

# LUISS



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## **Going Public via SPACs: Structural Characteristics, Implications and Impact on the Space Economy**

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## **1. Introduction**

Among the several methods allowing companies to go public, Special Purpose Acquisition Companies have recently gained popularity as an alternative to traditional IPOs. SPAC IPO filings reached an all-time high in 2020 and 2021, in which SPACs raised funds with 248 and 613 IPOs, comprising more than half of the American IPOs. Nevertheless, retail investors started buying SPAC stocks only to realize substantial returns in a relatively short period, without understanding the underlying implications of such practice. This hype around the SPAC phenomenon eventually led the SPAC bubble of 2020/2021 to burst starting from the second quarter of 2021. SPACs are an innovative asset class for a variety of reasons, but before concluding that they represent the next disruption in securities markets, they must be analyzed from a broader perspective and in more detail. This thesis aims to solve this problem by reviewing the existing literature and drawing further conclusions about the basic structural characteristics of American SPACs, continuously comparing them to traditional methods for going public. To present a complete and clear picture of the SPAC mechanism, I will discuss how SPACs emerged and developed in different geographical areas, what is their typical lifecycle, what is the role of warrants, and the legal and accounting requirements surrounding such structure. This research has a double perspective, focusing both on the benefits and drawbacks related to going public via SPAC. In this regard, I will highlight how misaligned incentives of sponsors and shareholders play a determinant role in the SPAC structure, often leading to moral hazard scenarios and negative returns on the investment for investors, as in the case of the electric vehicle company Nikola Corporation. In a system where investors continue to lose money and sponsors continue to profit significantly from their promotes, regulatory and technical changes to the SPAC structure are necessary. In this regard, I will analyze and comment on the SEC Statement of 30<sup>th</sup> March 2022 regarding the increase in disclosure requirements for de-SPAC transactions, technological requirements for SPACs, and underwriter's liability for false representations or omissions of significant facts.

Moreover, this thesis analyzes the relationship between SPACs and the space industry. The emergence of SPACs allowed several space companies to raise capital in a faster and relatively easier way, but was this the right decision? Analyzing Rocket Lab's market performance, I find that the results are coherent with previous findings in SPAC literature, thus supporting the presence of negative post-merger returns over the long term for investors.

## 2. Different Alternatives to Go Public

Going public typically refers to when a company sells shares of stock to the public in order to raise additional capital and, consequently, expand the business and improve future profitability in a given market. There are several options for a company to go public, and I will begin my research by first analyzing the traditional methods in detail, and then addressing the non-traditional methods, focusing in particular on SPACs in the following chapters.

### 2.1 IPOs

The most common route to becoming listed is via an Initial Public Offering (IPO). An IPO, also known as a stock launch, is a public offering in which a company's shares are offered to institutional and, in some cases, individual investors [1]. There are a very limited number of shareholders in a pre-IPO private firm, including early investors such as the founders, family, and friends, as well as professional investors such as venture capitalists and angel investors [2].

The IPO process is lengthy and comprises various stages. Initially, the issue is registered with the market regulator (e.g. SEC in the United States, FCA in the United Kingdom, CONSOB in Italy) and a prospectus of information describing the planned offering in detail<sup>1</sup> is published. Then, a series of presentations, also called "roadshows", is run to publicize the issue, build a book of subscribers and gather information on the offering price.

Investment banks often assist the company by underwriting the IPO and arranging for the shares to be listed on one or more stock exchanges (e.g. NYSE, NASDAQ, Euronext). In this respect, the underwriting group and the issuing company enter into an underwriting agreement, which ensures that all parties involved in the IPO process understand their responsibilities and risks [3]. There are different kinds of underwriting agreements:

1. *Firm Commitment Agreement*: the underwriters acquire all securities offered for sale by the issuer, bearing the risk of under-subscription but gaining the gross spread between the purchase price from the issuer and the offering price to the public.
2. *Best Efforts Agreement*: the underwriters try to sell all of the issuer's securities, but they are not required to acquire the securities for their own account. Any security that has not been sold will be returned to the issuer.
3. *Mini-Maxi Agreement*: a form of best efforts underwriting that is not enforced until a minimum number of securities is sold. Once this threshold is reached, the underwriter may

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<sup>1</sup> Typically, the details included are the business plan, financial records, eventual risks in the market, and expected share price range.

sell securities up to the maximum amount permitted under the offering's conditions. If the required minimum number of securities sold is not met, the offering is withdrawn, and the investors' money is refunded.

4. *All or None Agreement*: if all securities are sold, the issuer receives all the proceeds, otherwise the issue is terminated, and investors get a refund.
5. *Standby Underwriting*: the standby underwriter guarantees to acquire the securities not purchased by shareholders and resell them to the public.

Generally, a business considering an IPO would employ a lead manager, also known as a bookrunner, to assist in determining a fair price for the shares to be offered.

When pricing an IPO, underwriters analyze a variety of factors to arrive at a price that is both low enough to encourage interest in the stock and high enough to attract sufficient capital for the firm. There are two basic methods for determining the price of an IPO [4]: either the firm establishes a fixed price at which its shares are offered to investors (the "fixed price offering"), or the price is established by the bookrunner's examination of confidential investor demand data in a 20% price band ("book building offering"). The most used approach by underwriters to establish the offering price is the discounted cash flow, which is the net present value of the expected future cash flows of the company. Other techniques include the equity value, the enterprise value, and comparable firm adjustments.

After the offering price is chosen, the underwriters form a selling group, known as a "syndicate", to sell the shares internationally. The underwriters keep a percentage of the profits from the sale of the shares as their fee, known as an underwriting spread. According to a PwC analysis based on public filings of 829 companies [5], costs to companies in underwriting fees range from an average of 3.5% to 7.0% of gross IPO proceeds. In the event of over-subscription<sup>2</sup>, the shares are allocated by a computerized pro-rata mechanism that guarantees impartial distribution of shares to investors.

IPOs may be used to raise additional equity capital for businesses, monetize the investments of private shareholders, and make current holdings or future capital raising easier to trade by becoming publicly traded. Once the company's securities are listed on a public exchange and traded in the open market, the money paid by the investing public, consisting of any individual or institutional investor who is interested in investing in the company, goes directly to the company (primary offering) and to any early private investors who choose to sell their holdings (secondary offering) as part of the larger IPO.

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<sup>2</sup> An over-subscription of an IPO happens if the number of shares available is less than the demand for them

When a company goes public via an IPO, the underwriters require company insiders such as executives and employees to sign a lock-up agreement, which is a legally enforceable arrangement that limits the sale of stock for a specific timeframe, known as the “lock-up period”, to manage post-offering supply and reduce the shares’ volatility in the first days of trading.

Under these circumstances, an IPO enables a firm to access a large pool of prospective investors to raise funds and liquidity for future growth and expansion, debt repayment, or working capital. This improves the company's visibility, reputation, and public image, which may boost sales and profitability in the market. The most frequent option for an individual investor to get shares is via a brokerage platform (e.g. TD Ameritrade, Fidelity, Degiro) that has received an allocation and seeks to distribute it to its customers.

Although an IPO has numerous advantages, it also has considerable expenses, mostly related to its process, such as accounting, legal and marketing fees, as well as the continuous necessity to disclose financial and business information via quarterly and annual financial reports. During these disclosures, the company may be required to share secrets and business strategies that might help competitors. Because of the extensive legal requirements and the high cost of the process, IPOs often include law firms with significant specializations in securities law, such as the Magic Circle firms in London and the white-shoe firms in New York City. Increased transparency resulting from quarterly reporting requirements may often help a firm get more favorable loan conditions than a private company.

## **2.2. Dutch Auction IPOs**

A Dutch auction is a market structure in which the price of an item is set by aggregating all bids placed by investors to find the maximum price at which the whole offering may be sold [6]. If a company uses a Dutch auction for its IPO, investors submit bids for the number of shares and the price at which they are ready to acquire them.

For instance, a potential investor may submit a bid for 200 shares at \$10, whereas another bidder may offer \$9 for 450 shares. Once all bids have been made, the placement is given to the highest-bidding investors in descending order until all shares have been assigned. Nevertheless, the final price paid by bidders corresponds to the last successful bid [7]: considering the previous example, if the last successful bid is \$7.5, all investors will pay \$7.5 regardless of how much they offered initially.

The greatest advantage of Dutch Auction IPOs is their intention to democratize public offerings by allowing retail investors to exhibit a decision-making power in setting the IPO’s price. On the other hand, because the auction is accessible to every kind of investor, there is a risk of less accurate research compared to the one performed by investment bankers which could lead to an incorrect price estimate [6].



Google's IPO in April 2004 was the most remarkable example of a Dutch Auction process for an IPO. Google's Dutch auction established a suitable offering price and met the company's financial and cultural objectives, despite opposition from outsiders and early mistakes [8].

### **2.3. Direct Listing**

A direct listing occurs when an IPO is performed without investment banks acting as underwriters. Direct listings omit the underwriting process, which increases the issuer's risk if the offering is unsuccessful but may lead to a higher share price. In the event of a direct listing, the company and its stakeholders sell existing shares rather than offering new ones [9]. This implies that a direct listing lacks characteristics that are typical of a conventional IPO, such as lock-up agreements, book-building, and price stabilization efforts. As a result, the process increases liquidity for shareholders and, since underwriting fees are not paid, is often cheaper than an IPO. In a direct listing, the share price is purely determined by supply and demand (market-based pricing), resulting in higher share price volatility compared to IPOs in which the share price is decided in advance.

Because no underwriters are publicizing the issue, a direct listing is only viable for companies with brand-name recognition and an appealing business. Spotify and Slack are an example of two renowned unicorn companies that have gone public via direct listings, respectively in April 2018 and June 2019. Before going public, the reputations and the business model of both firms were already established as they already had a large customer base. Because investors tend to invest in firms they use and comprehend, the number of individuals who invested in Spotify and Slack was remarkable. According to the Financial Times, Slack spent around \$22 million in fees to Goldman Sachs, Morgan Stanley, and Allen & Co (the same trio responsible for the Spotify listing) for its direct listing. Uber, whose market capitalization is almost two times that of Slack, gave \$106 million to 29 banks for a standard IPO, thus showing how going public via IPO entails higher costs. The remarkable efforts of Slack and Spotify echo Google's decision to bypass the conventional IPO process in 2004 by going public via Dutch Auction.

