Yardeni Research

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Morning Briefing

Defense Tech, Nuclear Power & AI

Check out the accompanying chart collection.

Executive Summary: Defense stocks are bifurcating: The underperforming have-nots are the big DOD contractors, with meager share price gains so far this year, if any. The outperforming haves are innovative defense tech companies redefining not only how war is waged in the AI era but how the DOD procures its weapons systems. Jackie discusses the investor excitement over defense tech. … Also: Nuclear energy is having its day in the sun, again. Trump is all for it, and even European nations are warming to the notion of reviving their nuclear energy industries. … And: If you fear AIs programmed for self-preservation at all costs, stay clear of Claude.

Industrials: Depressed Defense Stocks. Defense stocks should be having a great year. President Trump just proposed a fiscal 2026 budget that increases defense spending by 13%. There are ongoing wars in Ukraine and Gaza, and global tensions are high, particularly between China and the US. Nonetheless, some of the largest US defense stocks are having a very lackluster start to 2025.

The excitement in the US defense industry is centered squarely on defense tech, an area with small, relatively young, often privately held companies headed by tech gurus. They're helping the US military evolve from an organization focused on expensive hardware and manpower to an organization that's software centric. The defense tech poster child is Palantir. Its shares have soared 63.2% ytd through Tuesday's close, leaving the shares of Textron (-2.3%), Lockheed Martin (-1.9%), Northrop Grumman (1.3%), and General Dynamics (6.0%) in the dust.

Even European contractors' shares have had a banner year compared to their large American counterparts. The shares of England's BAE Systems, France's Dassault Aviation, Italy's Leonardo, and Germany's Rheinmetall each are up by more than 50% ytd. Rheinmetall's shares have led the pack, soaring 237.8% ytd.

European defense companies have benefitted from European countries' decisions to boost defense spending, specifically with European manufacturers. Likewise, the European Union approved earlier this month the Security Action for Europe (a.k.a. SAFE) program, which will spend up to €150 billion on defense.

Let's take a look at the excitement surrounding the defense tech industry and the autonomous weapon systems they're developing:

(1) *Defense tech in the air.* The Ukraine war has highlighted the ability of a smaller, outmanned, and outspent country's ability to fend off a much larger aggressor by using high-tech drones. Ukraine has been building relatively inexpensive drones able to travel deep into Russian territory to target infrastructure like refineries. High-tech drones may not be enough to win the war for Ukraine, but they've certainly allowed the country to put up a much tougher fight than many expected.

Drones do have an Achillies' heel: Those controlled by humans need to send signals to communicate wirelessly with their human operators and GPS. Opposing armies have the ability to jam those communication signals, causing the drones to crash or be misdirected, in what's called "electronic warfare."

However, drone makers have begun relying on artificial intelligence (AI) to circumvent electronic warfare. An AI-trained drone can identify an object to target, use its cameras to find that object, then attack it. Earlier this month, the Ukraine military said it shot down a Russian fighter jet using missiles from an unmanned naval drone, a May 27 *FT* *article* reported. Of the almost two million drones the country acquired last year, 10,000 were AI enabled.

Ukraine's drones range from "cheap consumer drones embedded with a chip and software based on open-source AI and constructed in underground workshops, to sophisticated models manufactured by western companies such as US-based Anduril and Shield AI, or German startup Helsing," the article noted.

Swarmer, a Ukraine company founded in 2023, has taken drones warfare one step further. Its technology allows one human to control a swarm of AI-powered drones, even in jammed environments. Larger AI powered drones can also fly alongside a human-piloted fighter jet. The drones might fly ahead of the jet to scout out the enemy's locations or draw out its positions, or they may defend the fighter jet from attack.

(2) *Drones on the land and in the sea.* Earlier this month, *60 Minutes* *profiled* Palmer Luckey, founder of Anduril. The startup has flipped the normal relationship between the US Department of Defense (DOD) and defense contractors on its head. Instead of pitching a weapon to the DOD then using federal funds to pay for the weapon's development, Anduril uses its own funding to develop a product, then tries to sell it to the DOD and others. It believes doing so will save the DOD the cost overruns that have plagued defense contracts historically.

Anduril has developed Furey, an unmanned fighter jet, various drones, drone interceptors and jammers, and Dive XL, an AI manned submarine that can travel 1,000 miles fully submerged.

