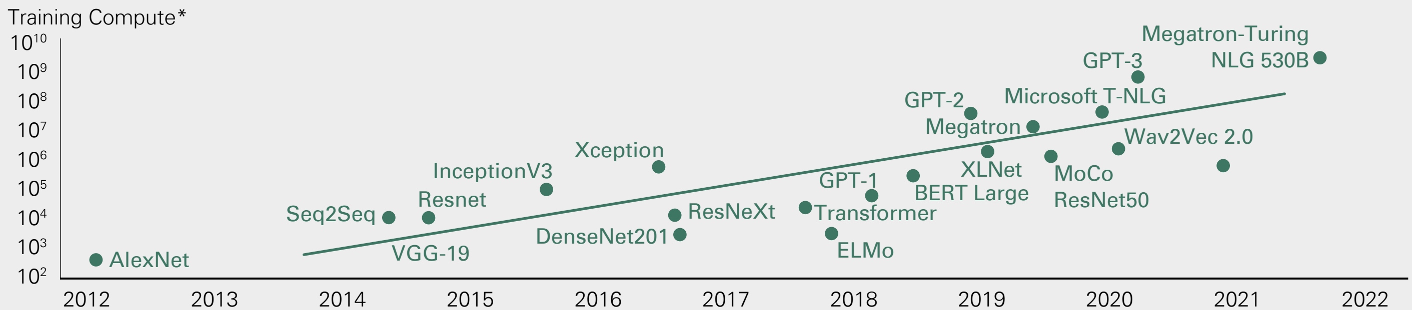
The Bessemer equity team has been closely monitoring the dynamic developments of AI, enabling the team to capitalize on the opportunities offered by this disruptive technology and to sift through the noise surrounding the space. For example, following Alphabet's first demonstration of its artificial intelligence (AI) chatbot, Bard, on February 8, 2023, the company's shares fell by over 7%, resulting in a loss of more than $100 billion in market value. This decline left many bewildered, given the intense interest in AI and Alphabet's leading position in the field.

The team attributes Alphabet's share decline to Microsoft's recent demonstration of AI-powered Bing and Edge, which compete with Alphabet's Google and Chrome. Microsoft's partnership with OpenAI, the creators of ChatGPT, has enabled the company to establish a strong foothold in the search market, where Google holds over 90% market share. The team anticipates that Microsoft will leverage OpenAI's technology across its entire technology stack, leading to stronger competitive advantages and revenue growth. As a result, we have increased exposure to Microsoft in Bessemer portfolios. While portfolio investments in Alphabet have been reduced, the team still views it as one of the best long-term investments in AI, especially if it responds to Microsoft's competitive pressure by rapidly commercializing its AI capabilities and generating new revenue streams.

At the March 2023 Morgan Stanley technology conference, the Bessemer equity team had the opportunity to hear from industry leaders — such as Elon Musk, CEO of Tesla, Twitter, and SpaceX; Brian Chesky, CEO of Airbnb; and Bill McDermott, CEO of ServiceNow — who unanimously agreed that AI adoption has reached an inflection point. With the demand for AI on the rise, more companies, such as Meta and Baidu, are announcing accelerated investments in AI, intensifying the AI arms race. The team's research suggests that Nvidia is the best-positioned company to benefit from this growing demand and competition, having established itself as

Exhibit 11: AI Training Computational Requirements

Key Takeaway: The computing intensity needed to train artificial intelligence models has been increasing at an exponential rate, driving the demand for Nvidia's graphic processing units (GPUs).



As of December 31, 2022. * In petaFLOPS.

Source: Nvidia Corporation

the dominant provider of semiconductors and software enabling AI workloads. As long-term shareholders of Nvidia, the team is thrilled to see the company leading the AI revolution. As we navigate the rapidly evolving AI landscape, the team believes Nvidia remains a strong investment opportunity given its enviable competitive position and significant growth opportunities (Exhibit 11).