### **2.4 Reverse Merger**

A Reverse Merger (or Reverse Takeover) is a non-traditional method for a company to go public. In a Reverse Merger, a private operating company collaborates with a "shell promoter" to identify an appropriate public shell company with which it merges in a second stage [10]. As the main purpose of a reverse merger is to transform a private company into a public one without proposing to raise capital (it is not a capital-raising transaction), the procedure is less reliant on market circumstances. A public shell company has only nominal operations and cash (and cash equivalents) is its only nominal asset. A public shell company exists because either it was a former operating company that

went public and then ceased operations and liquidated its assets or it never had any operations but was formed from scratch for the specific purpose of creating a public shell [9]. In the first scenario, shell promoters seize control of deceased operating firms by purchasing the majority of their shares; in the second case, shell promoters incubate the shells registering the company's shares and filing the required financial reports.

In the merger, the shareholders of the private company get a majority stake in the public shell company in return for their shares of the operating company. After the merger, the business of the operating company is controlled by the same shareholders and managed by the same stakeholders, but it is now incorporated into a public company. Under these circumstances, the shell company's name is changed to the private operating company's name, its directors and officers are superseded by the private operating company's directors and officers, and its shares keep trading on the same stock exchange [9].

Despite representing an easier method to go public, Reverse Mergers still require transparent disclosure, conduction of due diligence, and compliance with regulations.

#### **2.4.1 Reverse Mergers are cheaper than IPOs: A misleading pitch?**

It is generally believed that Reverse Mergers are cheaper, in terms of both money and time, than conventional IPOs, but is this statement always appropriate?

As stated by William K. Sjostrom, "*the pitch is misleading because Reverse Mergers and IPOs are not substantively equivalent*" [11]. On the one hand, IPOs require the presence of one or more underwriters who helps the company to facilitate its share's listing on a stock exchange and to raise capital. On the other hand, the main objective of a Reverse Merger is not to raise capital since no shares are purchased; instead, the public shell company issues shares in return for the private operating company's shares. In this scenario, the fees paid by the private operating firm to the promoter, and parties responsible for arranging the deal (accountants, lawyers) constitute the only cash that changes hands. Furthermore, without the support of underwriters who support the offering by backing the company's reputation through "underwriter certifications" and guaranteeing liquidity in the secondary market, the shares of a company that went public via a Reverse Merger may be relatively illiquid and will probably trade at a discount, thus decreasing the company's attractiveness and profitability [10]. Nevertheless, because filing for an IPO and finding an underwriter requires several thresholds (in terms of annual revenue, net income, and growth rate) for a company, some companies do not have the option to go public via an IPO, highlighting how the comparison between Reverse Mergers and IPOs is irrelevant [10]. Therefore, a Reverse Merger may be cheaper than an IPO in certain scenarios, but it makes no sense to compare such different methods.

Reverse Mergers are not necessarily cheaper and quicker than IPOs, and we will examine the accuracy of both statements.

Firstly, a \$50 million IPO will cost a company approximately 18% of the offering proceeds (\$9 million), including underwriter discounts, underpricing, and legal, accounting, filing, listing, printing, and registrar fees [12]. Contrarily, as calculated by the Halter Financial Group, a Reverse Merger typically costs between \$100,000 and \$400,000, but this range does not comprehend the value of the equity stake retained by the shell promoters and the agents involved in the deal [13]. This value is usually between 10% and 20%, therefore, if the shell company's market capitalization is \$50 million (assuming the same value as the IPO to make a fair comparison), this stake is worth from \$5 to \$10 million. Therefore, certain Reverse Mergers may be more expensive than IPOs.

Secondly, according to some sources [14], an IPO can be completed in 15 to 20 weeks, while, according to Feldman, Reverse Mergers take between a few weeks to four months to be effective. Even if these time frames are not commonly shared by scholars, we can observe that, comparing the high-end IPOs' range with the low-end Reverse Mergers' range, the latter method for going public may not be quicker than the former one.

### **3. Historical Background**

In this chapter, I will delve into the origins of the SPAC phenomenon, distinguishing its emergence in different geographical areas. As the emphasis of the thesis is on American SPACs, I will analyze the causes and events that transformed American SPACs from blind pools to an investment vehicle that comprised more than half of American IPOs in 2021. Furthermore, I will examine the usage, development, and regulatory framework of SPACs in Europe and Asia, highlighting the differences and similarities with the American system.

#### **3.1 Emergence of SPACs in the USA**

The legal history paper written by Ross Greenspan [15] analyzes in-depth the historical background of American SPACs, helping us to understand why such a phenomenon started and how we arrived at the SPAC bubble of 2020. The author distinguishes four generations of SPACs, but I have personally added the fifth generation, which relates to the period after March 2021, when the SPAC bubble burst.

##### **3.1.1 First-Generation SPACs (1992 – 1999)**

According to some commentators, modern SPACs may be traced back to the English South Sea Bubble<sup>3</sup> in the 18<sup>th</sup> century, when blank checks were first cited as blind pools [16]. The blind pools were brought to U.S. capital markets as “investment trusts” in the early 1920s, but they disappeared with the onset of the Great Depression [17].

SPACs as “blank check companies” arose in the United States as a workaround for new SEC regulations enacted in reaction to 1980s boiler room frauds. By the conclusion of that decade, over 70% of the penny stock<sup>4</sup> offers from 1988 and 1989 were blank check offerings<sup>5</sup>. In that period, state securities officials discovered that penny stock investors lost an estimated \$2 billion per year due to massive fraud in penny stocks, a significant portion of which must have occurred in blank check businesses. When a private firm was announced to be acquired by a blank check management team, it was common practice for the team to exercise its warrants in anticipation of a positive reaction from the market and dump the shares after the price increase (“pump and dump scheme”) [16].

To safeguard investors, the U.S. Congress passed the Penny Stock Reform Act of 1990 (PSRA), which restricted the offering of blank check companies and instructed the SEC to create special rules

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<sup>3</sup> South Sea Company, for instance, was established in 1711 as a blind pool to engage in slave traffic with Spanish America, based on the expectation that the War of the Spanish Succession would finish with a treaty allowing such commerce [17].

<sup>4</sup> A penny stock typically refers to the stock of a small company that trades, usually on OTC markets, for less than \$4 per share, has a market value less than \$50 million and stockholder’s equity less than \$5 million [80].

<sup>5</sup> There were around 2,700 blank check offers between 1987 and 1990 [81].

*“with respect to registration statements filed by an issuer that is a blank check company.”* Consequently, in 1992 the SEC enacted Rule 419, which governs offerings of blank check companies by establishing several regulations against the misapplication or misappropriation of shareholder capital during the pre-deal period.

At this point, SPACs were intentionally designed to offer a new investment opportunity to shareholders, but at the same time escape the penny stock classification by pricing their IPOs at \$6, \$8, or \$10 per share, therefore generating at least \$5 million in shareholder equity and exempting the SPAC from Rule 419 compliance.

In November 1992, the first SPAC, Information Systems Acquisition Corporation, was established as a “Specified Purpose Acquisition Company”. In 1993, the company went public at \$6 per share and was being traded only in the Over The Counter (OTC) market. On March 2, 1995, the firm merged with Human Designed Systems, obtaining poor results<sup>6</sup>. However, the firm ended up changing its name to Neoware Systems Inc. and being acquired by a subsidiary of Hewlett-Packard for \$16.25 per share.

Between 1993 and 1994, the investment banker David Nussbaum<sup>7</sup> formed thirteen SPACs, of which twelve successfully merged, targeting specific industries or geographic areas and overcoming the widely criticized concept of 1980s blank check companies. Nonetheless, this very first generation of SPACs was overshadowed by the IPO boom of the dot-com era, where investors shifted their interest towards smaller growth companies going public via traditional IPO, such as Amazon.com. After being suspended for 30 days from the securities sector, Nussbaum founded the investment bank EarlyBirdCapital, which has played an important role<sup>8</sup> in the SPAC market.

The actions taken by the National Association of Securities Dealers (NASD) in 1997, which resulted in the revocation of licenses of twenty-nine brokers and the CEO of GKN Securities Corporation<sup>9</sup>, represented another impediment to the blank check market, which froze until 2003 [16].

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<sup>6</sup> In late 1990s, the firm traded at \$1 per share, thus being categorized as a penny stock [15].

<sup>7</sup> Commonly recognized as the inventor of SPACs, along with the lawyer David Miller [15].

<sup>8</sup> Until 2014, 70% of SPACs were underwritten by EarlyBirdCapital and its peers [15].

<sup>9</sup> GKN Securities Corporation represented the main promoter of blank checks at the time [16].

### 3.1.2 Second-Generation SPACs (2003 – 2011)

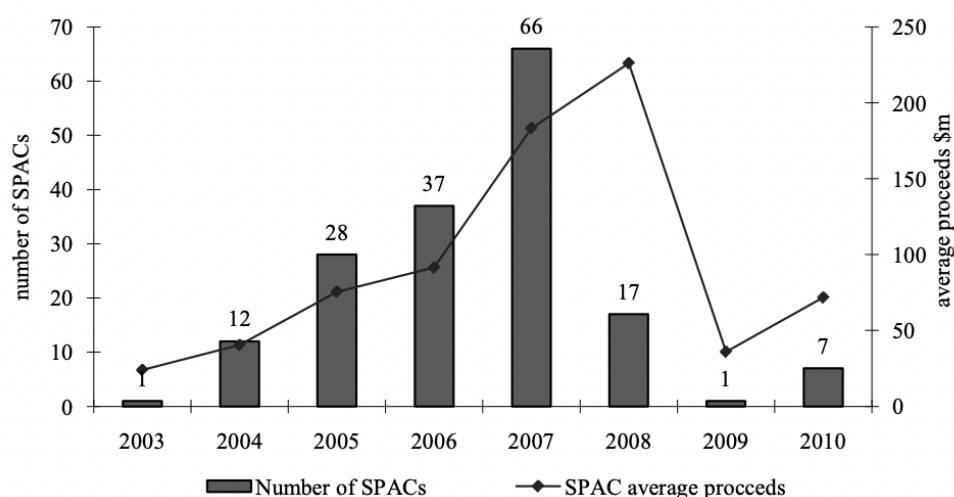


Figure 1. Number of SPACs and the average amount raised between 2003 and 2010 [18].

