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The Next Space Race—and How to Play It

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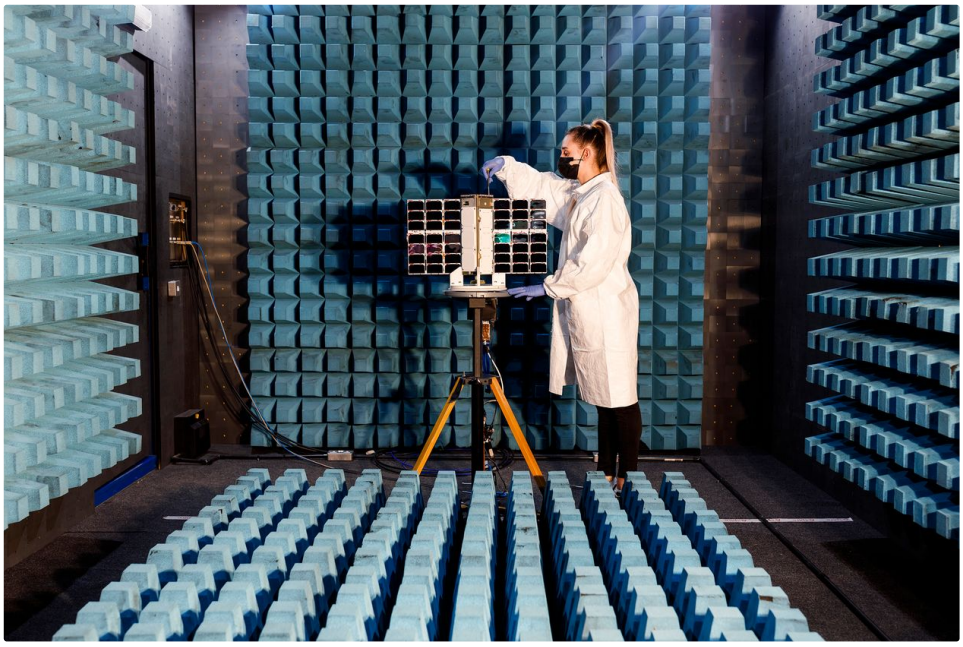

Zoe Clark, AIT technician at Spire Global in Scotland, prepares a Lemur satellite for testing in a room optimized to check for radiofrequency inteference.
Photograph by Robert Ormerod

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Like many kids, Luca Rossettini wanted to go to space.

His wasn't a typical childhood dream—one that fades away with age. Today, Rossettini, who was born in Vicenza, Italy, is an aerospace engineer with a doctorate in advanced space propulsion and a master's in strategic leadership toward sustainability. He also served in Italy's Folgore, an army paratrooper brigade.

It's an impressive résumé, but it wasn't quite good enough to get him into space. After reaching the final selection stage for European astronauts—something that happens about once a decade and whittles 10,000 applicants down to four—Rossettini, then in his early 30s, fell just short. Disappointed, he did what anyone would do after getting so close. "I decided to build my own spaceship and go to space on my own," he says.

Rossettini founded satellite company D-Orbit in 2011.