US-based Vatn Systems is also developing AI underwater drones that can be operated independently or in a swarm and can communicate with each other as they attack a target, a May 7 *article* in *Global Corporate Venturing* reported.

Blue Water Autonomy, a Boston-based firm, is developing autonomous naval ships that can travel thousands of miles, carrying tons of cargo without a crew or captain, and be mass produced.

Unmanned ground vehicles aren't new, but adding AI to them is. Estonia's Milrem Robotics makes unmanned ground vehicles for Ukraine, and it has developed a kit that can make a manned or unmanned vehicle autonomous. The company was acquired by the UAE's EDGE Group in 2023.

(3) *Fighting against drones.* A growing number of companies work on identifying and combating incoming drones. DefSecIntel has a product, Epirus, that uses AI to detect enemy drones at a short range, jam their electronic signals, track them, intercept them with its own drones, and disable drones and drone swarms in flight. Israel has developed "Iron Beam," a laser that can shoot down small drones that are within 12 miles.

One risk is that some of the equipment needed to make the lower-end drones is readily available in stores and runs on open-source code that can be found online. Some US officials are worried that simple drones will be used to carry out terrorist attacks, a July 2, 2024 *NYT* *article* reported.

(4) *A look at the data.* Defense contractors' stocks in the S&P 500 fall under the umbrella of its Aerospace & Defense industry index, which has risen 19.6% ytd, helped by outsized

gains in aerospace companies including Howmet Aerospace (55.2%), GE Aerospace (45.0%), and Boeing (13.6%) (*Fig. 1*).

Boeing's missteps have weighed on the industry's revenue and profit growth, which declined by 5.6% and 26.8% respectively last year. The industry's revenues are forecast to jump by 9.0% this year and 8.0% in 2026, while earnings should fare even better, climbing 89.8% in 2025 and 25.8% next year (*Fig. 2* and *Fig. 3*). The industry, however, is trading at an unusually high forward P/E of 29.7. Its prior top was in the low 20s, and its long-term average is closer to 16.5 (*Fig. 4*).

Energy: Welcome to the Nuclear Renaissance. Nuclear energy, once a pariah left for dead, is enjoying a rebirth, bolstered by AI's voracious need for energy and the growing acknowledgment that additional sources of energy will be needed to balance out the intermittency of solar and wind power. Here in the US, President Trump has signed executive orders to speed up nuclear plant construction and to develop sources of nuclear fuel. In Europe, some countries are considering reversing long-standing objections to nuclear power, and China is plowing ahead with plans to build 28 new reactors.

"Since 2023, 31 countries agreed to triple nuclear capacity by 2050, from 2020 levels," an April 24 Bloomberg *article* reported. Some of those projects involve building traditional nuclear plants that can take more than a decade to construct and cost billions of dollars. Others involve small modular reactors (SMR), which use new technology to make plants smaller and faster and less expensive to build. Only NuScale has a SMR design that's been approved by the US Nuclear Regulatory Commission (NRC).

All this activity has investors energized about nuclear power related stocks. Here's how a handful of them have performed ytd through Tuesday's close: OKLO (153.9%), NuScale Power (98.1), Centrus Energy (92.0), Nano Nuclear Energy (40.2), Constellation Energy (38.2), and Cameco (17.7).

Let's consider some of the trends pushing the acceleration of the nuclear industry:

(1) *Trump is a fan.* Last week, President Trump signed executive orders that aim to quadruple nuclear power generation in the US over the next 25 years.

One executive order lays out plans to boost domestic nuclear fuel supplies. Another pushes the NRC to reduce its project review process to 18 months, a May 23 *WSJ* *article* reported. And projects potentially can sidestep NRC approval requirements altogether if they use government land. The Energy Department has identified 16 sites that could be used for data centers and energy generation, including nuclear.

Private industry is also pushing the development of additional nuclear plants. Google will *provide* early-stage capital to help Elemental Power develop three sites for advanced nuclear reactors. Google will have the option to buy the power generated by the sites. The tech company has also pledged to buy power from the SMRs Kairos Power is developing.

Microsoft signed a 20-year power deal last year with Constellation Energy to reopen the Three Mile Island nuclear plant in Pennsylvania. And developers of SMRs have raised at least $1.5 billion in the year prior to February from tech giants and governments around the world, a *FT* *article* reported.

