



Virgin Galactic. (NYSE: SPCE)

Brown Socially Responsible Investment Fund
October 6, 2020



Macro Update

Markets:

- Trump tests positive for COVID-19, at least 6 others who attended an event did as well – this rattled markets, with the Dow dropping almost 400 points at the beginning of the day.
- US increases efforts to reduce reliance on Chinese minerals
- Institute for Supply Management non manufacturing index (services) rose to 57.8 in September from 56.9 in August
- Walmart sells its majority stake in Asda (UK grocery chain) to a group of private investors for \$8.8 billion
- Bristol Myers Squibb acquires MyoKardia at \$13.1 billion
- Walt Disney said it would lay off about 28,000 workers, United and American Airlines would be laying off around 32,000 workers whose jobs have been kept so far due to the \$25 billion from government aid
- JP Morgan agreed to pay \$920 million and agreed to admit misconduct for “spoofing” (making and then immediately cancelling trades to mess with price)
- Asana and Palantir had direct listing last Wednesday, with Palantir’s IPO filled with technical issues and closed at \$9.50 below the initial price of \$10 (still giving the company ~\$21 billion in valuation)

Other:

- More than 19,000 Amazon workers have tested positive for coronavirus (it has 1.3+ million employees)
- Republicans responded to Democrat’s \$2.2 trillion stimulus bill with a \$1.6 trillion one



Finance Pitch

Company Overview



At a Glance:

- Virgin Galactic is a British spaceflight company aiming to provide commercially available space tourism as well as suborbital launches for space science programs
- Developed the first hybrid rocket motor, using both solid and liquid rocket fuel
- Has successfully completed two missions to space, and commercial flights are expected to begin in first half of 2021, with Sir Richard Branson as the first passenger

Products/Services:

- Primary mission is commercial spaceflight, but a small portion of revenue is expected to come from space transportation and engineering subcontracts for US
 - Only revenue so far has come from these ancillary sources
- Designed with luxury in mind, 3D printed mesh seats and a spacious interior area for the optimal zero-gravity experience

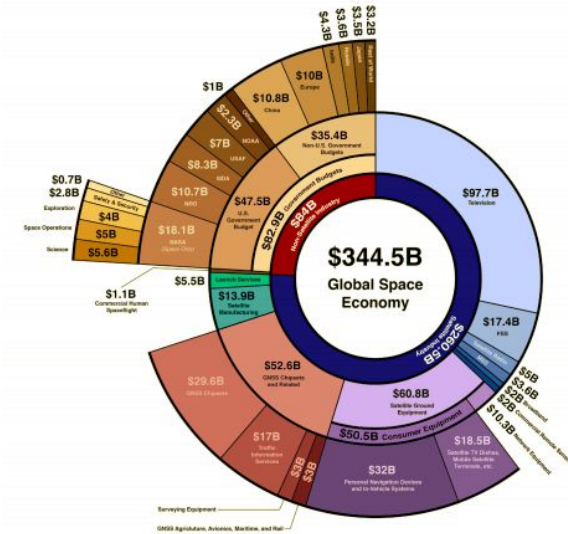
Flight Duration	90 mins
Ticket Price (Round 1)	\$250,000
Firm Reservations	600
Ticket Price (One Small Step)	> \$250,000
Firm Reservations	700
Countries Represented	60
Notable Ticketholders	Justin Bieber, Leonardo DiCaprio

Strategy:

- Virgin Galactic is vertically-integrated, meaning that almost all of the rocket components are designed and manufactured in-house
- Heavy investment in automation technology, creating an assembly-line process for rocket engines, which must be discarded after each use
- Next iteration of SpaceShipTwo will be modular, improving building efficiency and reducing costs

Competitive Landscape

- Virgin Galactic operates in the **Aerospace/Commercial spaceflight industry**
 - Estimated **market size: \$415 billion** in 2020 -> \$1.5 trillion by 2040
 - **6% YoY growth** (US Chamber of Commerce)
- **Blue Origin** (“New Shepard”)
 - Most direct competitor in space tourism race
 - Vertically-launched, reusable, suborbital spaceship
- **SpaceX** (“Falcon 9”), **Boeing** (“Starliner”)
 - Comparably sufficient funding
 - Orbital spaceship transportation for government