Although AI has been in existence for some time, we are now witnessing a new era in which the technology is significantly influencing the public equity market. As AI continues to advance at an unprecedented pace, it is creating both potential risks and opportunities that the team is closely monitoring. The Bessemer equity team is committed to allocating capital to the most attractive risk/reward opportunities as they emerge in this dynamic landscape.

Artificial Intelligence in Private Markets at Bessemer

Philip A. Benyola, Jr., Director of Private Equity

AI as a general purpose technology (GPT). The role of AI has evolved since its early days as a discrete investment theme targeting direct development of machine learning algorithms and big data sets. Today, AI is rapidly taking its place as a general purpose technology (GPT) and is being incorporated horizontally across most investment areas, including SaaS (software as a service), cybersecurity, process automation, business intelligence, developer tools, financial services, healthcare, consumer technology, marketplaces, and many more (Exhibit 12).

Taken in this context, AI may be alternatively thought of as "augmented intelligence" or "automated intelligence." As a tool, AI will enable a wide range of industries, companies, and professionals to build specialized assistants that will assume responsibility for repetitive tasks, enhance human performance, and unleash workforce productivity and creativity. Venture capitalists and company founders are developing ways to incorporate large language models, for example, into many types of business solutions.

This trend is exemplified by DeepL, a venture-backed company that applies neural networks and machine learning research to enhance the speed and accuracy of real-time automated language translation. The company's products are available across many technology platforms, enabling translation services to be incorporated into their customers' businesses in nearly 30 languages. Now, multilingual teams in global companies can draft clear and concise emails and campaign proposals, reports, and presentations for international clients. Another venture-backed company, Horizon3.ai, has developed deep learning systems to provide vulnerability scanning and penetration testing exercises to assess cyber risk for cohorts including national defense, military, government, and corporate customers. Within healthcare, CodaMetrix is a venture-backed company that was launched out of Mass General Brigham and uses applied AI to simplify the complicated process of translating patient records into codes for billing and clinical research on behalf of hospital systems.

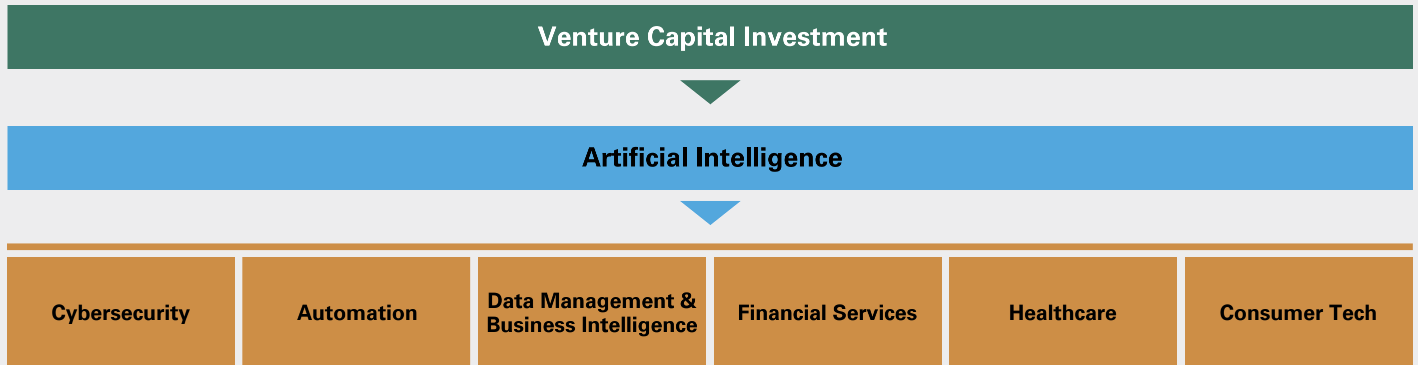
AI as an investment tool. Following the earlier data and algorithm-driven transformation of the hedge fund industry, private equity and venture capital firms are increasingly building internal AI platforms to source and close investment opportunities, as well as to deliver post-investment value-add to portfolio companies. The earliest adopters of this technology now have a discernible advantage over firms that have not invested in their data infrastructure.

