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MegaCap-8, AI & Gates On Climate Change

Check out the accompanying chart collection.

Executive Summary: The MegaCap-8 stocks are approaching their highest collective market capitalization ever, having already hit a record high in terms of their share of the S&P 500's capitalization. … Also: Jackie discusses Google's AI initiatives and election-year challenges. … And: Our Disruptive Technologies segment recaps Bill Gates' practical and innovative approach to climate-related investments as the annual COP28 climate change conference kicks off in the UAE. Three innovations seem particularly promising.

Technology I: MegaCap-8 Closing in on Record. Don't look now, but the MegaCap-8's capitalization is within spitting distance of a new record high. The group of eight stocks (i.e., Alphabet, Amazon, Apple, Meta, Microsoft, Netflix, Nvidia, and Tesla) collectively is up 78.7% from its 18-month low on January 5 through Tuesday's close. That leaves its capitalization only 1.7% below its previous record set in December 2021, Joe calculates (*Fig. 1*). And in terms of the percentage of the S&P 500's total capitalization the MegaCap-8 represents, it has never been higher, at 27.9% (*Fig. 2*).

Some of the individual stocks' ytd price gains are even more remarkable than the group's aggregate advance. Here are how the members of the MegaCap-8 have performed ytd through Tuesday's close: Nvidia (227.2%), Meta (181.7), Tesla (100.3), Amazon (75.0), Neflix (62.4), Microsoft (59.6), Alphabet (56.2), and Apple (46.5).

The MegaCap-8's forecasted long-term earnings growth rate (LTEG) has also risen this year, to 41.0%, up from 13.5% at the start of 2023 (*Fig. 3*). The LTEG estimate owes most of its surge to Nvidia's booming AI chip sales. Nvidia's LTEG estimate is 112.8%, up from 21.3% earlier this year and 6.7% before the pandemic.

Despite the surge in stock prices, the growing optimism about future earnings growth has meant the group's forward P/E has increased only modestly this year. It stands at 27.9, well above the low of 21.1 at the start of this year but well below the high of 38.5 in August 2020 (*Fig. 4*).

Here are the forward P/Es for the members of the MegaCap-8: Tesla (64.9), Amazon (42.3),

Microsoft (32.0), Netflix (30.9), Apple (28.6), Nvidia (25.0), Alphabet (20.7), and Meta (19.8) (*Fig. 5*). (FYI: "Forward P/Es" are the multiple based on forward earnings, or the time-weighted average of analysts' consensus operating earnings-per-share estimates for this year and next.)

Technology II: Checking in with Google. The executive drama at ChatGPT has captured headlines in recent weeks, keeping the spotlight off other artificial intelligence (AI) providers. But that doesn't mean that Alphabet—a.k.a. Google—isn't making progress with its AI offerings. Here's a look at some of the new ways the company is using AI and some of the steps it's taking ahead of the 2024 elections.

(1) *Google's AI learns new tricks.* Google's interest in AI dates back at least to 2014 when it acquired DeepMind Technologies reportedly for around $600 million. The company's most recent investment is in Anthropic, which was founded by former ChatGPT employees. After investing $500 million in the startup earlier this year, Google invested another $500 million into the firm and may add another $1.5 billion over time, a *WSJ* *article* reported on October 27.

Alphabet is expanding the use of AI throughout its offerings. It's using AI to make it easier for users to search their email inboxes, a June 2 CNBC *article* reported. Users will see "top results" above the "all results" section. Top results will be picked by Google's AI to display the most relevant emails. The company also plans to use AI to automate advertising and ad-supported customer services, a May 17 CNBC *article* reported.

Google's DeepMind researchers believe they have found a more efficient and automated method of designing computer chips using AI. They've also announced an AI vision-language-action model that can help train robots to do things like throw out the trash. And their protein-structure-prediction AI can hunt for the genetic mutations in a person's proteins that are likely to cause health problems, a September 21 *Scientific American* *article* reported.

