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AlphaCurrents

Playing AI Through Megacaps and Exchange-Traded Funds

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Artificial intelligence (AI) was the exciting new theme of 2023, and many of the companies that built the hardware for AI, considered the "AI enablers," have already made hearty price gains. This year's beneficiaries are likely to come from those who use AI—the AI adopters—and from those for whom AI initiatives are becoming core to their thesis—the "rate-of-change plays." That's good news for investors, as many of the best AI adopters are likely already in their portfolios.

So what are the most efficient ways to play AI in 2024? We see five ways to get AI exposure: venture capital (VC) funds, megacap tech stocks, “building blocks,” the “AI army” and exchange-traded funds. See our previous *AlphaCurrents* issues “AI Building Blocks”(April 23, 2023) and “Building an AI Army” (October 20, 2023). In this report, we focus on the megacaps and ETFs.

To be sure, AI is a costly pursuit. NVIDIA, a manufacturer of high-end graphics processing units, estimates that it may take $10 million to train a large language model for AI, but the task requires nearly $1 billion in hardware just to get started—and then even with the money, there is no guarantee you can acquire the processing power. Even with money and chips, AI human capital is also in high demand and short supply, as industry surveys indicate pervasive skills gaps.[1] The tech megacaps—also known as the Magnificent Seven, or Mag 7—are some of the only companies with the balance sheets, human capital and access to resources to compete in AI.

Fortunately, these seven stocks make up 28% of the capitalization of the S&P 500 Index and 47% of the Russell 1000 Growth Index, so most investors already have some exposure. How do these megacaps participate in AI and which are best positioned?

Corporate venture funds accounted for 90% of AI funding in 2023, up from only 40% in 2020-2022, according to the Morgan Stanley & Co. Research report, “*GenAI Privates: Where Are We Now and 12 Debates From Here.*” Of the megacaps, Microsoft allocated the largest amount to generative AI (GenAI) private investments—$10 billion in OpenAI (see Exhibit 1)—and NVIDIA has the most investments, counting more than two dozen private deals (not all shown below).

Exhibit 1: Select Megacap Investments in GenAI Privates

Company	AI Investment	Percent Owned
Microsoft	Nuance	100%
	OpenAI	33.4%
	Github	100%
	Inflection	3.2%
	Builder.ai	N/A
Amazon.com	Anthropic	N/A
	Zoox	100%
	Aurora	24%
	Hugging Face	N/A
	Imbue	21%
Alphabet	Waymo	N/A
	Anthropic	8%
	Hugging Face	N/A
	Nuro	7%
	Tempus	2.5%
NVIDIA	Inflection	3%
	Aleph Alpha	N/A
	CoreWeave	17%
	Adept	20%
	Cohere	14%
Meta Platforms	CTRL-Labs	100%
	Scape	100%
	Inworld	24%
Apple	Xnore.ai	100%
	Credit Kudoa	100%
	Laserlike	100%
	Drive.ai	100%
	A.Team	N/A
Salesforce	Cohere	14%
	Anthropic	8%
Oracle	Cohere	14%

Source: Morgan Stanley Research, Morgan Stanley Wealth Management Global Investment Office as of December 20, 2023

[1] "Skillsoft Survey Sees AI Driving Increased Need to Retrain IT Teams," DevOps.com

How Is This Capital Spread Around Within GenAI ?

There are three layers in the AI technology "stack." The "foundational model" (FM) layer, as the name suggests, signifies models that make up a base layer of sophisticated capabilities for a wide range of applications. Foundational models are deep-learning neural networks that are trained on large quantities of data to handle a range of tasks, such as summarization, translation and image creation.