The second generation of SPACs arose in May 2003, when EarlyBirdCapital filed an S-1 for Millstream Acquisition Corporation and, in 2004, completed the business combination with NationsHealth Holdings, a medical products, and prescription discount services company. From that point SPAC IPOs gained popularity, raising \$485 million in 2004, \$2 billion in 2005, and over \$12 billion by 2007, with important investment banks (Deutsche Bank, Merrill Lynch, Citigroup<sup>10</sup>) managing SPAC offerings. This volume of capital was not provided by individual investors, but rather by hedge funds, which started to engage in greenmail<sup>11</sup> and arbitrage by using the mechanics of shareholder voting.

In 2007 the AMEX (now known as “NYSE”) began authorizing the listing of SPACs, while the NASDAQ followed one year later. Due to the Global Financial Crisis, the supply of new SPACs fell, raising only \$3.8 billion in 2008. Despite the success of some of the largest SPAC IPOs and the emergence of bulge bracket investment banks in the SPAC market, the second generation of SPACs was still afflicted by inefficiencies. Between 2010 and 2011, NYSE and NASDAQ reacted to the greenmailing problem by modifying their SPAC-related listing criteria to include tender offer mechanisms after the target announcement and before the conclusion of the acquisition instead of a shareholder vote.

<sup>10</sup> Goldman Sachs and JP Morgan started to engage in SPACs from 2016 [15].

<sup>11</sup> Through this practice, hedge funds negotiated the sale of their stake in the SPAC for a premium above their pro-rata share of the trust funds, using the threat of withholding their vote, which could cause the dissolution of the company and a complete loss for SPAC founders [17].

It would take another decade for SPAC IPOs to reach the 2007 level of IPO proceeds, but as the global recession of 2008-2009 faded, SPAC IPOs started to surge from 2010, resulting in gross IPO proceeds of \$18,972 billion between 2010 and 2017 [17].

### **3.1.3 Third-Generation SPACs (2011 – 2017)**

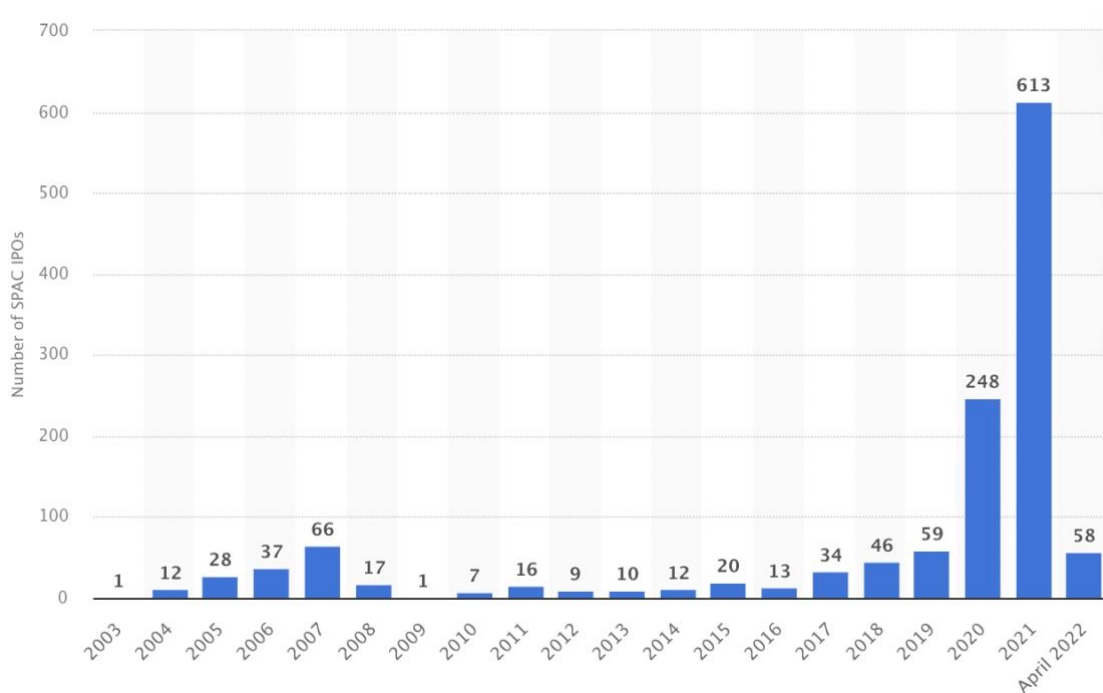
SPACs were a niche investment structure with little public knowledge and perception until at least 2017. The third generation of SPACs to go public following the global financial crisis adopted the form of SPACs now in existence, offering \$10 units with \$11.5 warrants. Starting from the late-second generation of SPACs, a group of hedge funds known as the “SPAC Mafia” arose. One research defines the SPAC Mafia as a 13F filer who owned at least 100,000 shares of 10 SPACs between the IPO and merger announcement from 2010 to June 2020 [19].

The percentage of SPAC IPOs is about 5% for each 2012, 2013, and 2014, and less than 2% of overall IPO proceeds for each year. In this period, supply comes from experienced operators and demand comes mostly from the SPAC Mafia.

Since 2015, when energy-focused transactions were brought to market to pursue distressed energy operators after the oil price collapse in late 2014, there has been a growing interest in SPACs. By the end of 2016, the two largest investment banks Goldman Sachs and JP Morgan entered SPAC underwriting due to the expanding supply of SPAC offerings and opportunities in distressed energy. SPAC IPOs in 2015 and 2016 witnessed the raising of \$3.9 and \$3.5 billion as a result of the interest

### 3.1.4 Fourth-Generation SPACs (2017 – March 31<sup>st</sup>, 2021)

After the issuance of NYSE’s revised listing regulations for SPACs, SPAC IPOs raised \$10 billion in 2017 and accounted for 20% of all US IPO proceeds. Following their increasing popularity over the last decade, SPAC IPO filings reached an all-time high in 2020 and 2021, in which SPACs raised funds with 248 and 613 IPOs, respectively [20]. However, as shown in *Figure 2.*, SPACs experienced a decline starting from the second quarter of 2021.



*Figure 2. Number of SPAC IPOs in the United States from April 2003 to April 2022 [20].*

According to Goldman Sachs, in 2020 and 2021, SPAC IPOs comprised more than half of the IPOs in the U.S, while SPAC mergers accounted for around 22% and 34% of corporations that went public in those years, respectively. In 2019, SPAC IPOs raised \$13.6 billion, which is more than four times the value they raised in 2016, and raised \$83.4 billion in 2020 and \$162.5 billion in 2021 [21].

During their boom, SPACs attracted prominent underwriters such as Goldman Sachs, Deutsche Bank, Bank of America, Citigroup, and Credit Suisse, as well as many celebrities (including influencers or professional athletes) [23]. In particular, since purchasing and launching space enterprise Virgin Galactic in 2019, the famous Social Capital CEO Chamath Palihapitiya has established numerous SPACs. After the pandemic started to spread in March of 2020, interest rates and the Federal Reserve’s recommitment to zero rates seem to have encouraged hedge funds to expand investments in SPACs [15].



### 3.1.5 Fifth-Generation SPACs

During the period between the autumn of 2020 and the spring of 2021, the SPAC market expanded into a full-fledged bubble, crashing violently in the spring of 2021 [24]. Starting from March 2021, short-sellers increased their bearish positions<sup>12</sup> against SPACs (*see Figure 4.*) [25]. Even if some investors probably hedged their positions in SPACs, the common belief was that SPACs were overvalued.

SPACs have collected only \$9.6 billion as of March 13<sup>th</sup>, 2022, which is a low value with respect to the previous two years [21]. The recent poor market performance of SPACs led to an increase in redemption rates and a decrease in the enthusiasm for associated PIPE (Private Investment in Public Equity) deals. Ivana Naumovska, an INSEAD professor, predicted the collapse of SPACs by noting that the hype and enthusiasm surrounding them was already evident in 2010 with reverse mergers<sup>13</sup> [26].

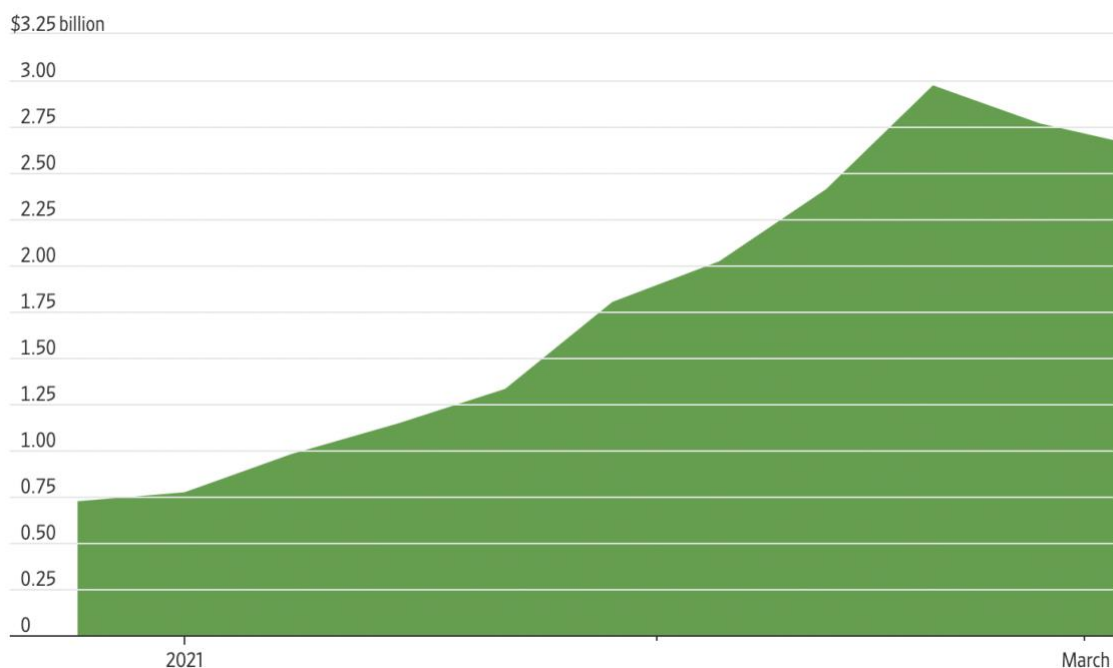


Figure 4. Value of SPAC shares shorted from 31<sup>st</sup> December 2020 to 9<sup>th</sup> March 2021 [25].