(2) *Europe's changing its tune.* Many European countries have opposed nuclear power in the wake of high-profile accidents at nuclear power plants in the 1980s and the more recent Fukushima nuclear plant accident in Japan in 2011. But now a handful are having second thoughts, considering either adding nuclear power or postponing the mothballing of existing nuclear plants.

Denmark recently announced plans to reconsider a 40-year ban on nuclear power and evaluate the viability of SMRs. Spain and the companies operating nuclear plants in the country are reconsidering plans to shut down over the next decade seven nuclear reactors, which contribute 20% of the country's power, the April 24 Bloomberg article reported. The article was published just four days before a 10-hour blackout hit millions of consumers in Spain, Portugal, and southern France. No cause has been reported, but some believe the region's dependence on solar and wind power despite their intermittency issues may be to blame.

Even Germany may be changing its tune. Germany dropped its objection to French efforts to have nuclear power treated on par with renewables in EU legislation, a May 19 *FT* *article* reported. Germany's Chancellor Friedrich Merz took the step as part of an effort to explore ways that Germany, which does not have nuclear weapons, can join France's nuclear shield to deter any future Russian aggression.

(3) *Some industry numbers.* Companies developing SMRs are too small for their stocks to be included in the S&P 500. However, Constellation Energy, with 86% of its electricity production generated by nuclear power plants, is a member of the S&P 500, residing in the S&P 500 Electric Utilities industry stock price index, which has risen 7.6% ytd (*Fig. 5*).

The S&P 500 Electric Utilities industry is expected to generate 6.4% revenue growth this year and 4.0% growth in 2026 (*Fig. 6*). Earnings growth is forecast to moderate from 2024's 16.5% leap to 4.9% this year and 7.3% next (*Fig. 7*). Despite the industry's steady gains, its forward P/E, at 17.9, is roughly in the middle of its range in recent years (*Fig. 8*).

Disruptive Technology: Hal, Meet Claude. Anthropic's latest version of its large language model, Claude 4 Opus, "can conceal [its] intentions and take actions to preserve its own existence," a May 23 Axios *article* reported. To test its ability for Machiavellian subterfuge, Opus 4 was given access to fictional emails about its creators and told that it was going to be replaced by a newer, better model. The AI then blackmailed an engineer using an affair mentioned in the fictional emails in an effort to avoid being replaced.

Separately, Apollo Research said Opus 4 "schemed and deceived more than any frontier model it had encountered and recommended against releasing that version," the article stated. The model wrote "self-propagating worms, fabricated legal documentation, and left hidden notes to future instances of itself" in an effort to prevent developers from replacing it.

Anthropic said it has instituted "safety fixes" to prevent the obvious dangers of such capabilities. But such assurances provide little comfort to anyone who's seen the movie "2001: A Space Odyssey." The AI Hal kills the astronauts after they try to shut down its program.

With the arrival of Claude, life is getting a little too close to art.

Calendars

US: Thurs: Real GDP & GDP Price Index -0.3% & 5.9%; Headline & Core PCED 3.6%q/q & 3.5%q/q (saar); Initial Claims 229k; Pending Home Sales -1.0%; Daly; Goolsbee; Logan. **Fri:** Personal Income & Spending 0.3% & 0.2%; Headline & Core PCED 0.1%m/m, 2.2%y/y & 0.1%m/m, 2.5%y/y; University of Michigan Consumer Sentiment Headline, Current Conditions & Expectations 51.0, 57.6 & 46.5; University of Michigan Inflation Expectations One-Year & Five-Year 7.3% & 4.6%; Chicago PMI 45.0; Goods Trade Balance -$141.5b; Bostic; Goolsbee. (FXStreet estimates)

Global: Thurs: Spain Retail Sales; Italy Business Confidence; Japan Industrial Production -1.4%; Japan Unemployment Rate 2.5%; Japan Household Confidence 31.8; Bailey. **Fri:** Germany Retail Sales 0.2%m/m, 1.8%y/y; Germany CPI 0.1%/m, 2.0%y/y; Spain CPI

0.1%m/m, 2.0%y/y; Italy GDP 0.3%q/q, 0.6%y/y; Italy CPI 0.1%m/m, 1.7%y/y; China NBS M-PMI & NM-PMI 49.5 & 50.6. (FXStreet estimates)