The FM layer accounts for about 60% of overall GenAI funding, with private FM vendors having raised $23 billion to date. Some Mag 7 companies have exposure to this layer via partnerships; Microsoft has 33% ownership of OpenAI. Oracle and Salesforce each have 14% stakes in Cohere, and Microsoft and NVIDIA both have 3% stakes in Inflection AI. Continued success for FMs can have direct implications for megacap tech companies. Early in the lifespan of a new technology, some models may leapfrog established leaders, as happened in the early days of search. Alternatively, open-source alternatives may ultimately prove faster than proprietary models, resulting in less pricing power or adoption for the leading foundational models. More broadly, MS & Co. Research analysts see the potential for more advanced model architectures and capabilities in 2024, which could reshape the FM leaderboard and extend the scope of possibilities for application builders. For now, as history suggests, MS & Co. Research analysts see value accruing first to the enabling technologies, followed by the other layers, which we describe below.

The second layer is the "technology and tools" layer, which accounts for 10% of industry funding. These software tools are used to train, customize, deploy and manage GenAI models. Competition is intense, especially from FM vendors and hyperscalers, the large-scale data centers that offer massive computing resources such as a cloud platforms. Meanwhile, there's a lack of standardization for techniques for customizing apps and models, which suggests a higher likelihood of industry consolidation over the long term.

Finally, the "application" layer, which makes up 30% of GenAI funding, comprises "horizontal" and "vertical" GenAI apps. Horizontal apps are designed for a broader range of use cases, spanning multiple end markets, such as general-purpose chatbots, coding assistants and image generators (ChatGPT is an example). Vertical apps address a specific market or end user, such as those developed for health care or financial services. MS & Co. Research analysts expect the application layer to eventually be the segment that sees most value creation over the long term. Although they anticipate funding amounts will increase, and valuations should reflect this dynamic in time, it's still early and difficult to determine the beneficiaries of the application layer at the moment.

How Much Will All This Investment Matter for the Mag 7?

Generally, the Mag 7 appear to have excellent balance sheets. On average, cash represents 3.6% of their market cap (see Exhibit 2). They have, on average, operating margins nearly twice that of the S&P 500 companies as a whole, and they earn triple the S&P 500's return on equity. By investing in AI startups, they divert this cash from alternatives such as buybacks, hiring or capital equipment. Some VC investments do have outstanding return profiles, but successes are often matched by failures. The Mag 7's businesses are so strong that they appear to be able to absorb VC investments that may not pan out. On average, Mag 7 companies bought back 1.6% of market cap in 2023 while the average Mag 7 stock increased 111% in 2023. It follows that buybacks were a very high-return investment.

Exhibit 2: The Magnificent 7 Hold Significant Cash

	Cash and Short-Term Investments (Billion)	Market Cap (Billion)	Cash % Market Cap	2023 Buyback (Billion)	Buyback % Market Cap	Shares Outstanding (Billion)
Apple	$61	$2,834	2.2%	$77	2.7%	15.5
Amazon.com	$70	$1,589	4.4%	$6	0.4%	10.3
Alphabet	$113	$1,803	6.3%	$72	4.0%	5.9
Meta Platforms	$40	$951	4.3%	$28	2.9%	2.2
Microsoft	$111	$2,917	3.8%	$18	0.6%	7.4
NVIDIA	$13	$1,386	1.0%	$10	0.7%	2.5
Tesla	$22	$703	3.2%	$0	0.0%	3.2
Average	**$62**	**$1,740**	**3.6%**	**$30**	**1.6%**	**6.7**

Source: Bloomberg, Morgan Stanley Wealth Management Global Investment Office as of Jan. 10, 2024

On the other hand, many startups and investments fail. Even those that do succeed are likely to be companies with lower returns on capital than the Mag 7. The Mag 7 average operating margins of 26% are well above the S&P 500 average operating margin of 14%. The Mag 7 ROE of 54% is also well above S&P 500 ROE of 18%. It is unclear if a big AI venture capital budget is a positive for Mag 7 companies even if they are successful. If their investments are unusually good, it may create value, but on average most investments are likely to be a drag on performance. The trouble is, it's notoriously difficult to figure out which investments might win out. Even the positive investments may not be noticeably better than buying back shares.

What About ETFs?

