



Who's Eating Whose Lunch?

Surging yields ate away at AI euphoria

Market Watch

Equity Market Indices ¹	8/31/23 Price	9/30/23 Price	MTD Change	YTD Change
MSCI All Country World	686	657	-4.3%	8.5%
S&P 500	4508	4288	-4.9%	11.7%
MSCI EAFE	2109	2031	-3.7%	4.5%
Russell 2000 ²	1900	1785	-6.0%	1.4%
NASDAQ	14035	13219	-5.8%	26.3%
TOPIX	2332	2323	-0.4%	22.8%
KOSPI	2556	2465	-3.6%	10.2%
Emerging Markets	980	953	-2.8%	-0.4%
Fixed Income				
2-Year U.S. Treasury Note	4.87%	5.05%	18	62
10-Year U.S. Treasury Note	4.11%	4.57%	46	70
BBG U.S. Agg Corp Spread	1.18%	1.21%	3	-9
BBG U.S. HY Corp Spread	3.72%	3.94%	22	-75
Currencies				
Chinese Renminbi (CNY/\$)	7.26	7.30	0.5%	5.8%
Brazilian Real (Real)	4.96	5.03	1.6%	-4.7%
British Pound (\$/GBP)	1.27	1.22	3.9%	-1.0%
Euro (\$/Euro)	1.08	1.06	2.6%	1.3%
Japanese Yen (Yen/\$)	145.54	149.37	2.6%	13.9%
Korean Won (KRW/\$)	1322.65	1349.40	2.0%	6.6%
U.S. Dollar Index (DXY)	103.62	106.17	2.5%	2.6%
Commodities				
Gold	1940	1849	-4.7%	1.3%
Oil	83.6	90.8	8.6%	13.1%
Natural Gas, Henry Hub	2.77	2.93	5.8%	-34.5%
Copper (cents/lb)	377	374	-0.9%	-1.9%
CRB Index	282	285	0.9%	2.4%
Baltic Dry Index	1086	1701	56.6%	12.3%

Source: Bloomberg

INTRODUCTION

September lived up to its reputation as the cruelest month for stocks – the S&P 500 Index lost 4.8% during the month and dragged the Index's quarterly return down to a loss of 3.3%. It's an outcome that many strategists and technicians did not foresee just two months earlier when the Index was hitting new year-to-date highs on the strength of upside earnings surprises and the euphoria that artificial intelligence would eat the world. Few had anticipated that the red-hot equity rally would be tripped up by the return of bond vigilantes and retreat of big foreign buyers, which sent U.S. Treasury bond yields to new cycle highs. The sell-off in Treasuries has brought out bond bears warning of structural issues – sticky inflation and too much debt issuance – that could send bond yields substantially higher from current levels.

On the positive side, there is much optimism for the upcoming earnings reporting season as U.S. economic growth appears to have accelerated in the third quarter, and the Fed has just upgraded its economic forecasts. Speaker McCarthy was able to avert a government shutdown by passing a 45-day funding bill with overwhelming Democratic support. However, this move has led to his removal from speakership and created an unsettling power vacuum.

The resiliency of the U.S. economy will likely be tested during the fourth quarter. Several major fiscal stimuli propping up the economy are fading away or being reversed. Much of the excess savings, estimated to have peaked at \$2.1 trillion in August 2021, appears to be depleted by now. The Internal Revenue Service has placed a moratorium on processing new claims for the generous Employee Retention Credit (ERC) due to a surge of questionable claim submissions. Student debt repayments, after a three-year forbearance, are set to resume this month. Higher energy costs will also erode consumers' discretionary spending power. Lastly, there is still the risk of a government shutdown six weeks from now.

These mounting challenges to the U.S. economy signal that a recession is probably delayed but not derailed. However, the negative impact on the market is likely a 2024 story, as potential weakness in the fourth quarter will not show up in corporate sales and earnings data until the January earnings reporting season.



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Reaching New Heights

One afternoon in the summer of 1959, Pearl McNair, a high school teacher, received a call from the Lake City Public Library asking her to come over immediately to resolve a problem with her son. As she hurried over, Pearl was praying that they would not put her child in jail. She couldn't believe that Ronald, not yet nine years old, would walk a mile alone to the library just to get into trouble.