### 3.2 Emergence of SPACs in Europe

SPACs' structure and performance on European capital markets were originally explained by Ignatyeva, Rauch, and Wahrenburg [27]. European SPAC IPOs began in 2005, only two years after

<sup>12</sup> According to data from S3 Partners, the dollar worth of bearish wagers on shares of SPACs has increased to almost \$2.7 billion from \$724 million at the beginning of the year.

<sup>13</sup> Reverse Mergers boomed throughout the middle of the 2000s, surpassing IPOs in certain years, and peaked in 2010 before plummeting precipitously in 2011 [26].

the first SPAC went public in the United States. Since that day, SPACs in Europe have become appealing investments due to the fact that they were subject to far less regulatory measures than conventional private equity in Europe.

In addition, European SPACs are not subject to the same strict requirements as their American counterparts. For instance, target companies are not necessarily required to have a fair market value of at least 80% of the net assets held in the European SPAC's trust account. In this regard, Ignatyeva, Rauch and Wahrenburg state that this is a major advantage both for target companies and investors because "*SPAC founders who choose smaller targets with more operational profitability also show a better stock performance*".

Moreover, European SPACs may disclose the potential targeting company they want to acquire, thus helping investors to better understand their business model. From 2005 to 2011, Ignatyeva, Rauch, and Wahrenburg collected data on 19 SPACs and found that neither the acquisition emphasis nor the investors for these companies were necessarily European. European SPACs have several institutional traits with their American counterparts, yet the results of their investments are not uniform, according to the authors of this study. Under these circumstances, the European markets seem to be more of a proxy for non-European investors to take advantage of favorable tax considerations and laws than a competitive advantage for European investors [28].

According to data provided by the Statista Research Department, while the frequency of SPAC IPOs in the United States has increased gradually over the previous six years, it has remained much lower in Europe<sup>14</sup>. The annual number of SPAC IPOs in Europe has yet to surpass nine, while the number of SPAC IPOs in the United States has steadily risen, hitting a notable high point in the end of 2021. Similar results are found in Asia, where only few stock exchanges authorize SPACs, but regulatory agencies in tech centers such as Singapore are starting to consider them [29].

### **3.3 Emergence of SPACs in Asia**

Despite Asia's vibrant private equity sector, SPACs have not yet gained traction in many Asian markets. Surprisingly, only the Asian markets of Malaysia and South Korea currently regulate SPACs, almost mirroring the regulations in the United States [28]. In South Korea, regulations governing SPACs require that: a minimum of 90% of IPO proceeds are held in the trust account; the SPAC has three years (one year more than American SPACs) to complete a merger; the SPAC does not disclose a target company before its IPO. Similarly, in Malaysia, regulations governing SPACs require that: a minimum of 90% of IPO proceeds are held in the trust account; the SPAC has three years to complete a merger; at least 80% of the amount held in the trust account must be used for to

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<sup>14</sup> During the first three months of 2021, Europe accounted for fewer than 5% of SPAC IPOs worldwide [20].

acquire the target company; the SPAC has three years to complete a merger; SPACs' mergers must be approved by at least 80% of shareholders.

In recent years, however, international investors have increasingly used SPAC investments to accomplish mergers and acquisitions with Chinese companies, which are interested in entering business combinations with U.S. SPACs because they gain higher visibility and liquidity by being listed on American stock exchanges.

In light of the SEC's decision in 2011 to delist a number of Chinese businesses from the US capital markets, Shachmurove and Vulanovic compare the performance and features of SPACs with acquisition concentration on China with the remaining SPACs [52]. They conclude that there is no statistically significant difference between the two subsamples in terms of institutional features and that Chinese-focused SPACs exhibit higher returns for their shareholders than other SPACs.

## 4. Structural Characteristics of SPACs

This chapter will concentrate on the structural characteristics of SPACs. I will start by recalling and delving into the definition of a Special Purpose Acquisition Company. Then, I will review the various steps and legal requirements necessary to establish a SPAC and finalize its merger with the target company. In explaining the SPAC mechanism, I will conduct an extensive analysis on the function of each party in the establishment and development of a SPAC, with particular focus on sponsors. Moreover, I will discuss the structure and characteristics of public warrants in a SPAC. Last but not least, I will outline the main accounting and reporting procedures that are required to go public via SPAC.

### 4.1 What is a SPAC?

A Special Purpose Acquisition Company (SPAC) is a publicly held investment vehicle founded for the sole purpose of raising investment capital via an initial public offering (IPO) and then acquiring or merging with an existing private company, which goes public.

Since SPAC investors can acquire shares before the merger happens and they are unaware of the specific company selected for the merger, SPACs have been defined by some commentators as the “poor man’s private equity funds”<sup>15</sup> [30]. After the merger is completed, a SPAC is typically listed on one of the main stock exchanges<sup>16</sup>.

The SPAC is also known as a “blank-check company” because it does not have any existing business operations and investors are unaware of the firm in which it will eventually invest. When issuing the IPO, the management team of the SPAC chooses one or more investment banks as underwriters, who draft a prospectus that focuses mostly on the sponsors and less on the company’s performance history and revenues, given that the SPAC lacks such information [31].

When a SPAC and a target agree to merge, the SPAC’s shareholders have the option of redeeming their shares instead of participating in the merger [24], and the paper written by M. Klausner, M. Ohlrogge and E. Ruan highlights that this option is almost always exercised<sup>17</sup>, thus leaving new shareholders to suffer the expenses associated with SPAC mergers.

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<sup>15</sup> SPACs operate similarly to private equity firms since a group of investors raises capital to make strategic acquisitions of businesses, with the primary distinction being that SPACs do public rather than private offerings [46].

<sup>16</sup> NASDAQ, NYSE, Singapore Exchange, London Stock Exchange, Euronext Amsterdam, Hong Kong Stock Exchange are the most common stock exchanges where SPACs are traded [78].

<sup>17</sup> Rate of redemption of 73% in a group of 47 SPACs that merged between January 2019 and June 2020 and of 80% in the first two months of 2022 [29]. According to a WSJ study, if investors purchase units in a SPAC public offering, redeem their shares, and retain or sell their warrants and rights, their annualized return with no downside risk exceeds 10% [85].

The fair market value of the target company must be at least 80% of the SPAC's net assets held in the trust account<sup>18</sup> [31]. If a SPAC does not accomplish a merger within its lifetime (typically 2 years, but it may change<sup>19</sup>), the SPAC is dissolved and it liquidates and returns all capital, with interest but adjusted for bank and broker fees, to its public shareholders<sup>20</sup>. Since 2009, around 10% of SPACs have liquidated [32].

The management of the SPAC is generally delegated to officers and directors selected by the sponsors, and is usually composed by a team of three or more people with previous experience in private equity or mergers and acquisitions<sup>21</sup>. The reputation, experience, and abilities of managers guarantee that SPACs will produce value by identifying an appropriate acquisition target. In this regard, H. Kim uses a sample of 158 SPACs that went public between 2003 and 2008 to demonstrate that SPAC managers have more industry and managerial experience than standard IPO managers. Furthermore, Kim finds out that management quality is positively correlated with the probability of concluding a business acquisition [16].

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<sup>18</sup> Similar to an escrow arrangement when purchasing a home, this money is kept by a third party until the transaction is completed or the SPAC is liquidated for failing to accomplish an initial business combination within the specified time frame [37].

<sup>19</sup> SPAC's governing instruments may allow to extend the two-years deadline (for six months), but shareholder approval is necessary [37].

<sup>20</sup> The sponsor does not enjoy a liquidation distribution if the merger fails.

<sup>21</sup> According to Vulcanovic and Shachmurove, a typical SPAC management team consists of six individuals who are, on average, 51.08 years old [16].

## 4.2 Typical SPAC Lifecycle

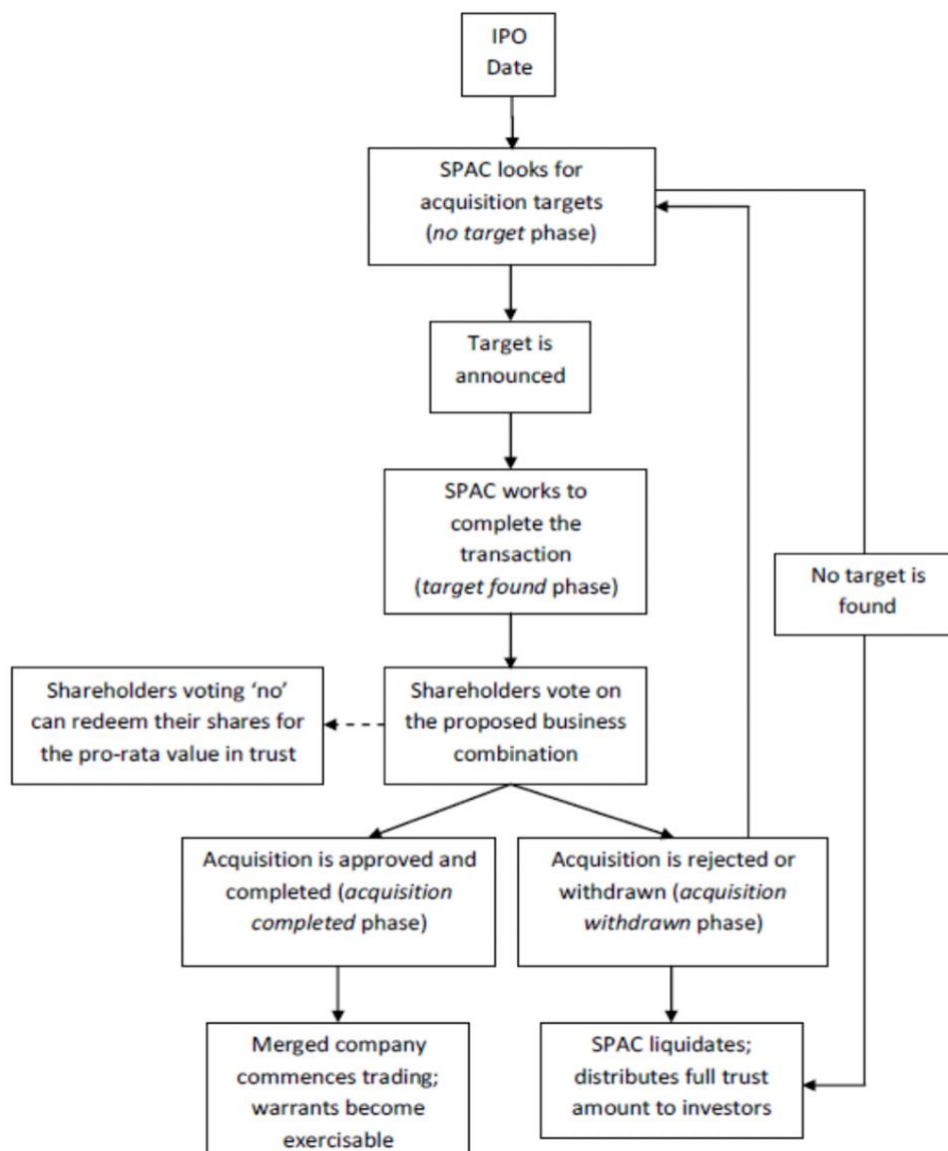


Figure 5. The SPAC's lifecycle [16]