Unfortunately, a perfect AI ETF doesn't exist. Each has various positives and negatives. ETFs often have so many stocks in small weightings that the success of any one company has little impact on the entire fund. Here we examine some of the largest AI ETFs to probe their strengths and weaknesses as an AI investment, though we take no position on any particular ETF.

First Trust Dow Jones Internet Index Fund (FDN)

First Trust Dow Jones Internet Index Fund (FDN) has approximately 40 internet-related companies across the communication services, consumer discretionary, financials, health care and information technology sectors. While the ETF is not specifically focused on AI, 27% of the ETF is positioned in Amazon.com (AMZN), Meta Platforms (META), Alphabet (GOOGL), and Salesforce (CRM), which are all leading companies with investments in generative AI. Meta Platform and Alphabet have developed their own large-language models, LLAMA and BARD, while Amazon.com is building a large language model named Olympus. Of the total portfolio, 32% of companies overlap with MS & Co. Research's AI Adopters/Enablers universe, and our AI Building Blocks and AI Army universes. This portfolio has more exposure to AI beneficiaries/users, as opposed to building blocks. FDN has a $6.3 billion market cap. This ETF has relatively high GenAI exposure due to its market cap-weighting, but ultimately skews the 32% of GenAI exposure into a few large names.

iShares Expanded Tech-Software Sector ETF (IGV)

iShares Expanded Tech-Software Sector ETF owns approximately 115 companies across the information technology sectors and communication services sector, with 97% of them in infotech. The primary focus of this ETF is to provide exposure to software companies. Software companies are one of the primary users of artificial intelligence, and as we posited in "Building an AI Army," they are likely some of the earliest identifiable companies that can deliver GenAI solutions to customers. Though six companies—Salesforce (CRM), Microsoft (MSFT), Adobe (ADBE), Intuit (INTU), Oracle (ORCL) and ServiceNOW (NOW)—account for 4% of the portfolio, the average company weight is 85 basis points. Only 10% of the companies are in our GenAI universes, with 27% of these enablers and the remaining 63% adopters. Despite including only a few companies in our generative AI list, because this list is market-cap weighted, some of the largest holdings are exposed to GenAI. Importantly it is very concentrated as the top four largest positions account for one-third of total value. IGV has a $7.6 billion market cap.

iShares Robotics and Artificial Intelligence Multisector ETF (IRBO)

iShares Robotics and Artificial Intelligence Multisector ETF (IRBO) spreads its portfolio over approximately 110 companies across the communication services, consumer discretionary, financials, health care, industrials and information technology sectors, with information technology the largest sector. From a regional standpoint, roughly 46% of portfolio holdings are domiciled outside the US, with China the second largest country allocation (11%). The average weight of a holding is 90 basis points, so big moves in a single stock have little impact. Many of the companies in this portfolio are either users or enablers of AI technology, though not all of them are specifically focused on GenAI. Roughly 17% of the companies are included in the generative AI universes compiled by Morgan Stanley & Co. Research and *AlphaCurrents*. Of these GenAI-exposed companies, 68% are enablers, while 32% are adopters. IRBO has a $607 million market cap. This ETF is good at providing exposure to automation and AI, with a good mix of both adopters and enablers, though the majority of the ETF is not exposed to GenAI.

ROBO Global Robotics & Automation Index ETF (ROBO)

ROBO Global Robotics & Automation Index ETF (ROBO) holds approximately 80 companies across the consumer discretionary, consumer staples, health care, industrials and information technology sectors, with industrials being the largest weight. This ETF's primary focus is automation, which often uses artificial intelligence, but it is not specifically focused on generative AI. Around 55% of the portfolio is domiciled outside the US, with Japan (20%) the second largest country allocation. This portfolio is not concentrated, with the largest position being about 2%, and the average position has a 1.2% weight. Only two companies in the ETF overlap with Morgan Stanley & Co. Research and *AlphaCurrents'* universes of AI companies. With a $1.3 billion market cap, ROBO provides exposure to automation, which often uses AI, but it does not provide direct investment in AI companies.