Most recently, DeepMind AI has made strides in materials science. It has discovered 2.2 million new crystal structures that may be used in areas that range from renewable energy to advanced computation. Researchers will winnow the structures down to 381,000 of the most promising for further testing, a November 29 *FT* *article* reported. The news illustrates how much faster AI was able to make successful discoveries.

(2) *Google preps for the elections.* AI will face a large test next year during the campaigns

for the presidential and congressional elections. The technology's ability to create and distribute false ads will face off against Internet providers' abilities to detect and identify or eliminate those ads. Google announced that election ads running on its platforms created with or altered by AI will have to carry a clear disclosure.

"Election ads that have been digitally created or altered must include a disclosure such as, 'This audio was computer-generated,' or 'This image does not depict real events,'" a September 7 CNBC *article* reported. Minor changes do not require disclosure. The article did not state how Google will know if the ad is AI created if it is not voluntarily disclosed.

Google's former CEO Eric Schmidt is concerned. "The 2024 elections are going to be a mess because social media is not protecting us from false generated AI," he *told* CNBC on June 26. "They're working on it, but they haven't solved it yet." Free speech should be allowed on social media for humans, not computers, he noted. And social media companies should mark all their content accordingly, as either human or computer generated.

Disruptive Technologies: Bill Gates on Climate Change. COP28, the world's annual climate conference, kicks off today, with politicians, scientists, and executives gathering in the United Arab Emirates (UAE). Despite the surge in renewable energy projects, the world is on track to miss the Paris Agreement's goals of reducing greenhouse gases by roughly 50% by 2030 to limit global warming to 1.5 degrees Celsius.

While Rome burns, expect COP28 attendees to squabble over whether the world should phase out all fossil fuels and whether it should aim for zero emission of carbon dioxide (CO_2). Arguments also are expected to revolve around how much funding rich countries should give poor countries to reduce their CO_2 emissions.

There's also controversy surrounding the meeting's President-Designate Sultan al-Jaber, who also happens to be the head of the Abu Dhabi National Oil Company and chair of the state-owned renewable energy company, Masdar. Papers reportedly indicate that UAE officials planned to pitch the country's oil and gas business to foreign government officials attending the event, a November 27 BBC *article* reported.

While President Joe Biden plans to skip the meeting, tech mogul Bill Gates will attend with many of the companies that the Bill & Melinda Gates Foundation has helped to fund and develop. His investment vehicle, Breakthrough Energy, has invested about $2 billion in 100 companies focused on reducing CO_2 emissions, and it's raising another $1 billion of funding.

As you'd expect, Gates approaches climate change like a tech businessman. He assumes that most consumers will not pay more to buy products that are environmentally friendly. Nor does he believe that consumers will buy less or travel less in order to reduce emissions.

As a result, he aims to develop technologies that allow consumers and companies to continue to operate as they do today, while reducing or eliminating their CO2 emissions at no additional cost. When consumers can buy an electric vehicle for less than a gas vehicle, you'll see mass adoption. "[W]e really do have to acknowledge that this is a world of finite resources. And the one thing that's magic in this world is … innovation," he said in a wide ranging *interview* with the *FT* on November 3.

Breakthrough Energy recently published *State of the Transition 2023*, which touches on industry trends in many areas of green energy. In his forward, Gates highlights three that he believes could accelerate efforts to reduce greenhouse gasses: harnessing hydrogen, preparing the grid for surging electricity demand, and carbon sequestration. Here's a brief look at each area:

(1) *Harnessing hydrogen.* Lots of work is being done to determine how hydrogen can be used in many areas of the fuel ecosystem. For example, it would be ideal if extra wind or solar power could be used to make hydrogen, which then could be stored in fuel cell batteries until the electricity is needed. Unfortunately, the process is costly.