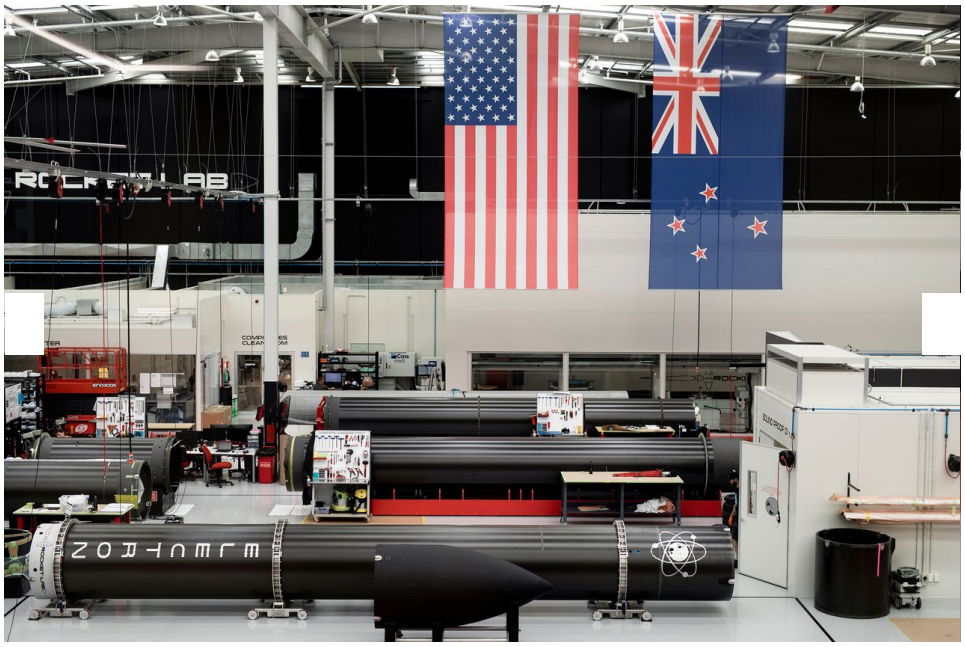
Rossettini is just one of many entrepreneurs now looking skyward for the next business opportunity. When *Barron's* put space on the cover in 2017, there were few ways of playing the coming wave of space businesses. Richard Branson's Virgin Galactic Holdings (ticker: SPCE) was more than two years from going public via a special-purpose acquisition company, or SPAC—still the vehicle of choice for many soon-to-be-

public space companies; Viasat (VSAT) was one of the few public satellite-communication companies; and the best recommendations we could offer were defense company Lockheed Martin (LMT) and aerospace giant Boeing (BA).

A combination of falling costs and rising investor appetite changed all that. While space tourism gets the attention, investors can pick from satellite makers, launch-services providers, even space-logistics companies—all generating actual revenue from new businesses.

The market capitalization of pure-play space companies now totals roughly $25 billion, up from essentially nothing a few years ago. That figure doesn't include SpaceX, the giant founded by Tesla (TSLA) CEO Elon Musk, which remains privately held and was recently valued at $74 billion, or Blue Origin, the passion project of Amazon.com (AMZN) founder Jeff Bezos. If the biggest challenge four years ago was finding enough companies to invest in, today it's figuring out which new start-ups—many in the process of going public by merging with SPACs—have the staying power to reward investors. While some look enticing, the legacy players, particularly Lockheed Martin, might still be the best way to capture the upside in space, while limiting the downside.

Inside Rocket Lab's Launch Missions



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Rocket Lab's Electron rocket production facility in Auckland, New Zealand. The start-up is one of Barron's stock picks in the sector.

PHOTOGRAPH BY KIERAN E. SCOTT

It was tough to imagine such a space revival a decade ago. The heyday of the space race in the '60s and '70s was over, the Space Shuttle was being decommissioned, and the only people interested in launching anything were governments. The number of orbital launches in the U.S. fell from about 40 a year in the late 1990s to fewer than 20. Business got so bad that Lockheed Martin and Boeing combined their launch-service operations to form United Launch Alliance, or ULA. Each still owns 50% of ULA.

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New Addition

Then Musk came onto the scene. In 2014, he told Congress that SpaceX could provide the same services as ULA for about a quarter of the cost. At another hearing a year later, SpaceX President Gwynne Shotwell was asked how the company could afford to offer launches below the multimillion price tag then being offered by ULA: "It is hard for me to say," she replied. "I don't know how to build a $400 million rocket."