Initially, a sponsor purchases a block of shares at a nominal price that will be adjusted to equal 25% of the IPO proceeds or, equivalently, 20% of post-IPO equity [24]. This block of shares, known as the sponsor's "promote" or "founders shares", represents the sponsor's reward for establishing the SPAC and supporting its management while the SPAC searches for an existing private firm to go public.

Then, the sponsor files Form S-1 and forms a company (the SPAC), which, as a shell company, does not yet engage in operational activities. Form S-1 explains the new company's funding requirements, the nature of issuing securities, the whole underwriting agreement, conflicts of interest between SPAC sponsors and potential investors, the intended business, the management team's experience, the creation of escrow accounts into which all cash obtained during the IPO will be put, and how the

profits from this fund will be utilized if the SPAC is unable to complete the acquisition and must liquidate [16].

Once Form S-1 is certified by the SEC, the sponsor collaborates with an underwriter, who gets an estimated fee of 7% [16], to take the SPAC public via an IPO and discloses the essential information in the SPAC IPO prospectus. At this point, public investors acquire units<sup>22</sup> in the SPAC's IPO in return for their capital contribution. In certain SPACs, a portion of the revenue generated by the sponsor's investment is contributed to the trust to support the return to IPO investors. In its initial public offering, a SPAC offers units that include a share, a warrant, and, in certain circumstances, the ability to buy a fraction of a share for free when the merger is finalized [24]. Typically, units are indicated by appending the letter "u" (for unit) to the ticker symbol of SPAC shares [33].

The proceeds from the SPAC's IPO are put in an interest-bearing<sup>23</sup> trust account and invested in liquid Treasury notes. The assets in the trust may be used to acquire a private company within two years, eventually redeem the shares (at \$10.00 plus the eventual interest generated by the Treasury notes) or liquidate the shareholders if no merger happens.

Once a merger has been identified, a proxy vote is held for SPAC shareholders to either accept or refuse the merger, and at most 20% or 30% of shareholders, depending on the SPAC's formation date<sup>24</sup>, may vote against the merger to be approved [34]. In certain cases, the shareholder vote is replaced by a tender offer in order to avoid the greenmailing phenomenon.

For the period 2003 to 2010, Cumming, Hass, and Schweizer analyzed 139 SPACs to identify the characteristics that influence merger approval [35]. According to their findings, mergers are more likely to be approved by management teams that are less experienced. However, a company's management expertise and board of directors do not have a beneficial effect on its acquisition chances. They argue the endorsement of well-known underwriters and syndicates, as well as their quantity, is negatively correlated with deal approval, while the blockholder structure has the greatest impact on transaction approval. In detail, the chance of a merger approval is negatively correlated with the levels of hedge fund and private equity fund ownership (active investors blockholdings), but positively correlated with the level of voting rights by SPAC management. A similar study conducted by Lakicevic, Shachmurove, and Vulanovic on a sample of 163 SPACs that either merged or liquidated between 2003 and 2012 states that the timing of the merger announcement, the deals focused on China and deals underwritten by EarlyBirdCapital are positively correlated with merger likelihood [36].

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<sup>22</sup> Each unit is priced at a nominal \$10.00 by convention.

<sup>23</sup> As reported by the SEC, "*SPACs generally invest the proceeds in relatively safe, interest-bearing instruments, but investors should carefully review the specific terms of an offering as there is no rule requiring that the proceeds only be invested in those types of instruments*" [37].

<sup>24</sup> While the threshold was 20% from 2003 to 2006, it raised to about 30% from 2006 to 2008, with a few SPACs having a 40% threshold. Only a few SPACs officially kept the threshold feature after the 2008 global financial crisis [16].

At this point, the de-SPAC transition starts. In situations where the SPAC does not seek the approval of public shareholders since some shareholders, such as the sponsor and its affiliates, hold sufficient votes to approve the transaction, the SPAC will provide shareholders with an “information statement”<sup>25</sup> prior to the finalization of the merger [37]. If a SPAC is not obliged to provide shareholders with a proxy or information statement<sup>26</sup>, investors will get a “tender offer statement” including information on the target firm and redemption rights. The SPAC’s IPO prospectus, periodic reports, proxy, information statement, and tender offer statement may all be reviewed in the SEC’s EDGAR database [37].

Concurrently with the (eventual) merger, the sponsor and/or other parties acquire shares in PIPEs, providing additional capital for the SPAC that is necessary to finalize the transaction. Even though the SPAC is already public and has been authorized by the SEC, the target company must also get regulatory permission. Once shareholders approve the SPAC merger and all regulatory issues are resolved, the merger will be finalized, and the target company will become a public company [38]. After the merger, the public SPAC investors, the private SPAC investors, and the sponsor each hold a small portion of the equity of the newly combined firm (*see Figure 6.*).

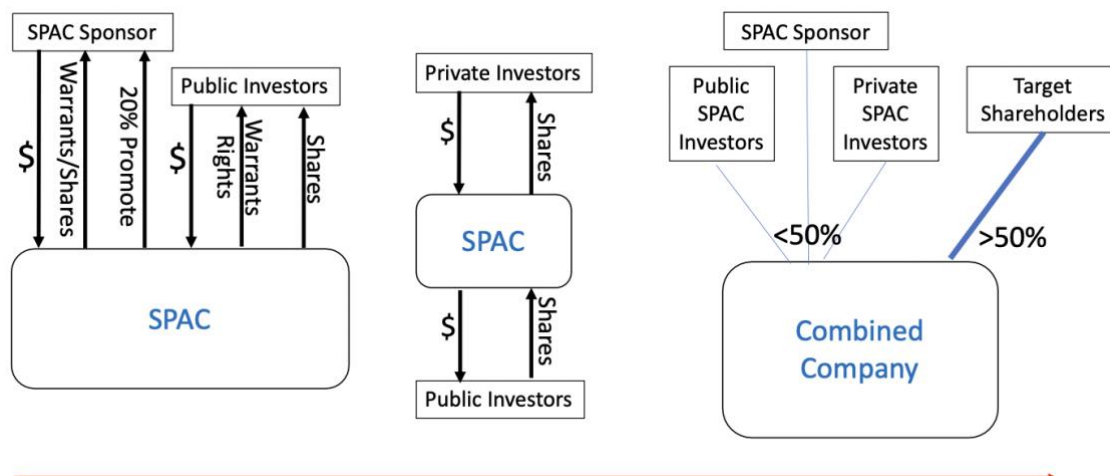


Figure 6. Equity's ownership after going public via SPAC [24]

While there are several methods to arrange the initial business combination, the combined company resulting from the transaction is a publicly-traded company that runs the operations of the target

<sup>25</sup> The proxy or information statement will include essential information about the business of the company that the SPAC wishes to acquire, the company's financial statements, the interests of the parties to the agreement, and the terms of the merger, including the capital structure of the combined company [37].

<sup>26</sup> This happens when a SPAC is not required to obtain shareholder approval of the transaction [37].



operating company [37]. Finally, the SPAC stock's ticker is changed<sup>27</sup> to match the acquired company's name, and the stock begins trading on a major stock exchange.

### **4.3 The Sponsor(s)**

A SPAC is established and managed by a sponsor, who may be affiliated with a private equity, venture capital, or hedge fund and may be a single person or a group of people. Typically, sponsors have substantial knowledge in certain industries or business sectors, which may aid in the completion of the merger.

In return for their contributions to the establishment and maintenance of the SPAC, sponsors receive abundant compensation, taking a “promote” of 20% of the SPAC's post-IPO shares for a nominal price. Sponsors of SPACs also profit from an earnout component, which allows them to gain more shares if the stock price reaches a predetermined objective within a specific time period, thus resulting in a further dilution. SPAC redemptions, therefore, compound the per-share consequences of dilution and cash dissipation. Under these circumstances, M. Klausner, M. Ohlrogge, and E. Ruan find out that, typically, a SPAC produces just \$5.70 per share in net cash in its merger, which indicates that the sponsor, the IPO investors, the underwriter, and other consultants have taken \$4.30 per share. This cost will be borne either by non-redeeming shareholders or target shareholders, whereas sponsors will typically enjoy high rates of return on their investment. Therefore, a merger must generate a surplus of value sufficient to cover these expenditures, but this is difficult since sponsors seeking to benefit from their promote will have a strong incentive to form SPACs even if the merging companies are not promising in terms of future growth and value. In fact, if the SPAC does not merge with a private company within two years, shareholders get liquidated, and sponsors lose their investment. In this regard, Jenkinson and Sousa studied a sample of 58 SPACs that completed a merger between 2003 and 2009 to find out that numerous acquisitions are authorized despite expected negative post-merger returns [39].

This belief that many value-destroying acquisitions are authorized due to incentives aligned in favor of SPAC management is widespread in the financial literature: besides Jenkinson and Sousa (2011), we remember Jog and Sun (2007), Howe and O'Brien (2012), Lakicevic and Vulcanovic (2013), Kolb and Tykvová (2016), and Dimitrova (2017) sharing the same idea [16].