Breakthrough Energy has invested in a number of companies that are developing alternatives for storing electricity. Malta takes electricity from the grid and uses a heat pump to convert it to thermal energy. The heat is stored in molten salt, and the cold is stored in a chilled liquid antifreeze coolant. The process can be reversed when the grid needs electricity. Form Energy, a company we've mentioned in past *Morning Briefings,* approaches the problem by storing electricity for up to 100 hours in an iron-air battery that converts iron into rust and then reverses the process. Antora stores electricity as heat in solid carbon blocks.

Because of its energy intensity, hydrogen might also be the cost-effective alternative fuel for trucks, ships, and planes. However, scientists need to determine how it can safely be transported and stored and then to develop a distribution system. Engineers are also creating electrofuels, or e-fuels, by pulling carbon out of the air with direct capture technology and combining it with hydrogen. The process, however, is far more expensive than traditional fuel production processes.

(2) *Fortifying the grid.* In a zero-carbon world, people in 2050 may use triple the amount of electricity used today, the report states. Gas- and coal-fired electric plants that power our homes, offices, and factories will be replaced by green electric power production. Additional capacity will also be needed to charge electric vehicles. Storing and transmitting intermittent solar- and wind-generated electricity "will require big, modernized, and interconnected electric grids. Right now those don't exist."

The report contends that if the grid isn't updated, 80% of the green investments being made by the Inflation Reduction Act will go unrealized. The grid's transmission capacity needs to be increased by 60% by 2030 and by 200%-300% by 2050. A grid update needs to include the addition of more high-voltage lines that can carry electricity long distances to connect regions and communities. Digital systems will need to be added to make the grid smart, adaptable, and efficient. Fortunately, the technology exists. Unfortunately, no one wants high transmission lines in their backyards, so permitting hurdles may stand in the way of modernization.

(3) *Seizing the carbon.* Gates and Breakthrough seem skeptical about capturing carbon from the air and pumping it underground because doing so requires energy and is very expensive. Unless the cost is reduced dramatically, companies won't pay up for that unless new taxes compel them to do so.

Until the price of carbon capture falls, it's more effective not to emit CO2 in the first place. Even then, carbon capture will have a roll. It will be needed to reduce the CO2 that has been emitted for a century and remains trapped in the atmosphere. It may also be used in industrial activities that can't go green economically. In that case, governments theoretically would tax any CO2 emissions at a rate high enough to push the companies to pay for the carbon capture needed.

Breakthrough is invested in Heirloom, which uses carbon mineralization to take carbon out of the air at a lower cost. The company places ground-up limestone on trays, and the limestone passively pulls CO2 out of the air. Fully CO2-saturated limestone is put inside an electric kiln to separate the CO2 and pump it underground. The process uses "significantly" less heat and power than direct air carbon capture technologies.

Calendars

US: Thurs: Personal Income & Spending 0.2% & 0.2%; Headline & Core PCED

0.1%m/m/3.1%y/y & 0.2%m/m/3.5%y/y; Initial & Continuous Jobless Claims 218k/1.855m; Chicago PMI 45.0; Pending Home Sales -1.5%; Williams. **Fri:** ISM M-PMI & Price Index 47.6/46.2; Construction Spending 0.4%; Motor Vehicle Sales 15.5mu; Atlante Fed GDPNow 2.1%; Baker-Hughes Rig Count; Powell; Goolsbee. (FXStreet estimates)

Global: Thurs: Eurozone Headline & Core CPI Flash Estimates 2.8% & 3.9%y.y; Germany Import Prices 0.1%m/m/-13.2%y/y; Germany Retail Sales 0.5%m/m/-1.9%y/y; Germany Unemployment Change & Unemployment Rate 23k/5.8%; France GDP 0.1%q/q/0.7%y/y; Italy Unemployment Rate 7.5%; Japan Household Confidence 35.6; Japan Housing Starts -6.8%; Japan Unemployment Rate 2.6%; Japan M-PMI 48.1; China Caixin M-PMI 49.3; Lagarde; Nagel; Enria; McCaul; Jochnick. **Fri:** Eurozone, Germany, France, Italy, and Spain M-PMIs 43.8/42.3/42.6/45.5/45.6; France Industrial Production; Italy GDP; UK Nationwide HPI; Canada Employment Change 10k; Canada Unemployment Rate 5.8%; Lagarde; Enria; Elderson. (FXStreet estimates)