Everyone was staring at Pearl when she entered the library. Two burly police officers had arrived just before her and were asking the librarian where the disturbance was. The old white woman pointed to the bespectacled African American boy sitting on the counter and said that he shouldn't be in a segregated library, let alone checking out books. To make matters worse, the stubborn kid refused to leave without the books and sat on the counter in protest.

One of the officers shook his head and asked the librarian why not just give the kid a break. Pearl chimed in that Ron would take good care of the books. The librarian gave Ron a stare and reluctantly let him check them out.

Pearl asked her son, "What do you say?"

Ron looked at the librarian and answered, "Thank you, ma'am."

This incident was only the beginning of Ronald Erwin McNair's lifelong journey of overcoming obstacles, breaking down barriers, and reaching new heights.

Growing up in a farm community in the Deep South – Lake City, South Carolina – in the 1950s and 60s,



Dr. Ronald McNair (September 20, 1978).

Ronald's early lived experience was that of a segregated society, but he dreamed big about the world and beyond. In October 1957, a few days before turning seven, the media coverage of the Soviet Union's Sputnik 1 satellite launch piqued his interest in science. Sputnik 1 was the first man-made object to orbit the earth and kicked off the Space Race during the Cold War. Ronald eagerly scoured books about space and science – including the ones he borrowed from the Lake City Public Library – and dreamed of becoming a scientist.

In 1966, inspired by the TV series *Star Trek*, which featured a multiethnic crew on the USS *Enterprise*, Ronald told his brother Carl that he wanted to be

an astronaut. Carl would laugh it off and tease his younger brother for having an unrealistic dream. Undaunted, Ronald finished high school as the class valedictorian in 1967 and won a scholarship to attend North Carolina Agricultural & Technical State University where he majored in physics. During his junior year, he studied at MIT as part of an exchange program. After earning a Bachelor of Science degree in engineering physics, magna cum laude, in 1971, he enrolled at MIT for graduate study.

Ronald had confided in Carl some trepidation about MIT's academic rigor and joked that even janitors there had master's degrees. In 1972, after failing to pass MIT's general physics examination required for the PhD program, he held intense study sessions for a month with a fellow graduate student. The collaborative effort paid off as they both passed the test on the second try. During his third year at MIT, his academic career almost ended when he lost a briefcase that contained two years of research notes and experiment results needed for his doctorate. Instead of panicking or giving up, he reconstructed his experiments over the following year and produced even better results. As he had recounted on several occasions, his early work experience in the cotton fields taught him endurance and determination.

Ronald was anything but a stereotypical, one-dimensional nerdy STEM student. He was so good at saxophone that he had seriously thought about getting a degree in music. A gifted athlete, he was a star on Carver High School's basketball, baseball, and football teams, and he had begun taking karate lessons in college. As a man of faith, he rarely missed 8 a.m. Sunday service at the St. Paul A.M.E. Church in Cambridge, where he taught fellow churchgoers karate.

1976 was a good year for Ronald McNair. He earned his PhD in Physics from MIT, married Cheryl Moore, whom he first met at a church potluck, and won the Amateur Athletic Union Karate Gold Medal. He would go on to win five more regional championships and become a fifth-degree black belt. Dr. McNair accepted a research position at the Hughes Research Laboratories and relocated to sunny Malibu.

Dr. McNair could have settled for a comfortable life by the beach, but his eyes were set on the sky above. After reading a recruiting brochure from NASA, he applied to be a mission specialist for the then upcoming space shuttle program. In 1978, he was selected as one of thirty-five individuals from a pool of 10,000 applicants for astronaut training.

On February 3, 1984, the bespectacled kid from the Deep South became the second African American to reach space. It was NASA's tenth space shuttle mission, a 191-hour flight on board the *Challenger*, which orbited the earth 122 times. He also earned the distinction as the first person to play the saxophone in space.

Upon his return to earth, Dr. McNair became an instant role model, especially to children in disenfranchised communities. He was especially engaging with children and encouraged them to get advanced degrees. He also spoke with great excitement about his next mission to space.