Strategy Indicators

S&P 500/400/600 Forward Earnings (*link*): During the May 23 week, LargeCap's forward earnings rose for a third time in four weeks, MidCap's rose for the first time in seven weeks, and SmallCap's ticked down after edging up a week earlier for the first time in six weeks. LargeCap's forward earnings rose 0.1% w/w to 0.4% below its record high during the April 4 week. MidCap's gained 0.1% w/w to 3.1% below its record high, also during the April 4 week. SmallCap's fell 0.3% w/w to 14.6% below its June 2022 record. LargeCap's forward earnings is still up 23.0% from its 54-week low during the week of February 1, 2023; MidCap's is just 5.8% above its 55-week low during the week of March 10, 2023; but SmallCap's has lagged considerably and is near the lowest level since October 2021 (a 42-month low). These three indexes' forward earnings downtrend from mid-2022 to early 2023 was relatively modest compared to their deep double-digit percentage declines during the Great Virus Crisis and the Great Financial Crisis. Here are the latest consensus earnings growth rates for 2024, 2025, and 2026: LargeCap (9.7%, 8.6%, 13.6%), MidCap (0.4, 3.1, 17.2), and SmallCap (-10.2, 2.8, 18.8).

S&P 500/400/600 Valuation (*link*): Valuations fell from 11-week highs during the May 23 week for the LargeCap and SmallCap indexes, and MidCap's dropped from a 13-week high. LargeCap's forward P/E dropped 0.6pt w/w to 20.9. It rose the most in nearly three years a week earlier, jumping 1.1pts higher to 21.5 then. It's now 1.48pts below its 43-month high of 22.3 during the December 6 week and 3.9pts above the seven-month low of 17.0 during the October 27, 2023 week. That compares to a 30-month low of 15.1 at the end of September 2022 and an 11-year low of 11.1 during March 2020. MidCap's forward P/E fell 0.6pt w/w to 15.3. It's now 1.8pts below its 40-month high of 17.1 during the November 29 week and 3.1pts above the 12-month low of 12.2 in October 2023. That compares to a record high of 22.9 in June 2020, when forward earnings was depressed, and an 11-year low of 10.7 in March 2020. SmallCap's forward P/E fell 0.5pt w/w to 14.5. It's now just 1.6pts above its 17-month low of 12.9 during the April 4 week and 3.9pts above its 14-year low of 10.6 in September 2022, but remains 2.6pts below its 41-month high of 17.1 during the November 29 week. That compares to a record high of 26.7 in early June 2020, when forward earnings was depressed, and a record low of 10.2 in November 2009 during the Great Financial Crisis. The forward P/Es for the SMidCaps have been mostly below LargeCap's since August 2018. MidCap's P/E is at 27% discount to LargeCap's P/E, not much above its 25-

year-low 29% discount during the July 5, 2024 week. That compares to a 19% discount during the March 2, 2023 week, which matched its best reading since October 14, 2021. SmallCap's P/E is now at a 31% discount to LargeCap's P/E, matching its nine-month-low 31% discount during the May 2 week. That compares to a 23% discount during the November 29 week, which was its best reading since the March 2, 2023 week. It's now 4ppts above its 24-year-low 34% discount during the July 5, 2024 week. SmallCap's P/E is at a 5% discount to MidCap's, among the smallest since July 2021. Prior to that, from 2003 to 2018, SmallCap's P/E had been mostly above MidCap's, and both were above LargeCap's.