Strategy Indicators

Stock Market Sentiment Indicators (*link*): The *Bull-Bear* Ratio rose for the fourth week, to 2.60, after moving down the prior two weeks from 2.32 to 1.67. *Bullish* sentiment climbed for the fourth week by 12.8 percentage points to 55.7% (the highest since the end of July), after falling the prior two weeks by 8.5ppts (to 42.9% from 51.4%). Meanwhile, *bearish* sentiment fell for the fourth week, by 4.3ppts to 21.4%, after rising the prior two weeks by 3.5 ppts (to 25.7% from 22.2%). The *correction count* also fell for the fourth week, by 8.5ppts to 22.9%, after rebounding 5.7ppts (to 31.4% from 25.7%) four weeks ago. Turning to the *AAII Sentiment Survey* (as of November 22), optimism continued to rise during the latest week, while pessimism fell. The *percentage expecting stock prices to rise over the next six months* rebounded 21.0ppts the past three weeks to 45.3%, after falling the prior three weeks by 15.7ppts to (24.3% from 40.0%). The *percentage expecting stocks to fall over the next six months* fell for the second time in three weeks, by 26.7ppts to 23.6%, after climbing the prior two weeks by 15.7ppts (to 50.3% from 34.6%), which was the highest since December 22, 2022's 52.3%. The *percentage expecting stock prices will stay essentially unchanged over the next six months* rose 3.0ppts during the latest week to 31.1%, after slipping the prior week by 2.1ppts to 28.1%.

S&P 500 Earnings, Revenues, Valuation & Margins (*link*): The S&P 500's forward profit margin was steady at 12.7% during the November 23 week, and is now just 0.1pt below its 11-month high of 12.8% during the September 21 week. That's up from a 24-month low of

12.3% during the March 30 week, but is down 0.7pt from its record high of 13.4% achieved intermittently in 2022 from March to June. It's now 2.4pts above its seven-year low of 10.3% during April 2020. Forward revenues ticked up 0.1% w/w to 0.1% below its record high during the November 2 week. Forward earnings dropped 0.1% w/w to 0.5% below its record high during the September 21 week, which had been its first since the June 16, 2022 week. Both had been steadily making new highs from the beginning of March 2021 to June 2022; prior to that, they peaked just before Covid-19 in February 2020. The consensus expectations for forward revenues growth rose 0.1pt to a 12-month high of 4.8% and is now up 2.5pts from its 33-month low of 2.3% during the February 23 week. That's down from a record high of 9.6% growth at the end of May 2021 and compares to 0.2% forward revenues growth during April 2020, which was the lowest reading since June 2009. The forward earnings growth forecast rose 0.2pt w/w to 10.7%, just below its 24-month high of 10.8% during the November 2 week, and is now 7.2pts above its 31-month low of 3.5% in mid-February. That's down from its 23.9% reading at the end of April 2021, which was its highest since June 2010, and up substantially from its record low of -5.6% at the end of April 2020. Analysts expect revenues to rise 2.1% in 2023 (unchanged w/w) and 4.9% in 2024 (up 0.1pt w/w) compared to a revenues gain of 12.4% in 2022. They expect an earnings gain of 1.0% in 2023 (down 0.3pt w/w) and an 11.0% rise in 2024 (up 0.2pt w/w) compared to an earnings gain of 7.3% in 2022. Analysts expect the profit margin to fall 0.1ppt y/y to 12.0% in 2023 (unchanged w/w), compared to 12.1% in 2022, and to rise 0.7ppt y/y to 12.7% in 2024 (unchanged w/w). The S&P 500's weekly reading of its forward P/E rose 0.6pt w/w to 18.2, but is down from a 17-month high of 19.8 during the July 20 week. That's still up from a 30-month low of 15.3 in October of 2022. It also compares to 23.1 in early September 2020, which was the highest level since July 2000, and to a 77-month low of 14.0 in March 2020. The S&P 500 weekly price-to-sales ratio rose 0.03pt w/w to a 12-week high of 2.41 and is up from a six-month low of 2.22 during the October 26 week. That compares to a 15-month high of 2.46 during the July 27 week and is up from a 31-month low of 1.98 in October 2022. That also compares to a record high of 2.88 at the end of 2021 and a 49-month low of 1.65 in March 2020.