On January 28, 1986, Dr. McNair and six fellow crew members boarded the *Challenger* on an unusually cold morning in Merritt Island, Florida, where the temperature was in the mid-20 degrees Fahrenheit. Unbeknownst to the crew, the engineering team at Morton Thiokol, which manufactured the O-ring

REACHING NEW HEIGHTS

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The Space Shuttle Challenger (OV-099) shortly after its launch on STS-51-L, Florida (28th January 1986).

seals in the shuttle's solid rocket boosters, had recommended against the launch unless the temperature was above 53 degrees. The team was concerned that the rubber O-rings could lose elasticity in cold temperatures. However, the recommendation was overruled by management as the launch was already two days behind its original schedule.

The Challenger lifted off at 11:28 a.m. with millions watching live on TV. It was a picture-perfect launch cheered on by thousands of spectators. However, 73 seconds later, their sense of wonder turned into horror as the shuttle exploded into a ball of fire and scattered into the Atlantic Ocean. The Morton Thiokol engineering team's worst fear proved prescient.

Dr. McNair's time on earth was tragically cut short at 35 years, but it was an exemplary and fulfilling life. As a role model, he had spoken eloquently about the power of perseverance, depths of one's own imagination, and pursuit of one's dream against seemingly insurmountable odds. It was a remarkable journey from segregated schools in the Deep South to MIT, and from watching the news on Sputnik 1 to observing the earth from space.

In January 2011, on the 25th anniversary of Dr. McNair's tragic death, the library where the little boy refused to be denied his rights 52 years earlier was renovated and dedicated as the Dr. Ronald E. McNair Life History Center.

A Souring American Dream



College education has long been a part of the American Dream. However, prior to the 20th century, women, minorities, and lower income individuals faced significant barriers to college enrollment. Most Ivy League schools did not admit women until the 1960s, with Columbia University holding out until 1983. Prior to the Civil Rights Act of 1964, African Americans' higher education needs were met by institutions that are now called Historically Black College and Universities (HBCUs) – Dr. McNair's alma mater, North Carolina A&T, has been one of the nation's top-rated HBCU STEM institutions.

Over the last six decades, the adoption of affirmative-action policies and government subsidies to low-income students' tuition, as well as the dismantling of various institutional barriers have increased the college enrollment rate in the U.S., and women have consistently outnumbered men in college enrollment since 1980. However, since the pandemic, college enrollment has declined – according to the National Student Clearinghouse, total undergraduate enrollment in 2022 was 1.16 million below the level in 2020.

❁ A SOURING AMERICAN DREAM

While data has shown that a college degree would lead to higher earnings and lower jobless rates for college grads versus those without a college degree, a growing number of U.S. adults – 56% according to a March 2023 poll by the Wall Street Journal – believe that a four-year college education is “not worth the cost.” It’s quite understandable as the cost of a four-year degree has gone up more than twice the rate of inflation since 1980. According to the Bureau of Labor Statistics, after adjusting for the quality of education, college tuition and fees have grown at an annualized pace of 6.45% from 1980 to 2022 while the annualized headline inflation (the Consumer Price Index) came in at 3.1%. To put the power of compounding into perspective, it means that college tuition and fees are now 13.5 times what they were in 1980, while the general price index is only 3.6 times its level in 1980.

The irony is that various well-intentioned programs, such as government subsidies to colleges and universities and the federal government guarantee of student loans, have contributed to the rapid growth

of administrators in higher education institutions, which has had more impact on tuition hikes than the quality of education and research. Some would argue that the growing administrative class in higher learning institutions has led to the unnecessary coddling of students, excessive regulation, and interference with academic freedom. Higher tuition and fees have saddled many graduates with greater student loan debt, which stands at roughly \$1.8 trillion and growing. Student loan debt has become a political lightning rod as some politicians seek to cancel it outright for millions of borrowers while others argue that such a relief program is unfair to those who had dutifully paid off their debt, not to mention the precedent set for future borrowers.

While student loan forgiveness will likely be hotly debated and politicized in the upcoming general election in 2024, there is a looming risk on the horizon poised to challenge the value of a college education for many. The risk, of course, is the rapid coming of age of artificial intelligence (AI).