Assuming that target shareholders know about the presence of these costs (a highly unrealistic scenario), they will only acquire shares if they believe the merger's non-cash benefits are significant enough to offset the SPAC's cash shortfall, and these benefits could not be obtained more cheaply through another funding method. In order to attract interest in the public market and attract private

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<sup>27</sup> For instance, after RocketLab merged with Vector Acquisition Corporation, its common stock's ticker changed from “VACQ” to “RKL B” on August 25<sup>th</sup>, 2021.

investment in a specific merger (usually in the form of PIPEs), the managers of the SPAC and of the target company may perform a series of SPAC “roadshows”. Thus, it is evident that sponsors have a crucial role in the formation, management (since they nominate directors and officers), and profitability of a SPAC.

#### 4.4 SPAC Warrants

In addition to ordinary shares, the SPAC also issues warrants, which are essentially composed by [40]:

1. *Founder warrants*: issued at the SPAC’s formation to sponsors as compensation for their services.
2. *Public warrants*: included in the units offered by the SPAC to compensate investors in the SPAC’s first public offering for permitting their funds to be utilized to establish the SPAC as a public corporation [24].

The warrants offered to investors (public warrants) are cash-settled<sup>28</sup>, while sponsors' warrants may be net settled<sup>29</sup>. In this paragraph, we will focus on the structure and characteristics of public warrants. The units issued in SPAC IPOs to the public consist of shares of common stock and warrants, which give SPAC investors the right (but not obligation) to acquire from the company more common stock at a fixed price<sup>30</sup> after the merger is completed. Even if their mechanism is similar, a warrant differs from a call option since the former is directly issued by a company (a non-standardized contract), while the latter is a standardized contract between two investors having opposite price predictions. As a result, if the shareholders get liquidated because no merger happens within two years, they can still keep their warrants and rights at no cost. Depending on the bank issuing the IPO and the volume of the SPAC, one warrant may be exercisable<sup>31</sup> for a fraction or a whole share of stock [31]. However, a SPAC is able to redeem warrants according to their terms, therefore investors may exercise warrants until the redemption date<sup>32</sup>.

Investing in SPACs requires a thorough understanding of the terms of warrants, which are included in the SPAC IPO prospectus and may vary significantly across SPACs. The terms of the warrants generally include the number of shares the investor is authorized to acquire, the price and period

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<sup>28</sup> To get a complete share of stock, the investor must pay the entire price of the warrant in cash [31].

<sup>29</sup> Sponsors are not obliged to pay cash in order to acquire a whole share of stock [31].

<sup>30</sup> This price is often a premium to the current stock price at the time the warrant is issued [37].

<sup>31</sup> The warrant may be exercised either twelve months after the SPAC IPO or 30 days after the De-SPAC transaction [31].

<sup>32</sup> After this date, the warrants are void and no longer exercisable.

during which shares may be bought, the conditions under which the SPAC may be allowed to redeem the warrants, and the expiration date of the warrants. After the SPAC IPO, the SPAC common stock and warrants may begin trading on the open market separately under their unique tickers, and investors must be aware of whether they are acquiring units, common shares, or warrants [37].

## **4.5 Accounting and Reporting Considerations**

Going public via SPAC involves several accounting and reporting procedures that must be followed. In this respect, an article published by PwC underlines the most important steps [38].

The multinational accounting firm underlines that “*public company readiness for a target company should encompass cross-functional topics including accounting and financial reporting, finance effectiveness, financial planning and analysis, tax matters, internal controls and internal audit, human resources (HR) and compensation, treasury, enterprise risk management, technology, and cybersecurity*”. Under these circumstances, project management is necessary to lower execution costs, improve project efficiency, and offer working group members more responsibility and transparency. A solid and cross-functional project plan should be developed and controlled by a project management office and project leader.

A SPAC merger often requires numerous phases of equity and legal reorganization, which affects the tax position of the target company. Under certain conditions, the target firm may be eligible for reporting allowances offered to Smaller Reporting Companies (SRC) or Emerging Growth Companies (EGC). This relief may significantly affect the time and effort necessary to complete the deal, so target firms should consider these allowances with their consultants as early as possible in the readiness preparations process.

The financial statements of the target firm must comply with SEC reporting standards and specific financial statement disclosure areas<sup>33</sup> may increase the time and work necessary to compile compliant financial statements. The annual and interim financial statements of the target firm must be audited and evaluated by Public Company Accounting Oversight Board (PCAOB) standards, which may add time and complexity to historical audits in comparison to the American Institute of Certified Public Accountants (AICPA) standards. Generally, pro forma financial statements are necessary and will offer an all-encompassing perspective of the SPAC merger. The foundation for presenting pro forma information depends on the anticipated accounting treatment of the transaction and often includes considerations for redemptions by public shareholders, secondary transactions, and the effect of any change in tax status resulting from the SPAC merger.

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<sup>33</sup> In particular, PwC talks about profits per share, segments, adoption of new standards, and quarterization [38].

The accounting acquirer is the company that has control over the other company and it does not always correspond with the legal acquirer. If the target company is the accounting acquirer, the transaction will be regarded as a capital raising event; however, if the SPAC is the accounting acquirer<sup>34</sup>, purchase accounting will apply and the target company's assets and liabilities will be valued at fair value. IFRS 3 paragraphs B13–B18 clarify the identification of the acquirer in a business combination [40].

The target firm must provide an MD&A disclosure for all periods provided in the financial statements so that investors may comprehend the financial condition and operating performance of the target company.

Lastly, within four business days of closing the merger, a Form 8-K containing equivalent information that would be required in a Form 10 filing of the target company<sup>35</sup> must be filed with the SEC.

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<sup>34</sup> Because the acquiree (the SPAC) is not a company, the acquisition does not satisfy the IFRS 3 definition of a business combination [40].

<sup>35</sup> It is commonly known as “Super 8-K” [38].

## **5. Advantages and Risks of SPACs**

Going public via SPAC entails several advantages and risks at the same time. This chapter will outline the main benefits for the parties involved in the SPAC establishment and development. On the other side, I will discuss several significant drawbacks that are typically associated with going public via SPAC. After addressing the risks and concerns of SPACs, I will analyze a real-world example by examining the Nikola SPAC Merger. In conclusion, these advantages and risks of SPACs will be compared with those of IPOs, thus contrasting these two different methods of going public.

### **5.1 Advantages of a SPAC**

Regarding the advantages of going public through SPAC, I will emphasize the benefits earned by the three key players in the SPAC market: target companies, investors, and sponsors [29].

#### **5.1.1 Benefits for Target Companies**

The first advantage for companies choosing to go public via SPAC is price stability. A SPAC deal is attractive because it eliminates any price uncertainty: the company's management team is able to negotiate the terms of its public offering and, in particular, an exact purchase price. However, this practice implies a drawback: the valuation it receives may be less than it would receive through a conventional IPO, and the sponsor fees account for additional expenses. Contrarily, in an IPO the company's share price is uncertain because it is determined by supply and demand based on the valuation of the business and because it is often mispriced<sup>36</sup>.

The second advantage for target companies opting for a SPAC quotation is a faster process, which usually lasts between three and six months. However, some commentators disagree that there is a substantive difference and argue that it is difficult to determine whether SPACs are quicker than IPOs since both procedures need preparatory work before the public announcement of the agreements [41]. This preparatory work includes financial reporting, tax preparation, SEC supervision, technological updates, cybersecurity measures, and more. In this regard, Gahng et. al believe that merging via SPAC is not a quicker process than conducting a traditional IPO, but the common belief that "merging via SPAC is quicker" influences companies' decision-making [42].

The third advantage for companies going public via SPAC is the exploitation of strategic partnerships: SPAC's leadership teams are generally formed by experienced and competent individuals who assist and guide the target company in its public quotation.

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<sup>36</sup> Commentators often refer to the "first-day IPO pop" phenomenon, according to which the price of an IPO is often underpriced on purpose, thus leading to an increase towards its real valuation in the first days of trading [79].

### **5.1.2 Benefits for Investors**

Going public via SPAC has proved to be appealing to many investors, both institutional and retail investors. As of late 2020, the top 75 investment managers in the United States allegedly controlled about 70% of all SPAC shares [29].

The first advantage is the active involvement of retail investors, who cannot always access conventional IPOs before the first trading day on the open market. Under these circumstances, retail investors may reap profits when a merger is announced<sup>37</sup>.

Secondly, the possibility to redeem shares in case the proposed merger does not seem profitable is a major benefit provided to investors in SPACs. Therefore, investors actively contribute to business combination decisions, a feature that is significantly different from the blind pools of venture capital<sup>38</sup> world [43].

Lastly, institutional investors may invest in the initial SPAC and buy, via warrants, additional shares after the acquisition for just a small premium over the initial purchase price, therefore limiting their risk exposure. For instance, if a mutual fund buys 100,000 shares of a SPAC at \$10 each, it also receives 100,000 warrants to acquire additional shares for \$11.5 (the typical strike price for SPAC warrants). If the mutual fund believes the merger is not going to be profitable (negative scenario), it can redeem its shares and limit its loss; conversely, if the mutual fund has an optimistic view about the combined company, and the share price increases to \$13, it can exercise the warrants, immediately gaining \$1.5 for each share. Under these circumstances, we notice that the rewards enjoyed by institutional investors tend to be larger than the ones of retail investors, who assume more risk over the long run.

### **5.1.3 Benefits for Sponsors**

SPACs are particularly appealing possibilities for sponsors, who in most circumstances earn substantial profits, thus representing the category that benefits most from this method of going public. Firstly, the SPAC IPO process is relatively simple since the shell company encounters fewer regulatory obstacles than conventional IPOs.

Furthermore, the SPAC merger enables sponsors to invest in later-stage private companies and potentially help to drive the post-IPO strategy.

Most importantly, sponsors receive a promote consisting of 20% of SPAC shares post-IPO, which may result in huge profits even if the target company's share price declines after the merger.

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<sup>37</sup> As we will discuss later, the public announcement of a SPAC merger typically drives the SPAC's share price up, at least in the short run.

<sup>38</sup> In a venture capital pool, partners deposit their funds in a "blind pool" for exclusive investment by the VC fund management team [43].

## 5.2 Risks of a SPAC

Despite the advantages that SPACs offer, there are also some serious challenges and concerns that should be considered [29].

