
ANATOMY OF AN AI CORRECTION

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ChatGPT was released in November 2022, about 18 months ago. The novelty of the software went viral, and AI now pervades the market and the public's consciousness. While we are as excited as anyone about AI's potential, some reality has set in.

- **AI Is Not Independent of Interest Rates:** Equities still are taking cues from interest rates. Coming into 2024, the market was pricing in a number of rate cuts, and expectations have been sharply tempered.¹ Higher-for-longer rates are not helpful for [growth](#)-oriented equities, especially startups without cash flows and profits.
- **We Overestimate the Short Term while Underestimating the Long Term:** ChatGPT came out 18 months ago, so why aren't more jobs fully automated? Enterprise software adoption takes time. AI represents an intersection of numerous technologies. The fuel for AI is data, and the world is still determining how to treat data privacy and cybersecurity. Companies cannot simply adopt AI; they must develop an entire strategy around it. Thirty years into the internet's adoption curve, a lot more has happened than many would have predicted when it started growing in 1993.
- **Don't Rush the Phases of AI:** The "AI picks and shovels" (largely Nvidia) have delivered strong performance. When will the benefits diffuse? During 2024, we are still seeing the hyperscalers spending \$175 billion on capital expenditures.² It has also taken until 2024 to see the CHIPS Act unlocking a lot of the government grants to encourage chip production in the U.S.³ Software companies can leverage the AI infrastructure buildout. But it is difficult to foresee the next Nvidia-like return without the market adjusting forward interest rate expectations downward.

Corrections are natural. We believe those looking at AI should contemplate disruptive innovations that challenge our wildest imaginations over the next five to 10 years. The journey will include significant bouts of [volatility](#), as we saw in April.

The Four Components of the AI Ecosystem

The [WisdomTree Artificial Intelligence and Innovation Fund \(WTAI\)](#), which tracks the returns, before fees, of the [WisdomTree Artificial Intelligence and Innovation Index](#), approaches the space with diversification at the center. A number of AI-focused [ETFs place significant weight—more than 10%—in Nvidia](#). A concentrated strategy worked well after the release of ChatGPT. Yet, over time, we think investors will benefit from a more diverse AI ecosystem:

- **Semiconductors:** Nvidia's move after the initial release of ChatGPT and the awakening of the world to generative artificial intelligence has been historic. Yet, the idea of application-specific integrated circuits and companies developing custom chips also receives a lot of attention—Broadcom and Marvell are strong here. Any company designing chips is using software from Cadence or Synopsys for electronic design automation. Many processes also require ever-increasing amounts of memory chips (think what Samsung, SK Hynix and Micron provide). Finally, there are specialized players like Mobileye, focused on a particular use case (autonomous driving), and ARM Ltd., licensing an array of designs to all sorts of users. Will these companies capture as much economic value as Nvidia has over the past 18 months? No company has gained an incremental trillion in market capitalization as quickly as Nvidia.⁴ However, absent developing chips in completely new ways, many companies will have to partake in the AI megatrend over the coming years for these ideas to come to fruition.
- **Software:** Software is a natural next leg of the AI megatrend, as this is what the picks and shovels will be used for. Copilot for Office 365 at Microsoft is an important example, with a \$30 per-user-per-month option that companies can immediately use to adopt a form of AI across tasks they already do. Salesforce.com has certain packages that provide different types of AI functionality. Amazon's AWS, Microsoft's Azure and Google's Cloud also provide different menus of AI services. In our opinion, the big, established names are important, yes, but take a smaller firm like Darktrace. Darktrace applies AI to the use case of cybersecurity. We think cybersecurity will be one of the most important and impactful AI use cases, and companies like Darktrace, SentinelOne and Palo Alto could play a big role in AI's proliferation.
- **Other Hardware:** There are semiconductors, and then there's everything else. One part of that "everything else" is robotics. New AI models allow for robotics to effectively learn by doing and learn by repetition, and we believe this approach will ultimately lead us from a world where robots have to be programmed explicitly, function by function, to robots being able to accomplish goals logically, learning from their environment. Another type of hardware is sensors. Sensor providers recognize that the fuel for AI is data, and one type of data, for example, comes from a car collecting information about its surroundings in different ways. Whether companies are using lidar, radar or visual cameras, the concept that systems will need to take in massive amounts of environmental data is a good one.
- **Innovative Use Cases:** Finally, there is the long tail of things that AI can be used for. In a sense, these companies may have returns that are not as correlated to other broad macroeconomic factors. For example, for a company like Recursion or Exscientia, things like interest rates and the market are important until a drug of significant success is produced. Currently, the world accepts the concept of AI being used for drug discovery, but it is still early, and we do not yet have a long list of successful drugs that have been developed this way. If certain companies can prove that they can raise the success rate of drug development or quicken the timeline, this would be extremely valuable (also extremely difficult).

Realistic Expectations for 2024

The bottom line, in our opinion, is that for any shorter period, like the next year, we need the appropriate expectations. A single year is too fast to imagine the majority of companies across every industry adopting and benefiting from AI. However, something that we may see is a catalyst of AI in devices—laptops and smartphones—leading to a hardware refresh cycle. The innovation in this case is that the chips in these devices would be designed such that certain types of AI could run directly on the devices instead of needing to run only in the cloud. If this is borne out, it could be important for semiconductor fabricators, like TSMC, and certain chip designers, like Qualcomm and ARM,

that would generate the designs and make the chips that go into many of these devices.⁵ Beware of big headline topics, like Tesla announcing its robotaxi model in early August 2024. The concept of fully autonomous vehicles is one of the most exciting in the AI landscape, but we have to recognize as investors that this topic (like fusion power, general artificial intelligence or commercially available quantum computers) has a tougher-to-define timeline. Maybe something interesting happens in the next couple of years ... or maybe it takes closer to a decade. Don't underestimate the difficulty, and always remember that the hard stuff is hard for a reason.

¹ Source: Nicholas Jasinski, "The Fed Is Beginning to Shift Its View on Rates. Watch Closely," Barron's, 3/21/24.

² Source: Adam Clark, "Nvidia Stock Gains. Here's How Much Its Major Customers are Set to Spend," Barron's, 3/26/24.

³ Source: Kathrin Hille, "TSMC boosts Joe Biden's AI chip ambitions with \$11.6bn US production deal," Financial Times, 4/8/24.

⁴ Source: David Marino-Nachison, "Nvidia's Market Cap Finished the Day Above \$2 Trillion," Wall Street Journal, 3/1/24.

⁵ Source: Isabelle Bousquette, "AI Gives Enterprise Device Market Something to Be Excited About," Wall Street Journal, 4/19/24.

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volatility...: A measure of the dispersion of actual returns around a particular average level.

Semiconductor...: A semiconductor is a material product usually comprised of silicon, which conducts electricity more than an insulator, such as glass, but less than a pure conductor, such as copper or aluminum. Their conductivity and other properties can be altered with the introduction of impurities, called doping, to meet the specific needs of the electronic component in which it resides.