A Job Killer or Enhancer?



In May 2023, Geoffrey Everest Hinton, a British-Canadian cognitive psychologist and computer scientist widely lauded as the Godfather of AI, abruptly resigned from Google, which had acquired his neural networks research company DNNresearch in 2013. Dr. Hinton said his departure from Google would allow him to freely speak out about the dangers of AI. His sense of urgency and apprehension was triggered by the release of ChatGPT-4, which achieved exponential advancement over ChatGPT-3.5. It made him realize that AI could potentially best human intelligence in the not-too-distant future, and he feared that catastrophic misuses of AI could lead to outcomes unaligned with human interests and even an existential risk. On the more mundane side, he cautioned that AI will in time upend the job market beyond so-called drudge work.

ChatGPT-4 has already passed a long list of professional certification and academic aptitude tests. It has aced the Uniform Bar Examination with flying colors, scoring 298 out of 400, which puts it in the 90th percentile. It passed major accounting certification exams – Certified Public Accountant (CPA), Certified Management Accountant (CMA), Certified Internal Auditor (CIA), and the enrolled agent (EA) – with an average score of 85.1%. ChatGPT has also demonstrated the ability for critical thinking, problem solving, and creative work.

🌀 A JOB KILLER OR ENHANCER?

In response to my query regarding what white collar jobs will be threatened by generative AI, ChatGPT gave me a response that can be summarized as:

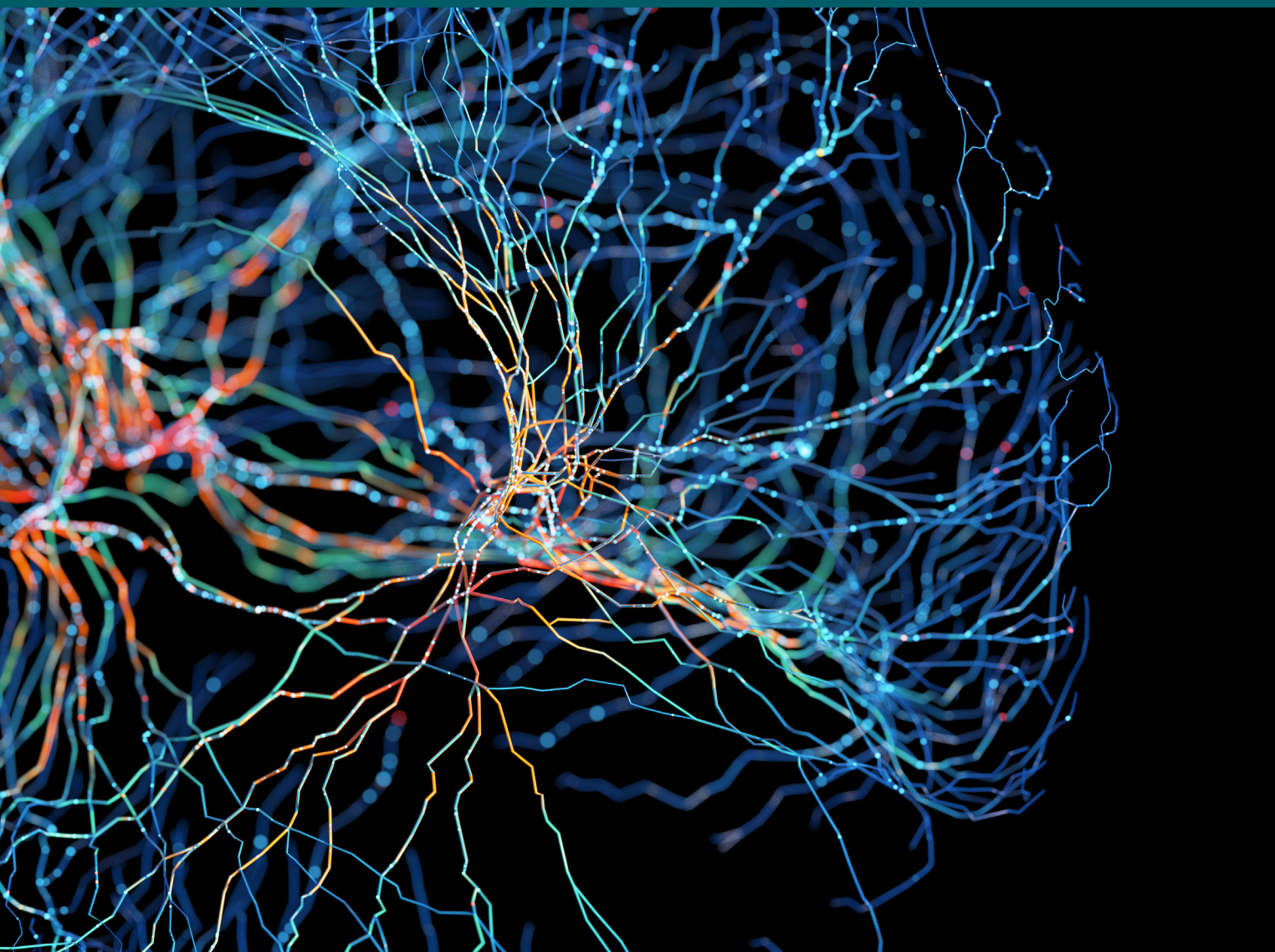
1. Legal services: AI can analyze legal documents, precedents, and case law more quickly and accurately than humans, which will impact jobs in legal research, document review, and other paralegal functions.
2. Finance and accounting: AI can perform data analysis, fraud detection, and financial planning.
3. Healthcare: AI can more accurately analyze medical images, electronic health records, and other data to help with diagnosis and treatment.
4. Marketing and advertising: AI can analyze behavior, optimize advertising campaigns, and personalize marketing messages.
5. Human resources: AI can be trained to screen resumes and initiate candidate assessments.