S&P 500 Sectors Earnings, Revenues, Valuation & Margins (*link*): Looking at the S&P 500 sectors, the November 23 week saw consensus forward revenues rise for five of the 11 sectors and forward earnings rise for five sectors. The forward profit margin moved higher for three sectors. Information Technology is the only sector with forward revenues at post-pandemic or record highs this week. In early November, these three sectors were in that club: Communication Services, Health Care, and Industrials. Among the remaining seven sectors, just three have forward revenues more than 5.0% below their post-pandemic highs: Energy, Financials, and Materials. Information Technology and Utilities are the only sectors

with forward earnings at a record high this week, as these three sectors have eased from that mark over the past 11 weeks: Communication Services, Consumer Discretionary, and Industrials. Among the remaining six sectors, only Energy and Materials have forward earnings down more than 10.0% from their post-pandemic highs, while Financials exited that club in early October. Among the 11 sectors, only Industrials has weathered a broad margin retreat from post-pandemic or record highs. Now nearly all of the sectors are showing signs of recovering from their early 2023 lows, though it has stalled recently. None of the sectors had a forward profit margin at a record high this week. That's down from these three sectors in that club in early October: Consumer Discretionary, Industrials, and Information Technology. The forward profit margins of Communication Services, Consumer Discretionary, Industrials, and Information Technology remain close to their post-pandemic highs. Energy has improved markedly off its low in July, but Consumer Staples and Health Care remain at or close to their record lows. Energy and Industrials were the only two sectors to have their profit margins improve y/y for full-year 2022. The annual profit margin is expected to be flat y/y in 2023 for Consumer Staples, but these six sectors are expected to see their margins improve: Communication Services, Consumer Discretionary, Financials, Industrials, Information Technology, and Utilities. Here's how the S&P 500 and its 11 sectors rank based on their current forward profit margin forecasts along with their record highs: Information Technology (25.6%, down from its 25.7 record high in September), Financials (18.3, down from its 19.8 record high in August 2021), Real Estate (16.5, down from its 19.2 record high in 2016), Communication Services (16.5, down from its 17.0 record high in October 2021), Utilities (13.3, down from its 14.8 record high in April 2021), S&P 500 (12.7, down from its record high of 13.4 achieved intermittently in 2022 from March to June), Energy (11.3, down from its 12.8 record high in November), Materials (10.8, down from its 13.6 record high in June 2022), Industrials (10.7, down from its record high 10.8 in September), Health Care (9.1, a record low and down from its 11.5 record high in February 2022), Consumer Discretionary (8.3, down from its 8.4 record high in mid-September), and Consumer Staples (6.8, down from its 7.7 record high in June 2020).