Time has proved SpaceX correct. Costs are down a lot and keep falling. SpaceX now has a web application where potential customers can input a weight and get an estimate for how much it will cost to send it to low Earth orbit. SpaceX charges as little as $1 million for hitching a ride on a Falcon 9 rocket, while ULA launch costs have dropped too, although the company is tight-lipped about how much. New companies have emerged with hopes of taking on SpaceX, including soon-to-be publicly traded Rocket Lab USA and Astra, which will offer smaller, low-cost rockets that can be launched at a fraction of what even SpaceX offers.

Such low costs have made all kinds of businesses possible that would have been unimaginable a decade ago, from space-based internet service to continuous Earth monitoring and imaging. The end result will be more space launches. U.S.-based launches topped 40 in 2020 and are expected to grow again in 2021 and for years into the future. "One thousand satellites were launched in 2020," says Mikhail Kokorich, founder of space logistics firm Momentus. "That's going to 10,000 by 2030."

The Buzz from Above

As the cost of sending rockets into orbit has fallen, the number of companies offering satellite-based services has expanded.

Company	SPAC Ticker	Ticker Once Merged	Market Value (bil)	2025E Revenue (bil)	Price / 2025E Sales	Description
AST & Science	NPA	ASTS	2.3	2.6	0.9	Provider of sattelite cellphone service
Astra	HOL	ASTR	3.3	1.5	2.2	Launches smaller, low cost rockets into orbit
BlackSky Holdings	SFTW	BKSY	1.5	0.5	2.8	Satellite maker with plans to shakeup geospatial imaging market
Momentus	SRAC	MNTS	2.1	2.0	1.1	Provider of space logistics, from moving satellites to fixing them
Rocket Lab USA	VACQ	RKLB	5.7	0.7	7.6	Like SpaceX, it makes its own satellites and rockets
Spire Global	NSH	SPIR	1.7	0.9	1.8	Satellite maker calls itself a space software company

E=Estimate.

Source: company reports

And failure is no longer catastrophic, as every video of a SpaceX rocket exploding on a landing pad demonstrates. Satellites are cheaper and more capable. Satellite-services company Spire Global has built a "constellation" of tiny satellites that it calls Lemurs, short for Low Earth Multi-Use Receivers, which are about the size of those small primates. Spire runs a constellation of over 100 satellites, which collect five terabytes of data daily and beam them down to the company's 70 ground antennas in 16 countries. The company processes and analyzes the data—which cover every spot on Earth 10 times a day and can be used to track ships, planes, or weather—then sells access to customers on a subscription basis.

Similarly, BlackSky Holdings says it can generate imagery for a tenth of the cost of a traditional Earth-imaging satellite, while AST & Science will use satellites the way cellphone companies use towers to deliver phone service around the world.

Launch crew pushes the electron rocket onto the launchpad at Rocket Lab Launch Complex 1 in New Zealand for the March 2021 "They Go Up So Fast" mission.
Photograph by Kieran E. Scott

It's the stuff of science fiction. Space, however, remains a niche business, though analysts have started to take a crack at sizing up the potential opportunity. Launch services could hit $10 billion in annual sales by 2040, says Morgan Stanley analyst Adam Jonas, while he sees Earth observation growing to $25 billion a year from $3 billion in 2021.

What's more, space-based high-speed internet access, the kind SpaceX is targeting, should grow from about $10 billion to more than $90 billion. Satellite manufacturing will remain about a $20 billion to $30 billion business a year, although the number and diversity of satellites made for that amount of money will rise, which could hike risks for companies like Maxar Technologies (MAXR) and Iridium Communications (IRDM).

The big opportunity, however, could be in businesses that can exploit the new space model. Rossettini's D-Orbit will ferry satellites to different locations and clean up space junk. That's one example of a second-order impact. Eventually, satellite-services companies might be doing in-space repair and refurbishment. All told, those services could be worth $400 billion, more than four times that of building satellites and launching rockets.

"Space touches virtually every industry in a significant way," Jonas writes. "It is hard to find an industry that will not ultimately be altered or even completely disrupted by the development of the space economy."