ChatGPT-4 tried to avoid stirring up anxiety by adding that while AI may impact certain tasks within a job, it does not necessarily mean that the entire job will be automated as human skills such as empathy, creativity, and complex problem-solving are still needed. It also pointed out that AI will create new opportunities for workers to focus on higher-value tasks and develop new skills.

My further chat with ChatGPT got it to admit that, while it is indeed devoid of empathy, emotions, and consciousness, it can be trained to recognize human emotions and simulate empathetic responses. On the creative front, AI has already produced music, poetry, artworks, and novel ideas that are practically indistinguishable from human-generated content. The undeniable fact is that once software surpasses humans in any endeavor, its lead cannot be reversed, and the gap will only widen.



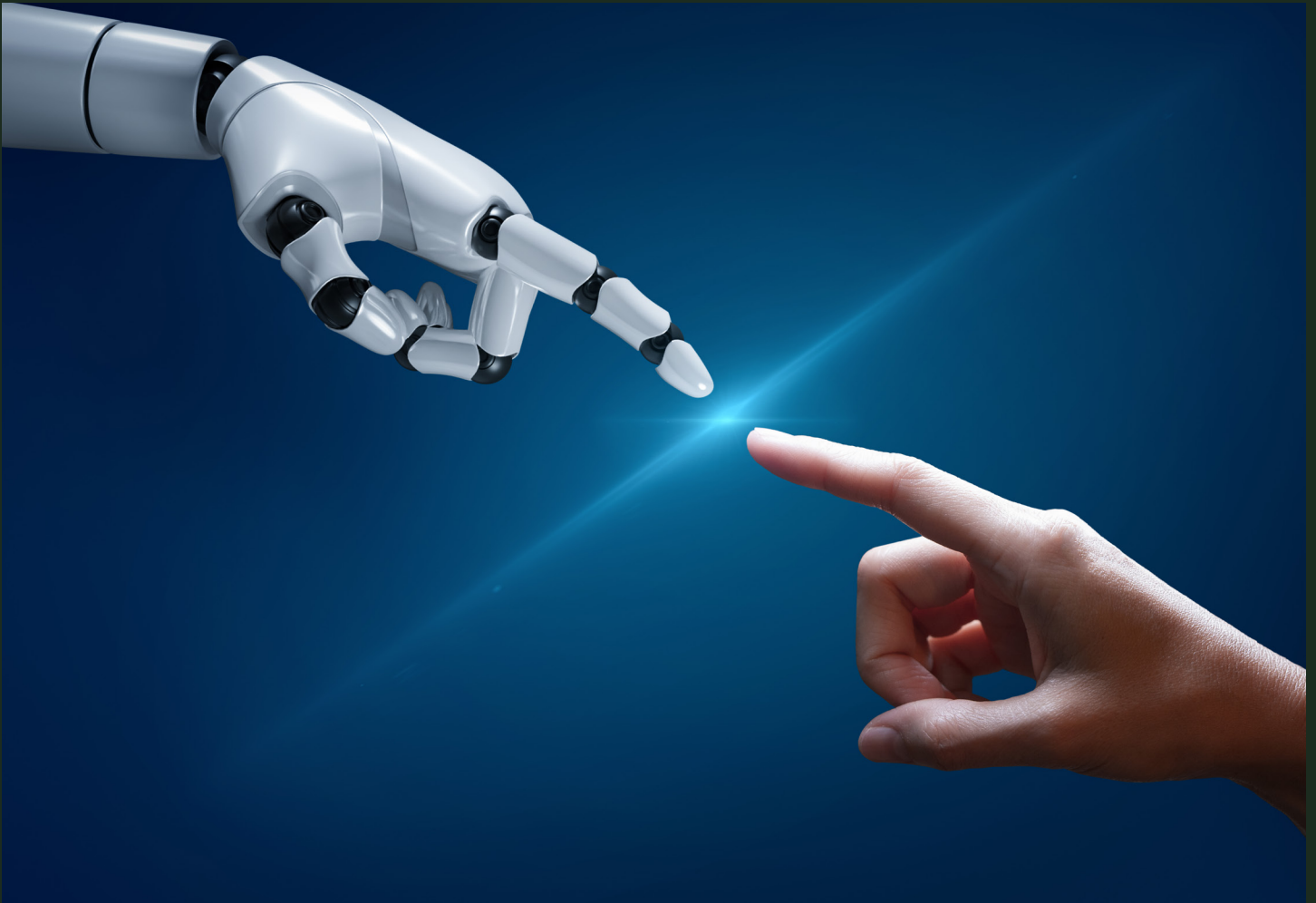
AI's potential to replace various white-collar jobs is a rude awakening to the American dream of getting a four-year college degree. For decades, people have been told to work more with their heads than their hands, as many manufacturing jobs have been replaced by robotics. With AI now poised to disrupt many white-collar jobs, it will become increasingly complicated for many families to determine if a college education is worth the investment and what to major in. Ironically, it appears that in the foreseeable future, plumbers and electricians are going to have more job security than many white-collar workers.



While disruptions to many professions are unavoidable, it is not clear how quickly they will take place. For example, the accounting profession, which has long been a target of automation, is experiencing a shortage of talent in the U.S. According to a recent Wall Street Journal article, there were about 1.65 million accountants and auditors in the U.S. in 2002, down 15.9% from 2019. The cumulative loss of 300,000 accountants to retirement as well as better career alternatives during the last three years and fewer people pursuing degrees in accounting mean that AI may be viewed by accountants as a valuable productivity enhancer. New jobs in consulting and software will also be created to help companies better harness the power of AI.

In short, artificial intelligence is poised to materially boost our productivity in the years ahead, which will likely lift the economy's secular growth potential while exerting a disinflationary force on white-collar job compensation. However, AI's disruptions to the job market, not to mention its impact on other areas such as politics and warfare, will lead to unintended consequences in social stability and wealth distribution. There will likely be profound changes in taxation and welfare programs, with much impetus for something akin to universal basic income.

Shaping AI in Our Own Image



The Challenger disaster that took away the lives of Dr. McNair and his six fellow astronauts is one of the worst cases of bureaucratic mismanagement, hubris, and risk assessment. What drove NASA and Morton Thiokol's management to ignore the engineering team's safety warning? What was the greater harm in postponing the launch?