SPACs have had a negative reputation as a means for sponsors to get wealthy rapidly at the cost of other investors<sup>39</sup>. Even though recent SEC regulations and enhanced sponsor quality have helped to improve the image of SPACs, there are still risks and disadvantages connected with the sponsor, such as:

1. *Costs for the target company*: the sponsors' ownership of 20% of SPAC shares might result in a 1-5% stake in the acquired firm after the merger. Therefore, sponsors earn substantial profits, regardless of the merger's outcome, which may reduce the incentive to conduct adequate due diligence on target firms.
2. *Sponsor quality*: investors in the SPAC IPO are not investing in the combined firm, but rather in the sponsors, thus bearing a new layer of risk in case of low-quality or not reliable sponsors.
3. *Time constraints*: as the two-year deadline for a SPAC to acquire a company approaches, sponsors may face a moral hazard scenario in which they are compelled to merge with any willing company to protect their investment, even if the transaction seems unfavorable to SPAC shareholders. In this way, sponsors will prioritize quickness over diligence and quality, to the harm of shareholders and in violation of a board's fiduciary duty. Dimitrova confirms this view by stating that SPAC performance is correlated with the degree of management pressure to complete the transaction [44].
4. *Insufficient supply of target companies*: the number of SPACs may exceed the number of firms willing to go public. Because sponsors go public with their SPACs without knowing the demand for future SPAC mergers, if the supply of target companies is limited, they may reduce their quality criteria for finding such companies.

Under these circumstances, non-redeeming shareholders (typically retail investors) bear the majority of risks, and limited rewards, associated with SPACs. In particular, investors who buy and hold the combined company's shares for the long run are the ones who experience the worst returns on their investment.

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<sup>39</sup> For example, between January 2019 and January 2021, SPAC sponsors enjoyed an average return on investment of 958% [29].

### 5.2.1 Nikola SPAC Merger

At the start of 2020, the hydrogen fuel-cell electric truck maker Nikola Corporation was contemplating two options for going public: a traditional IPO or a merger with VectoIQ Acquisition Corporation, a blank-check corporation managed by a former General Motors executive. Kim Brady, the chief financial officer of Nikola, noted that the likelihood of a successful IPO diminished as a result of the Covid-19 outbreak's impact on the markets [22], so the company went public via SPAC in March 2020 despite not having produced a single dollar of revenue yet.

Nikola's market capitalization skyrocketed to \$29 billion, overcoming giants in the automotive industry such as Ford or Honda. Later, the SEC started a fraud investigation against Nikola, resulting in the resignation of Nikola's CEO and chairman. Saengchote reports that the anomalous mispricing of EV SPACs in 2020, focusing in particular on Nikola Corporation, is closely related to the rise of Tesla stock, and his evidence of SPAC overpayment suggests that investors may not fully understand SPACs as an investment opportunity (*see Figure 7.*) [45].



Figure 7. Average SPAC unit price and Tesla stock price between January 2019 and January 2021 [45].

### 5.3. Special Purpose Acquisition Companies as an Alternative to IPOs

While in an IPO a private firm issues new shares and sells them on a public exchange with the assistance of an underwriter, in a SPAC transaction the private firm becomes publicly traded by a merger with a listed shell company, the special-purpose acquisition company. Figure 8. Summarizes these two processes of going public that we discussed in detail previously.



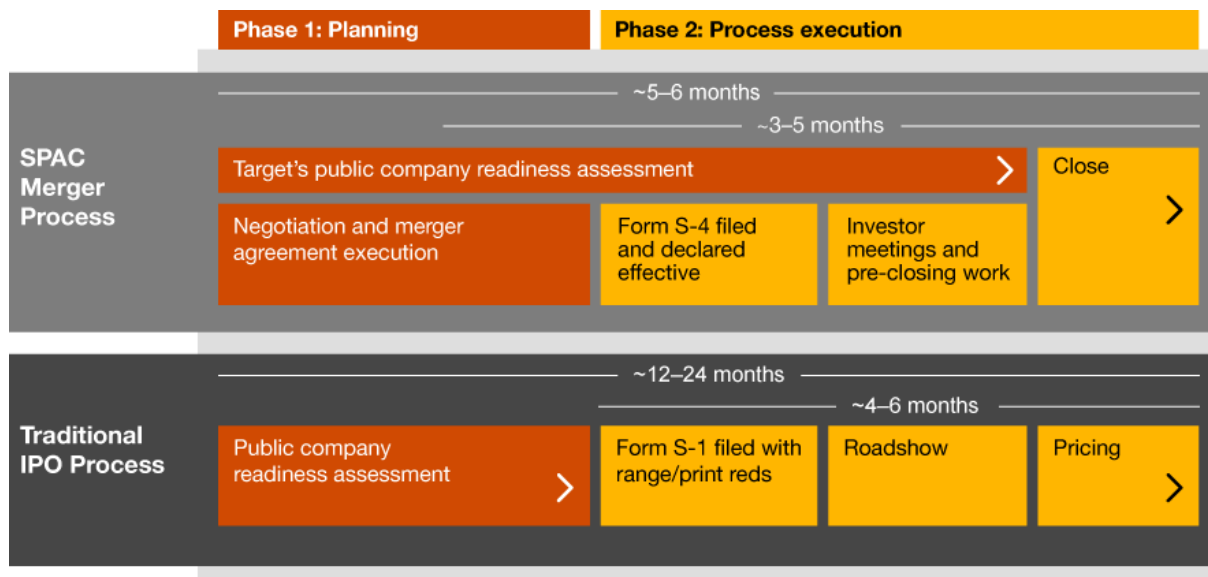


Figure 8. Comparison between SPAC Merger Process and Traditional IPO Process [46].

The primary advantages of going public via a SPAC merger as opposed to an IPO are [47]:

1. *Lower thresholds*: a SPAC is a viable option for smaller companies that may not qualify for a traditional IPO but still have substantial growth potential.
2. *Faster execution*: a SPAC merger typically happens between three and six months on average, while the timeline for the execution of an IPO is usually longer<sup>40</sup>. This is because SPACs are not operating firms, so they are required to reveal a minimal amount of information in the registration statement.
3. *Lower advertising and marketing expenses*: a SPAC merger is not required to engage investors in public markets with several roadshows, therefore expenses in legal fees, marketing, and financial consulting are significantly lower.
4. *Possibility of raising additional capital*: to foster growth for the company, SPAC sponsors often raise debt or PIPE financing in addition to their original capital.
5. *Upfront offering price discovery*: the IPO offering price is contingent on market circumstances at the time of listing, whereas the price is negotiated with the SPAC before the closing of the transaction (but it is still subject to uncertainty due to the redemption of shares).
6. *Access to operational expertise*: SPAC sponsors are often established financial and industrial experts who may use their experience and network of connections to provide managerial guidance or serve on the board themselves.
7. *Flexibility allows to better address information asymmetry*: according to some commentators [48], with a SPAC merger, firms may attach earn-outs, minimize insider lockups, and allow

<sup>40</sup> This argument is not accepted by all experts (see 4.1.1).

the private company more freedom to adapt its move to the public market to its requirements. This flexibility is advantageous for companies with information that cannot be made public or that would have a harder time attracting traditional public market investors.

8. *Forward-looking statements are covered by a safe harbor*: because SPACs are overseen by rules applicable to mergers, according to the Private Securities Litigation Reform Act (PSLRA), if projections or other forward-looking statements prove to be wrong, the issuer is not liable unless the person who made the statement knew it was false at the time it was made [24]. This safe harbor does not apply to IPOs and its purpose is to incentivize public companies to disclose uncertain information to the market. Nevertheless, the SEC proposed new rules in March 2022 to limit this behavior and let investors and voters make informed judgments regarding these transactions [49].

On the other hand, going public via SPAC presents some risks compared to a conventional IPO, among which there are [47]:

1. *Lack of underwriting and comfort letter*: since the SPAC is already public, the target company does not have an underwriter who checks for the accuracy of all regulatory requirements.
2. *Shareholder dilution*: sponsors of SPACs typically hold a 20% stake in the SPAC through founder shares and warrants to acquire further shares, thus diluting the value of SPAC shares.
3. *SPAC Sponsors may reduce profits for investors*: according to some scholars [24], the expenses of SPACS are borne by SPAC shareholders who own the shares at the time of the merger (non-redeeming shareholders), and not by the companies they take public. As a result, investors incur substantial losses after a merger, whereas SPAC sponsors profit significantly.
4. *Higher embedded costs than IPOs*: due to the sponsor's promote, the costs of SPAC warrants, and other fees, Gahng, Ritter, and Zhang (analyzing 47 SPACs that merged between January 2019 and June 2020) estimated that the median SPAC cost as a percentage of cash distributed is 62%, compared to the 28% of IPOs [42]. Nevertheless, as we saw in the last point, these costs are usually borne by non-redeeming shareholders, therefore companies may want to go public via SPAC anyway.
5. *Capital shortfall from potential redemption*: if redemptions of shares from initial SPAC investors surpass the estimates, then cash availability becomes problematic, and SPACs are compelled to obtain PIPE financing to cover the resultant deficit.
6. *Financial diligence performed at a narrower scope*: the SPAC process lacks the thorough due diligence of a conventional IPO, which might lead to restatements, improperly valued companies, or even litigation.

7. *Compressed timeline for public company readiness*: although the SPAC sponsor may offer assistance during the merger process, the target company is typically responsible for preparing required financial reports and establishing public company functions, such as investor relations and internal controls, within a significantly shorter timeframe than in an IPO.

Despite the SPAC boom between the fourth quarter of 2020 and the first quarter of 2021, traditional IPOs are still outraising SPACs in terms of total value (see Figure 9.).