Trends and Outlooks

- Transformative vision of space for humanity
- 1) Advancing technologies, 2) Decreasing costs, 3) More available private capital
- **Risks:** 1) Too early stage, 2) Highly uncertain outcomes; 3) High capital expenditure; 4) New FAA regulations
- **Opportunities:** 1) Contracts with NASA, 2) Hypersonic travel aircrafts, 3) high barriers of entry

Overall, the industry as a whole is subject to highly uncertain outcomes. However, for SPCE to capture the full potential, it just needs to stand out amongst limited competitors - Blue Origin and SpaceX.

Comparables



Company	Market Cap. (\$B)	P/S (TTM)	YoY Revenue Growth (Q2-2020)	EBITDA Margin (TTM)	EV/EBITDA (TTM)	Leverage Ratio (D/E)	ROA (Annual)	Beta
Virgin Galactic (SPCE)	4.37	2733.01	-90.17%	-15,107%	-16.6	0	-32.2	N/A
Boeing Co (NYSE: BA)	170.14	2.55	-25.74%	-4.44%	-77.3	-6.72	-0.51	1.38
Lockheed Martin (NYSE: LMT)	106.39	1.69	10.81%	15.41%	12.0	3.35	13.48	0.96
Airbus SE (EPA: AIR)	50.64	0.86	-38.61%	1.32%	86.5	16.7	-1.15	1.73
General Dynamics Corporation (NYSE: GD)	40.77	1.06	-4.27%	12.26%	11.5	1.05	7.39	1.00
Northrop Grumman (NYSE: NOC)	52.34	1.51	5.16%	14.50%	12.8	1.65	5.71	0.77

Income Statement Overview



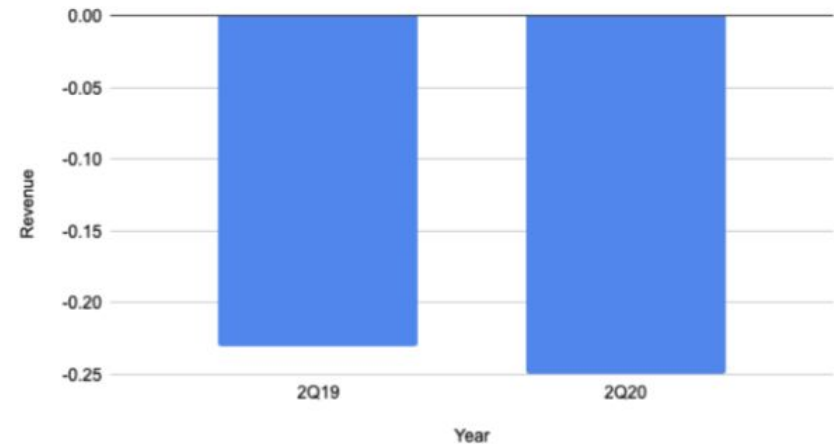
2020 Q2:

- **\$35,787 (85%)** YoY decrease in net revenue to **(\$122,448)** in 1H20.
 - EBITDA: **32%** YoY decrease to **\$(58,477)**; EPS: **30%** decrease in EPS to **\$(0.30)**.
 - Management cites pandemic-related reduction in operations.
 - Expected TAM expansion through new customer demand programs.
- Margins: **Operating Margin: -522%** (10.5 avg.); **Net Margin: -514%** (9.5 avg.); **EBITDA Margin: -245%** (16 avg.).

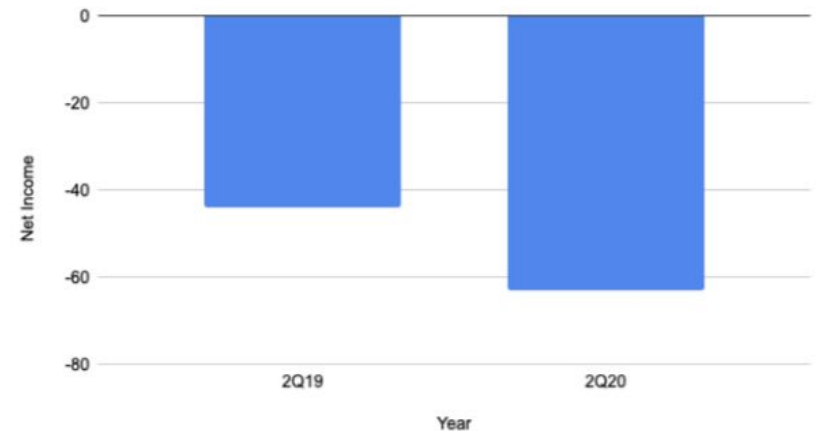
FY 2019:

- History of losses from 2017-2019: decreasing operating margins over this time with increasing revenue and increasing operating losses.
 - Driven by a decrease in Other Income **(-51%)** and an increase in SG&A **(-61%)**.
 - Net losses increased 53% from 2018-2019 to **\$210,935**.

Revenue vs. Year



Net Income vs. Year

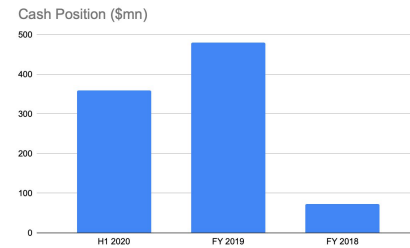


Balance Sheet and Cash Flow Statement Overview



Balance Sheet:

- **Assets:** \$491mn (H1 2020) vs. \$606mn (H1 2019) (19% drop)
 - Drop is attributable to a decrease in cash and cash equivalents
 - PPE increased slightly (up 14% to \$56mn)
- **Liabilities:** \$137mn vs. \$138mn (2019)
 - Nearly all liabilities stayed constant
 - Consumer deposits (\$80mn) make up the highest portion of long-term liabilities
- **Summary:**
 - Virgin Galactic is debt-free, but has no real income stream



Cash Flow Statement (First 6 months of Fiscal Year):

- **Cash Flow from Operations:** **-\$122mn** vs **-\$87mn** (2019)
 - Virgin Galactic still has no real revenue stream. Research and development have continued to increase
- **Cash Flow from Investing:** **-\$10mn** vs **-8mn** (2019)
 - Exclusively capital expenditures
- **Cash Flow from Financing:** **-\$1.5mn** vs. **\$101mn** (2019)
 - 2019 positive value is attributable solely to a transfer from parent company, Virgin Group
 - Cash flow from financing in 2020 is only from transaction costs

- **Untapped and growing market for space travel**
 - Commercial space market expected to grow 6% per year
 - Total addressable market of ~2M high net worth individuals
 - expected to grow at a 5.9% CAGR through 2023
 - “One Small Step” offering already has over 700 qualified prospects
 - Commercial space flight will be their bread and butter but they will leverage their tech and manufacturing experience to augment their service offerings and to expand
- **Strategic relationships and new applications for their technologies**
 - Relationships with NASA, Rolls Royce, and Boeing
 - also sees opportunities for agreements with international government agencies
 - Orbital Spaceflight initiative (12 clients)
 - includes Space Act Agreement with NASA for flights to the ISS
 - Demand for access to suborbital research and for delivering research payloads
 - already has interest from multiple government agencies and educational institutions
 - Commercial use for their technology in reducing travel time in international flights
- **Competitive advantages**
 - Iconic Virgin Atlantic Brand
 - Limited competition due to high barriers to entry
 - Experienced management team and an industry-leading flight team
 - includes former NASA chief of staff
 - Differentiated technology with highly specialized and vertically integrated capabilities (lower costs over time)

Macro:

- UK's Space Industry Act of 2018 + 2020 Regulations
 - Additional licensing required for British spaceports
 - Gov-funded spaceport developments

Industry (commercial aerospace):

- Largely uncharted territory, underdeveloped
- Foreseeable increase in regulations
- Safety of staff and passengers
- Relatively weak track record compared w/ competitors
 - Blue Origin well-tested vs. VG's 2 successful tests
 - Consistent delays, mismatch between Branson's attitude and technical expertise



Company:

- Continued losses financially
 - Rising SG&A and R&D costs since 2017
- High demand in capital expenditure
- Customer turnover (luxury experience + repeatability)
 - Current 600 customers at \$250k each
- Previous safety incidents
 - 2007 disaster of 3 deaths and 3 severe injuries in spaceship testing
 - 2014 crash leads to 1 death and 1 severe injury



Finance Vote



ESG Pitch

Key Issues	Opportunity	Risks
<p>Energy Waste</p>	<ul style="list-style-type: none"> ● Aircraft designed to reduce energy requirements for suborbital launch ● Spaceship and aircraft are reusable, with exception of rocket motor fuel and oxidizer ● Motor made from substance that does not need special or hazardous storage ● Utilizes sustainable aviation fuel 	<ul style="list-style-type: none"> ● Richard Branson has claimed that Virgin Galactic’s flights consume less than one Singapore-London round-trip. ● Experts say that 5 round trips is more realistic as a comparison ● 7 such trips if you consider the whole operation
<p>Debris</p>	<ul style="list-style-type: none"> ● Debris from past test launches, made improvements ● Successful flights in Dec 2018 and Feb 2019, in final stages of testing ● Expected to pass flight tests from Spaceport America ● Reusable spaceship minimizes space debris than one-use ships 	<ul style="list-style-type: none"> ● In 2014, a spacecraft broke apart in midair. The debris fell into the Mojave Desert

Key Takeaways:

- While commercial space travel of any kind may cause a carbon footprint and comes with its hazards, Virgin Galactic is mindful of possible risks and seeks to improve itself in terms of environmental awareness

Key Issues	Opportunity	Risks
<p>Target Audience</p>	<ul style="list-style-type: none"> ● Commercial space flight could significantly contribute to scientific research. ● If Virgin Galactic increases volume of space flights in the future, space research will be much more accessible and effective. ● Virgin Galactic plans to provide an affordable service for private companies to send small satellites to space. 	<ul style="list-style-type: none"> - Tickets for 2021 flights cost \$250,000. - Space tourism for the foreseeable future will be restricted to upper class elites and inaccessible for the majority of society.
<p>Safety Concerns</p>	<ul style="list-style-type: none"> ● Past criticisms about safety, have lead to improvements designed to increase safety and reduce human error. ● FAA requires four successful test flights to get commercial license. Reduces safety risk posed with commercial flight. 	<ul style="list-style-type: none"> ● 3 Killed in 2007 explosion. ● Crash in 2014 killed 1 and injured 1. ● Government investigation found widespread problems with Scaled Composites (company Virgin Galactic paid to train the pilots and build the rockets).

Key Takeaways:

- **Virgin Galactic's benefit to scientists and other companies as well as their safety improvements can outweigh the risks posed by the exclusiveness of their programs and past safety concerns.**

CEO - Michael Colglazier

- CEO since July of 2020; 4 months with the company
- Previously President of the Disney resort
- Annual total compensation \$1 M
 - Plus a performance bonus up to 150% of his salary & generous stock options

Executive and Board of Directors

- 13 executives: 5 women, 2 people of color
- 8 board members: 1 women, 2 people of color



Opportunities

- Diverse executive and board member expertise
- Executives have a strong background in space industry
- Relatively diverse board compared to its competitors (i.e. Blue Origin, SpaceX)

Risks

- Relatively new CEO without any experience in the space industry
- 2014 death of test pilot
 - Branson (founder) criticized with playing with people's lives to fulfill a self-aggrandizing fantasy

ESG Thesis

Highlights

- Reusable spacecraft technology limits the contribution of space junk, reinvents traditional space industry
- Robust vertically integrated supply chain
- Targeting researchers and scientists to make space research more accessible
- Safety is at the forefront of their manufacturing process
- Very experienced executives and board members within aerospace industries
- Decent diversity compared to competitors

Risks

- Nitrous oxide needed for Hybrid Rocket Motor >>> increased GHG emissions mostly just for commercial space travel use
- Target market is limited to high net worth individuals, cost is a major inhibitor towards access
- Deaths have resulted from spacecraft testing; **any major incident occurring after their public space travel launch could be very fatal to company**
- Possibility for military and weapon contracts?
- CEO is inexperienced in space industry, commercial experience at Disney may make up for this



ESG Vote