It was alleged that NASA management chose not to heed the engineering team's warnings because it had prioritized public relations over safety. It was alleged that one of the highlights of the mission was for Christa McAuliffe, a schoolteacher and the first civilian on a space mission, to beam down a lesson

to kids on her fourth day in space, and a further delay in the launch would mean a Saturday broadcast when no kids would be in school. Another speculation was that NASA's management was eager to have President Reagan mention McAuliffe in space during that evening's State of the Union address, and another delay of the launch would diminish the publicity impact.

In my "conversation" with ChatGPT, I asked if artificial intelligence could have guided NASA to make a better decision. ChatGPT responded that AI could potentially provide an unbiased analysis and raise flags where human biases or pressures might otherwise overlook

a risk. However, it also added that AI would need to be programmed to prioritize safety and be given access to all relevant engineering and environmental data.

The last point highlights the risk of GIGO – “garbage in, garbage out” – in AI training. That is, if AI is trained with a wrong set of values and biased data, its “intelligence” would be compromised, and its output could be dangerous. This is why many people advocate for proactive regulations to prevent AI from being misused. The White House has touted its success in securing voluntary commitments from seven leading companies to manage the risks posed by AI. These companies are Alphabet, Amazon, Anthropic, Inflection, Meta, Microsoft, and OpenAI.

While the regulatory effort to ensure AI’s safety, security, and trust is laudable in principle, some observers publicly question whether the companies involved are really the paragons of objectivity and righteousness. Some of them are known for censorship, ideological biases, and employing various unhealthy “hook” models or “stickiness” techniques to maximize user engagement and increase their revenues and personal data collections.

Unfortunately, no entities, be they religious, academic, non-profit, or governmental, are free of biases. While Dr. Hinton and various experts are right to point out the risk of misinformation and fake data in the use of AI, we should also be mindful of the slippery slope associated with a monolithic entity censoring what goes in and out of AI. In the not-too-distant future, we will also have to deal with the proliferation of AI systems trained by hostile countries that do not share our values. After all, the great strategic competition in our era extends beyond diplomatic, economic, and military powers – the spread of technologies, values, and ideas is just as important in building alliances and creating codependency.

A Tighter-For-Longer Fed

At the conclusion of the Federal Open Market Committee’s September meeting, the monolithic institution in charge of setting America’s monetary policies delivered a Statement of Economic Projections that portrayed a near-perfect economic landing.

The Fed signaled that it is close to wrapping up the most aggressive tightening cycle in four decades with possibly one more rate hike by year-end 2023. Despite the 5.25% to 5.5% rise in the Fed funds rate over the last 18 months, the Fed raised its 2024 GDP growth forecast from 1.1% to 1.5%, slightly below its 1.8% longer-run potential growth expectation. The unemployment rate was projected to settle at 4.1% at the end of both 2024 and 2025, essentially in line with the Fed’s 4.0% longer-run natural unemployment rate. Headline and core inflation were estimated to return to the Fed’s 2% target by year-end 2026.

When asked by a reporter whether he would call a soft-landing the baseline expectation, Chair Powell replied, “No, no, I would not do that.” He then rambled on about his belief that soft-landing was always a plausible outcome but equivocated, “Ultimately, this may be decided by factors that are outside our control at the end of the day.”

Chair Powell’s cryptic message about “factors that are outside our control” may be a subconscious sideswipe at the Congress and White House for complicating the Fed’s job. The Fed’s moves to restore price stability have been compromised by the Treasury Department running up massive fiscal deficits during a period of full employment and elevated inflationary pressure. The political brinkmanship over FY2024’s federal budget could lead to a government shutdown that winds up disrupting economic activities and hindering the Fed’s forecasting and policymaking.

Surging Bond Yields Eating Away at Stocks

When Fitch Ratings downgraded the U.S.'s long-term credit rating on August 1st, it cited erosion of governance and rising general government debt as two of the drivers. While the downgrade was widely condemned by the administration, the current round of the budget battle and the threat of another government shutdown have vindicated Fitch's concerns – America has issues with both governance and its rapidly rising debt, and there does not appear to be serious efforts to fix these problems.