One of the early pioneers of this approach, SignalFire, has been building its AI data platform, Beacon, for more than 10 years. Beacon tracks 80 million companies and 495 million employees, using machine learning to identify the top talent most likely to leave their current job to start a new company or join an existing portfolio company. In addition to being a powerful discovery tool, Beacon also enables SignalFire to deliver market-leading services to its portfolio companies, leveraging more than 2 million data sources to provide competitive intelligence on everything from product pricing to customer cohort analysis. Many other venture capital firms are now building internal AI capabilities to support their investment processes.

Our investment due diligence framework centers around the primary areas of team quality and capabilities, prior performance and its drivers, and investment process. Increasingly, our assessment of investment process considers the extent to which a firm's human efforts are augmented by data and compute platforms. While the human element remains paramount, a well-organized and sufficiently resourced technology infrastructure can promote repeatability and consistency of investment processes and, ultimately, investment returns.

Exhibit 12: Artificial Intelligence as a General Purpose Technology

Key Takeaway: AI is now a horizontal application being deployed across vertical sectors.



Source: Bessemer Trust

Artificial Intelligence at Bessemer

F. Zafar, Head of Technology Research and Development

At Bessemer Trust, we consider artificial intelligence to be a toolkit for augmenting our deep professional expertise. By automating processes that require data-driven decisions or predictions, our goal is to achieve the following key business outcomes: greater efficiencies, enhanced employee experience, better decision making, and reduced business and regulatory risks (Exhibit 13).

As with other technology initiatives at the firm, our guiding principles for AI are to start with a holistic analysis of a given process through design thinking, develop iterative prototypes, and deploy limited pilots using third-party platforms — while considering governance, information security, and scale — prior to rolling out solutions firmwide.

Bessemer uses machine learning and natural language processing to analyze around 15 billion daily information-security events and screen over 80,000 daily inbound emails for suspicious contents. We recently piloted AI to drive efficiencies by automatically identifying key provisions in trust documents and to enhance decision-making through predictive analytics.

Exhibit 13: Desired Outcomes for AI at Bessemer

Source: Bessemer Trust

The firm has also implemented robotic process automation (RPA) to automate and streamline business processes, eliminating thousands of hours of manual work annually and improving employee productivity and experience. This frees up employees' time to pursue greater value-add activities that can benefit our clients more directly.

Conclusion

Holly H. MacDonald, Chief Investment Officer

Thank you for reading our latest Quarterly Investment Perspective in what remains a dynamic market and economic environment. To that end, we will continue updating our clients in written, video, and more interactive forums, and we welcome your engagement. Please reach out to your client advisor with any questions you may have.

Authors in Order of Appearance

Holly H. MacDonald
Chief Investment Officer

Ms. MacDonald oversees the firm's investment research, asset allocation, and portfolio management. She is a member of the firm's Executive Committee and Management Committee.

Bree Sterne
Senior Investment Strategist

Ms. Sterne performs in-depth macroeconomic and financial market analysis to deliver custom asset allocation and investment recommendations to clients.

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Investment Strategies Analyst

Mr. Howell performs in-depth macroeconomic and financial market analysis to deliver custom asset allocation and investment recommendations to clients.

Bobby Jan
Associate Portfolio Manager

Mr. Jan is responsible for performing in-depth analysis of equities as well as providing investment recommendations for the U.S. Select Portfolio.

Philip A. Benyola, Jr.
Director of Private Equity

Mr. Benyola is responsible for managing the firm's private equity funds, including sourcing, selecting, and monitoring private equity investments. He is a member of the firm's Private Equity Investment Committee, Hedge Funds Investment Committee, and Investment Policy and Strategy Committee.

F. Zafar
Head of Technology Research & Development

Mr. Zafar has extensive experience in formulating technology strategy, transforming enterprise business processes using design thinking, and leading product management.

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