US Economic Indicators

GDP (*link*): *Real GDP* for Q3 was revised higher, expanding 5.2% (saar)—stronger than the initial estimate of 4.9% and more than double the gains posted during Q1 and Q2 of 2.2% and 2.1%, respectively. It was the strongest quarter since Q4-2021. *Gross private domestic investment* drove the upward revision, expanding 10.5% (saar), up from the 8.4% initial gain on widespread strength—with structures (to 6.9% from 1.6%, saar) posting the biggest upward revision, followed by residential investment (6.2 from 3.9). Q3 inventory investment

revised up to $83.9 billion (saar) from the initial reading of $80.6 billion; it was at $14.9 billion during Q2. Intellectual property products (2.8 from 2.6) was slightly stronger than first reported, while the decline in equipment (-3.5 from -3.8) spending was slightly less negative. *Real government spending* was a bit stronger than first reported (5.5 from 4.6), with both federal (7.0 from 6.2) and state & local (4.6 from 3.7) government spending stronger than initial estimates. Meanwhile, *real consumer spending*, which accounts for two-thirds of real GDP, was slightly weaker than first reported, rising 3.6% (saar) from the initial 4.0% gain, with consumer spending on services (to 3.0% from 3.6%) slightly weaker and goods consumption (4.7 from 4.8%) little changed from the initial increase.

Contributions to GDP Growth (*link*): *Consumer* spending (2.44ppts) was the biggest positive contributor to real GDP growth during Q3, led by *services* (1.38), though *goods* (1.05) spending also was notable, with both durable (0.54) and nondurable (0.51) goods consumption contributing. *Inventory investment* (1.40) moved up to the number two spot, virtually all nonfarm (1.35) inventories, after being a drag on growth the prior two quarters. *Government* spending (0.94) was the third biggest contributor to GDP growth during Q3, with both state & local (0.50) and federal (0.44) governments equal contributors. *Residential investment* (0.24) was a positive contributor to real GDP for the first time in 10 quarters (Q1-2021). *Nonresidential* (0.18 ppts) investments contributed positively, as gains in intellectual property products (0.15) and structures (0.21) offset the negative contribution from equipment (-0.18) spending. Within equipment spending, information processing (-0.09), industrial (-0.06), and other (-0.02) equipment all contributed to the decline, while transportation (0.00) equipment was neutral. *Trade* (-0.04) subtracted from growth for the first time in six quarters, as the positive contribution in exports (0.65) was more than offset by the negative contribution from imports (-0.69). (Imports, which are a subtraction in the calculation of GDP, increased.)

Global Economic Indicators

Eurozone Economic Sentiment Indicators (*link*): The Economic Sentiment Indexes (ESIs) for the both the EU and Eurozone improved for a second month in November, after dropping seven of the prior eight months. The *EU's measure* increased 0.5 point in November and a total of 0.7 point over the two-month period, to 93.7, after falling 4.6 points (to 93.0 from 97.6) during the eight months through September, while the *Eurozone's gauge* rose 0.4 point over the two months through November, after falling eight of the prior nine months by 6.1 points (to 93.4 from 99.5). They were at record highs of 117.7 and 118.8 during October 2021. ESIs among the *six largest EU economies* were mixed in November,

with ESIs posting gains in the Netherlands (+2.9 points to 96.1), France (+2.0 to 96.1), and Poland (+1.7 to 98.8), while ESIs eased in Spain (-1.5 to 98.8) and to a lesser extent Germany (-0.5 to 89.1) and Italy (-0.3 to 96.5). By sector, *consumer* confidence in the overall EU edged up 1.1 points to -17.5 this month, reflecting consumers' more favorable attitudes toward their household's past and future financial situation as well as the general overall economic situation. Meanwhile, *construction* confidence firmed, moving up 1.3 points the past two months to -6.9, after deteriorating from a record high of 8.4 at the end of 2021 to -8.2 this September, reflecting brighter employment expectations and appraisals of the level of order books. *Retail trade* confidence stabilized, edging up 0.3 point to -5.8, after falling five of the prior six months by 4.7 points to -6.1, as views on changes in the past and future business situation were broadly unchanged, while the inventory situation showed signs of improvement. Meanwhile, *industrial* confidence has been in a flat trend the past several months around -9.0, while *service* confidence remains in a flat trend just above 4.0 since July.

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