Since the credit downgrade, U.S. Treasury bond yields have gradually climbed to new cycle highs even though inflation expectations have remained largely unchanged going out 2, 5, and 10 years. The rise in bond yields thus reflects a combination of stronger growth expectations, a tighter-for-much-longer monetary policy, and concerns over a deluge of Treasury issuance.

Rising bond yields have brought out more bond bears and so-called bond vigilantes in the face of Uncle Sam's profligacy. JPMorgan Chase CEO Jamie Dimon warned that the Fed funds rate could still rise significantly from its current levels and asked rhetorically if the world is prepared for 7%, especially if stagflation sets in.

While long bond yields can potentially climb even higher in the near term, I continue to view rising bond yields as an opportunity to lock in attractive income streams with the potential for capital gains. For endowments and foundations that use CPI plus 2% as an investment benchmark, Treasury Inflation-Protected Securities (TIPS) look attractive with real

yields north of 2%. My positive view on bonds is rooted in my belief that the U.S. economy will likely surprise on the downside in the near future with various stimuli fading away and the banks tightening lending standards. Higher interest rates will also exert more downward pressure on growth. As economic weakness becomes more apparent, Treasury bond yields could turn sharply lower driven by bond bears rushing to cover their short positions.

For now, the surge in bond yields has poured cold water on the stock market's early summer rally. Some of the tech stocks beloved for their AI potential have fallen from their recent peaks by double-digit percentage points, though most are still up quite a bit year-to-date (YTD).

The challenge for equities is that surging risk-free rates are a headwind to risk asset valuations. With U.S. Treasury bills yielding around 5.5%, a 7% or 8% potential return for equities may not look so attractive given their volatility. In other words, for the first time in many years, the there-is-no-alternative (TINA) narrative for equities no longer holds water. Indeed, if not for the AI euphoria that sent a small group of mega-cap tech stocks soaring, equities' YTD performance would pale in comparison to risk-free Treasury bills. For example, stripping out the so-called Magnificent Seven stocks from the S&P 500 Index, the remaining 493 companies' aggregate YTD price gain was only 3.1% at the end of September. The Russell 2000 Index, which is not skewed by the AI halo effect and thereby more reflective of the mixed macro environment, was up just 1.4% YTD in price performance.

As for tech stocks that have been anointed as AI winners, they may rebound more than the major equity indices after the market's current pullback is exhausted. However, on a multi-year basis, their outperformance is not assured due to investors' lofty expectations and the law of large numbers. Unlike prior technology waves led by startups – Microsoft, Compaq, and Dell in the 1980's PC revolution; Cisco, Amazon, and Yahoo! during the Internet's early commercialization period; Facebook and Twitter in the social media era – the nascent AI landscape is currently dominated by mature companies such as Microsoft, Nvidia, Alphabet, and Meta (OpenAI and Anthropic are not publicly traded).

In August 2011, Marc Andreessen, a venture capitalist and one-time wunderkind of Netscape fame, penned a Wall Street Journal op ed, "Why Software Is Eating The World." He observed that investors were too bearish on tech stocks at the time, as evidenced by their subdued valuations. He was prescient in pointing out that major businesses and industries were being run on software and delivered as online services, and more would be disrupted by software.

Six years later, in May 2017, Jensen Huang, Nvidia's CEO, one-upped Andreessen by proclaiming, "Software is eating the world, but AI is going to eat software." The rapid adoption of AI over the past year has proven Huang right.

Today, investors have fully embraced Andreessen and Huang's bullish views on software and AI. Vinod Khosla, one of Silicon Valley's most successful venture capitalists, recently warned that most AI valuations are "overhyped."

Ironically, amid all the excitement about who's going to eat whom, technologists were suddenly reminded of a basic necessity – energy. It turns out that AI needs so much processing power that energy has become a bottleneck for data center development. Microsoft is reportedly seeking a nuclear technology expert to assess the use of nuclear energy – Small Modular Reactors and microreactors – to meet its data centers' power requirements. In short, while investors are enamored with AI eating the world, this technology is toothless without energy. It looks like it is energy that ultimately eats AI and software, and it remains an attractive and reasonably priced sector for patient and valuation-sensitive investors.

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