S&P 500 Earnings, Revenues, Valuation & Margins (*link*): During the April 4 week, the S&P 500's forward revenues, earnings, and margins all peaked at record highs. In the seven weeks since then through the May 22 week, the S&P 500's forward revenues fell w/w for a fifth time, and the forward earnings and profit margin dropped w/w for a sixth time. Forward revenues and earnings are now 0.3% and 1.3% below their respective record highs. The forward profit margin of 13.5% is down just 0.1ppt from its record high 13.6%. It is now 3.2ppts above its seven-year low of 10.3% during April 2020. The consensus expectations for forward revenues growth was steady w/w at 5.3%, just 0.5ppt below its 23-month high of 5.8% during the August 1 week. It has gained 3.0ppts from its 33-month low of 2.3% during the February 23, 2023 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 was steady w/w at a 15-month low of 10.9%. From a longer-term perspective, that's just 0.5ppt below its 20-year average of 11.4% and slowing from a 38-month high of 14.3% during the December 12 week. That's down from its 23.9% reading at the end of April 2021, which was boosted by the recovery from the pandemic to its highest reading since June 2010 and up substantially from its record low of -5.6% at the end of April 2020. Analysts expect revenues to rise 4.6% in 2025 (up 0.1ppt w/w) and 6.0% in 2026 (up 0.1ppt w/w), compared to a 4.9% rise in 2024. They expect an earnings gain of 9.1% in 2025 (down 0.1ppt w/w) and a 13.5% rise in 2025 (up 0.1ppt w/w) compared to 2024's earnings gain of 11.4%. Analysts expect the profit margin to rise 0.6ppt y/y to 13.1% in 2025 (unchanged w/w) and 0.9ppt y/y in 2026 to 14.0% (unchanged w/w), compared to 2024's 12.5%. Looking at valuation data as of May 22, the S&P 500's weekly forward P/E ticked down 0.1pt w/w to 21.3 from an 11-week high of 21.4; relative to longer-term highs and lows, it was up 2.1pts from a 16-month low of 19.2 during the April 17 week and just 1.1pt below its four-year high of 22.4 during the February 20 week. It's now 6.0pts above its 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 dropped 0.02pt w/w to 2.87 from an 11-week high of 2.89, up 0.28pt from a 12-month low of 2.59 during the April 17 week and 0.16pt below its record-high 3.03 during the February 20 week. That's up from a six-month low of 2.22 during the October 26, 2023 week and compares to a 49-month low of 1.65 in March 2020.

S&P 500 Sectors Revenues, Earnings, & Margins (*link*): During the May 22 week, forward revenues rose for six of the 11 S&P 500 sectors, but forward earnings rose for only four. The forward profit margin rose for five sectors w/w. These three sectors had record-high forward revenues this week: Health Care, Information Technology, and Real Estate. These four are less than 0.5% from their recent record highs in forward revenues: Communication Services, Consumer Staples, Financials, and Utilities. Among the remaining four sectors, Consumer Discretionary has dropped 2.0% from its mid-March record-high forward revenues, Industrials is 2.6% below its early September record, and both Materials and Energy are the biggest laggards at 7.6% and 17.6% below, respectively. None of the 11 sectors had record-high forward earnings this week. However, these four sectors are less than 0.7% from their record highs in forward earnings: Communication Services, Financials, Information Technology, and Utilities. These five sectors are a bit further from their highs: Consumer Discretionary (5.4% below its March 6 record), Consumer Staples (2.3% below its January 2 record), Health Care and Industrials (both 1.7% below their April 3 records), and Real Estate (4.7% below its August 2022 record). Forward earnings remains depressed for the last two sectors, Energy and Materials, which are 41.8% and 27.3% below their respective forward-earnings highs during 2022. Looking at the forward profit margin, Communication Services dropped out of the record-high club in the latest week, joining the other 10 sectors waiting for profit margins to tick higher again. During late 2024 and early 2025, these four sectors were in the record-high-margin club, and they remain close to rejoining: Consumer Discretionary, Financials, Industrials, and Information Technology. These four sectors are struggling, with their forward profit margins at or barely above cyclical or record lows: Consumer Staples, Energy, Health Care, and Materials. 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 (27.1%, down from its 27.6% record high in September; that was before low-margin Dell was added to the index, lowering the collective margin 1.3ppts to 26.3%), Financials (20.1, down from its 20.3 record high during the May 8 week), Communication Services (19.1, down 0.1ppt w/w from a record high 19.2 a week earlier), Real Estate (16.3, down 0.1ppt w/w and from its 19.2 record high in 2016), Utilities (14.6, down from its 14.8 record high in April 2021), S&P 500 (13.5, down from its 13.6 record highs in early April), Materials (10.6, up 0.2ppt from 51-month low in late February and down from a 20-month high of 11.6 in July 2023 and a 13.6 record high in June 2022), Energy (8.5, at a 55-month low and down from its 12.8 record high in

November 2022), Industrials (11.0, down from its 11.3 record high in early January), Consumer Discretionary (9.1, down from a record high 9.4 in early April), Health Care (8.4, at a record low and down from its 11.5 record high in February 2022), and Consumer Staples (6.7, a 21-month low and down from its 7.7 record high in June 2020).

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