iShares Semiconductor ETF (SOXX)

iShares Semiconductor ETF (SOXX) holds 30 semiconductor companies. Semiconductors are critical components of high-performance computing, providing information processing, information storage and transfer. This $11.5 billion portfolio is market-cap weighted, and Advanced Micro Devices (AMD), NVIDIA (NVDA), and Qualcomm (QCOM) represent its top names. The average holding has a 3% weight, but this is somewhat skewed due to the large weights in four stocks. Of the 30 companies, 23% of them have exposure to GenAI. Because it owns just chipmakers, this ETF has high exposure to GenAI. The high exposure does come with concentration risk. Roughly one-third of the fund's value is spread among the top four largest companies.

WisdomTree Cloud Computing Fund (WCLD)

WisdomTree Cloud Computing Fund (WCLD) owns 70 stocks across the communication services, financials, health care, industrials and information technology sectors in its $671 million portfolio. Roughly 86% of the portfolio's holdings are in information technology. The positions in the fund have an average weight of 1.4%, and there are no outsize positions. Cloud computing companies have exposure to GenAI as both enablers and users of this technology. Some companies, such as Snowflake (SNOW), provide data management services, which is an important building block for AI models. Other cloud computing users are software companies, and they can deploy GenAI tools to their customers over cloud networks. Of the companies in this portfolio, only 16% have exposure to GenAI. Of these companies, about 30% are enablers/building blocks, while the rest are users/adopters. This ETF provides some diversified exposure to GenAI companies, even though it is a relatively small amount of the overall portfolio.

Securities Mentioned in Report

Adobe (ADBE; $613.93; MS & Co. Rating: Overweight/Attractive)

Advanced Micro Devices (AMD; $177.25; MS & Co. Rating: Overweight/Attractive)

Alphabet (GOOGL; $152.19; MS & Co. Rating: Overweight/Attractive)

Amazon.com (AMZN; $159.12; MS & Co. Rating: Overweight/Attractive)

Apple (AAPL; $192.42; MS & Co. Rating: Overweight/In-Line)

First Trust Dow Jones Internet Index Fund* (FDN; $195.47; MS & Co. Rating: Not Covered/Not Covered)

Intuit (INTU; $641.36; MS & Co. Rating: Overweight/Attractive)

iShares Expanded Tech-Software Sector ETF* (IGV; $423.31; MS & Co. Rating: Not Covered/Not Covered)

iShares Robotics and Artificial Intelligence Multisector ETF* (IRBO; $33.07; MS & Co. Rating: Not Covered/Not Covered)

iShares Semiconductor ETF* (SOXX; $597.77; MS & Co. Rating: Not Covered/Not Covered)

NVIDIA (NVDA; $610.31; MS & Co. Rating: Overweight/Attractive)

Meta Platforms (META; $394.14; MS & Co. Rating: Overweight/Attractive)

Microsoft (MSFT; $403.93; MS & Co. Rating: Overweight/Attractive)

Oracle (ORCL; $114.64; MS & Co. Rating: Equal-weight/Attractive)

Qualcomm (QCOM; $150.72; MS & Co. Rating: Equal-weight/Attractive)

ROBO Global Robotics & Automation Index ETF (ROBO; $56.17; MS & Co. Rating: Not Covered/Not Covered)

Salesforce (CRM; $279.94; MS & Co. Rating: Overweight/Attractive)

ServiceNOW (NOW; $769.44; MS & Co. Rating: Overweight/Attractive)

Snowflake (SNOW; $202.51; MS & Co. Rating: Overweight/Attractive)

Tesla (TSLA; $183.25; MS & Co. Rating: Overweight/In-Line)

WisdomTree Cloud Computing Fund* (WCLD; $34.91; MS & Co. Rating: Not Covered/Not Covered)

**Covered by Michael Suchanick of Morgan Stanley Wealth Management Global Investment Office (GIO). Morgan Stanley Wealth Management GIO and its affiliates do not provide fundamental research ratings on exchange-traded funds (ETFs).*

Note: Prices as of market close on January 26, 2024

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