New opportunities look big, but remain a way off, and investors might have too many options now—or not the right ones. Demand has to be high enough to justify capital going into stocks, as Teal Group aerospace consultant Richard Aboulafia says, while costs have to be low enough to disrupt terrestrial-based players. "You can build it, but the economics can be God-awful," he says.

FEAR OF FAILURE

Innovation slowed, costs were high, and caution spawned stagnation at NASA after the heyday of spaceflight in the 1960s and '70s.

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The number of orbital launches in the U.S. fell by more than half after the late 1990s.

Lockheed Martin might be the safest way to play space. It owns 50% of ULA, which has more than 130 successful missions under its belt. The company recently agreed to purchase rocket-parts maker Aerojet Rocketdyne Holdings (AJRD) for about $4.4 billion. Lockheed can make satellites, too, and is an investor in Rocket Lab. It may be one of the largest, most complete space franchises.

Investors might think of Lockheed as "old space," with only the government as a customer. But the convergence of government and commercial is happening, meaning that Lockheed will have the same opportunities as some of the hottest start-ups.

That doesn't mean the stock will trade like a space stock. "The Aerojet deal was nice," says Dan Morgan, portfolio manager at Synovus. "But Lockheed is still a defense franchise."

Defense stocks haven't gotten much love of late. Investors have been nervous about budget deficits and Democratic control of the executive and legislative branches, which could mean less military spending. Lockheed shares have dropped about 9% over the past six months, even as the S&P 500 has gained 18%.

That fear may be overstated. "Since World War II, there has been no relationship between military spending and [budgetary] economics," Aboulafia tells *Barron's*. "Defense is driven by threat and politics, that's all."

Morgan owns shares. He believes he's buying a great business at a low price. Lockheed shares trade for just 13.6 times estimated 2021 earnings of $26.34 a share, a big discount to the market's 22.6 times multiple. If the stock can trade at a price/earnings ratio of 20, roughly in line with its recent discount to the S&P 500 valuation multiple, shares would fetch about $500, up more than 40% from recent levels. Lockheed has an attractive dividend yield, too, at about 3%. "I'm getting paid to wait," adds Morgan. He's expecting good things.

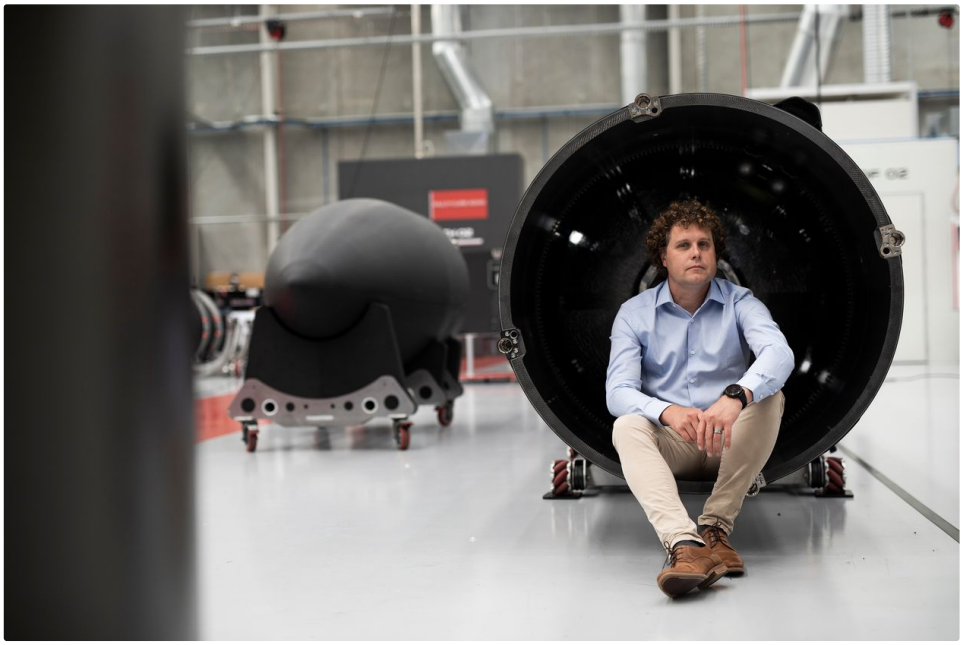
Some of those good things could be space-related. Lockheed's valuation multiple might expand as space opportunities grow, or the company could separate some of its space assets into a new entity. And even if Lockheed does nothing, investors get the most significant maker of combat aircraft on Earth.

Investing in these space start-ups almost resembles a lottery. Some of these will make it big; others will fade. Even the founders seem to know that reality. "That's the big question," says Payam Banazadeh, CEO of privately held Capella Space, whose satellites provide 3-D images of Earth day or night, regardless of cloud cover. "Some of the companies will get to sustainability, no problem, and then you're going to have a lot of the companies that will not."

Complicating matters is that many are still going public, all via SPACs, and many lack sales. All have big plans. None is cheap.

"When you look at all the satellites launched over the next decade or so, there's a real need for a... constellation building machine."

— Peter Beck, CEO, Rocket Lab



Peter Beck, CEO of Rocket Lab, sits inside of a rocket fairing at the Electron rocket-production facility in Auckland, New Zealand.
Photograph by Kieran E. Scott

Spire Global

Spire, the satellite company, initially focused on weather and atmospheric monitoring. Spire says it generated about $30 million in sales in 2020 and projects that sales will grow to $900 million by 2025. By then, Spire expects about $350 million in free cash flow. The company, which plans to go public by merging with NavSight Holdings (NSH), is valued at $1.7 billion, based on 164 million shares after its merger closes, or about 1.8 times projected 2025 sales.

BlackSky Holdings

BlackSky, also a satellite company focusing on Earth imaging, is valued at $1.6 billion, and is merging with Osprey Technology Acquisition (SFTW). It has $20 million in 2020 sales and trades at 2.8 times projected 2025 sales.

AST & Science

AST is merging with New Providence Acquisition (NPA) in a deal that values it at $2.2 billion. AST projects sales of $2.6 billion in 2025 by becoming part of the telecom infrastructure used to provide mobile data. AST trades for less than one time projected 2025 sales.

Astra

Astra, a new launch-services provider, has no sales. It has had some successful launches, but its goals are aggressive: sales of $1.5 billion by 2025, by launching close to a rocket a day. The company is valued at $3.3 billion, based on the 261 million shares outstanding after it completes its merger with Holicity (HOL), and trades at 2.2 times projected 2025 sales.

Momentus

Momentus, which calls itself a deep-space logistics company, projects sales of $2 billion by 2025 through a mix of transportation, launch, and refurbishment services. The company, which is merging with Stable Road Acquisition (SRAC), is valued at about $2 billion, and trades at one time projected 2025 sales.

Rocket Lab USA

Of all these start-ups, we prefer Rocket Lab, which has the most conservative projections and, with $35 million in 2020 sales, the most revenue. Rocket Lab provides launch services and makes its own satellites, giving it multiple ways to win. "When you look at all the satellites launched over the next decade or so, there's a real need for a... constellation building machine," says CEO Peter Beck.

Satellite-related sales are projected to be about $350 million by 2025, with launch revenue of $400 million. That's more than tenfold growth compared with 2020 launch sales, but would amount to only 5% of projected dollars spent on launch services. Its current valuation of $5.5 billion, based on its merger with Vector Acquisition (VACQ), is a fraction of the $74 billion that SpaceX, its larger rival, is worth. It's not cheap, but its business breadth and successes make the path to viability far more clear.

Perhaps it isn't as clear as a starry sky, but in this new space race, it's enough.

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