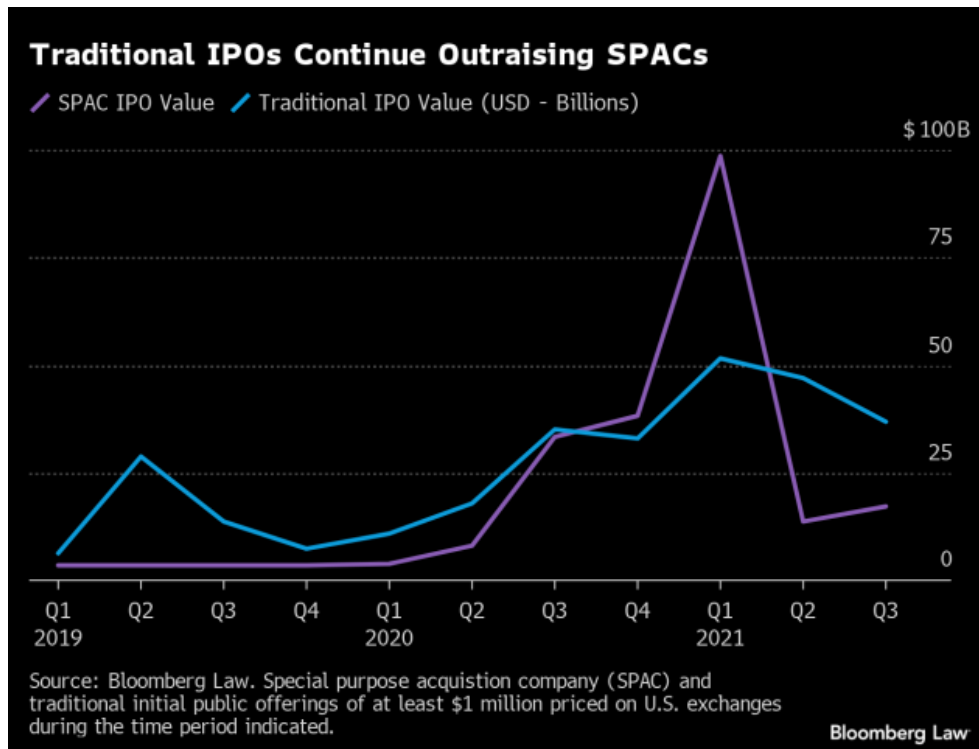


Figure 9. Traditional IPOs continue outraising SPACs [50]

## 6. Poor Market Performance and the Necessity of Changes

SPAC returns for investors over the previous two decades have been modest, particularly when compared to those of IPOs. In this context, I will discuss the findings of the SPAC literature about the short- and long-term market performance of companies going public via SPAC. In doing so, I will focus on explaining the legislative and technical factors that have led to these poor returns on investment. Finally, I address how the intrinsic problems of SPACs might be resolved, or at least mitigated, as well as what the SEC has done in this regard.

### 6.1 Literature on SPAC Performances Over Time

The working paper “*SPAC IPOs*” by Vulanovic and Shachmurove analyzes in-depth the results and conclusions obtained by known researchers in the SPAC environment regarding the SPAC performances in the last two decades.

Datar, Emm, and Ince examine the long-term performance and operational performance of 156 SPACs during the period 2003-2008 [51]. They compare SPACs to 794 companies that had standard IPOs throughout the same period, discovering that the operational performance of SPACs is worse than that of industry peers and conventional IPOs during the same time span. They report a one-month post-acquisition return of -5.37%, six-month post-acquisition return of -20.93%, and one-year post-acquisition return of -38.32%. In addition, they argue that SPACs carry more debt, are smaller in size, invest less, and have fewer chances for expansion than their benchmark counterparts.

Lakicevic and Vulanovic study a sample of 161 firms over the years 2003 to 2009 to find that SPAC merger announcement returns are [36] generally positive, and Howe and O’Brien, as well as Tran and Dimitrova, later confirmed these results<sup>41</sup>. In particular, they find that the return on shares is 1.2%, the return on units is 2.4%, and the return on warrants is 10.4%. On the other hand, they record a cumulative abnormal return rate of -9.59% ten days from the merger date. Lastly, based on a subsample of 66 SPACs that completed mergers, they report a -28% return to unit holders, supporting prior results in the literature that post-acquisition SPACs destroy investor value on average.

Howe and O’Brien construct a sample of 158 SPACs for the period 2003-2008 to analyze their short-term and long-term performances and their correlation with ownership structure and corporate governance characteristics. They assert that board independence and ownership structure have little or no effect on SPAC returns.

Dimitrova concludes that SPAC acquisitions drastically underperformed key benchmarks based on operating margins and return on sales [44]. In her study of 73 SPACs, she finds that SPACs as a

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<sup>41</sup> Howe and O’Brien report a return of 1.7% at the merger announcement date, while Tran and Dimitrova talk about an approximate return of 1%.

whole perform poorly, with a four-year buy-and-hold return of -51.9% after the IPO date, while companies that went public via traditional IPOs in the same period exhibit a positive annual return of 8.5%.

Similar results are obtained by Jenkinson and Sousa, who report a -24% return for six-month after the acquisition and -55% for a year after the acquisition, and Howe and O'Brien, who report an average half-year return of -14%, a one-year return of -33% and a three-year return of -54%.

A more recent study by Gahng, Ritter and Zhang, who focus on 114 SPACs that completed a merger with an operating company from January 2012 to September 2020, reports that the equally-weighted average one-year return on the combined company shares has been -8.1%, underperforming the market by 24.7% [42].

Kolb and Tykvová compare the attributes of 127 modern-era SPACs with 1128 IPO counterparts, stating that SPACs considerably underperform traditional IPOs and are generally not value-creating investments [53].

Vulanovic analyzes the factors that impact SPACs' survival in the long run, concluding that SPAC's post-merger survival is positively correlated with the pre-merger commitment by SPAC management and initial positive returns [54].

Therefore, the literature on SPACs indicates that investor returns during the time between the SPAC IPO and the acquisition are either moderately positive (especially when a merger is announced) or close to zero because investors are able to redeem their shares and sell their warrants on the market. On the other hand, data indicates that post-acquisition returns are considerably negative and that investors do not profit, on average, from approving a business acquisition.

Nevertheless, Dimitrova notes that *“the literature on SPACs is limited compared with the importance of SPAC deals. Researchers have overlooked the richness of empirical data that SPACs' public disclosures offer and the unique form of SPACs that can be used to shed more light on the classic private equity contract [16].”*

## **6.2 Why the SPAC Enthusiasm is Going Down**

By the end of 2021 and the beginning of 2022<sup>42</sup>, SPACs have lost some of their shine as a result of increasing regulatory supervision and mediocre performance. The negative impact on the number of SPAC IPOs beginning in the second quarter of 2021 was the consequence of increased regulatory scrutiny by the SEC and an increase in shareholder lawsuits<sup>43</sup> brought against SPACs.

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<sup>42</sup> In the first months of 2022, several companies, such as Ascendant Digital Acquisition Corp. II, withdrew their registration statement with the SEC [77].

<sup>43</sup> According to estimates from Woodruff Sawyer, shareholder lawsuits against SPACs tripled from five in all of 2020 to fifteen in the first half of 2021. The increase occurred despite a 13% decline in total securities cases in 2021, according to the data.

In a statement from 31 March 2021 [55], SEC Acting Chief Accountant Paul Munter outlined some crucial financial reporting concerns for SPACs. In this respect, the OCA staff concluded that warrants issued by SPACs should be classified as liabilities measured at fair value, and not as equity of the entity, since they are not indexed to the entity's stock (which is a necessary condition to qualify for equity classification). Moreover, the SEC established that “*registrants should consider their obligation to maintain internal controls over financial reporting and disclosure controls and procedures to determine whether those controls are adequate, assessing whether prior disclosure on the evaluation of internal controls over financial reporting and disclosure controls and procedures needs to be revised in the amended filings*”.

M. Klausner, M. Ohlrogge, and E. Ruan argue that specific elements contributed to the SPAC bubble: fewer redemptions, fewer warrants, larger PIPEs, and supposedly higher-quality sponsors. Lower redemptions<sup>44</sup> resulted in less dilution and more net cash per share in the mergers. Investors in the IPO predicted that each warrant (and share) would appreciate over this time, and were thus ready to take fewer warrants<sup>45</sup>.

If PIPE investors pay a price per share that exceeds a SPAC's net cash per share, they raise net cash per share at the time of a merger, and the larger the PIPE<sup>46</sup>, the greater the rise, resulting in greater returns for SPAC shareholders.

According to several commentators, the fact that non-redeeming SPAC shareholders are responsible for the expenses inherent to the SPAC structure explains why SPAC mergers are still attractive to companies aiming to go public [24].

### **6.3 Eventual Solutions**

M. Klausner, M. Ohlrogge, and E. Ruan believe that regulatory change is necessary both to safeguard non-redeeming shareholders and to prevent social costs linked to SPACs. In this regard, they propose a two-stage process: first, erasing the regulatory distinction between SPACs and IPOs; second, with the aim of helping investors make more informed decisions, requiring SPACs to disclose their pre-merger net cash per share under several redemption scenarios, the effective price per share paid by PIPE investors, the terms of non-redemption agreements, and the sponsor's and management's financial stake in a proposed merger.

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<sup>44</sup> Mean and median redemption of 22% and 0% between the fourth quarter of 2020 and the first quarter of 2021, compared to 58% and 73% between January 2019 and July 2020 [24].

<sup>45</sup> Mean number of warrants for SPAC IPOs was 0.33 per unit between the fourth quarter of 2020 and the first quarter of 2021, compared to a value of 0.55 per unit between January 2019 and July 2020 or between July 2021 and November 2021 [24].

<sup>46</sup> The average PIPE was equal to 85% of the value raised in the SPAC IPO between the fourth quarter of 2020 and the first quarter of 2021, compared to a value of 30% between January 2019 and July 2020 and a value of 43% between September 2021 and November 2021 [24].

In this framework, the Private Securities Litigation Reform Act's (PSLRA) safe harbor concerning forward-looking statements for SPACs plays a determinant role, and either removing this benefit for SPACs or applying also to IPOs would prevent non-redeeming SPAC shareholder in bearing significant expenses. However, treating SPACs and IPOs similarly with regard to forward-looking statements involves some difficulties [56]: firstly, state law may require disclosure of projections in SPACs but not in IPOs; secondly, while issuers do not provide projections in IPOs, underwriters do it on the basis of information provided by the issuer.

Furthermore, M. Klausner, M. Ohlrogge, and E. Ruan essentially propose two eventual solutions to improve the SPAC's structure and popularity among investors: either a less expensive and more incentive-aligned SPAC or an IPO/direct listing that integrates the potentially appealing characteristics of SPACs without their significant expense.

In the first scenario, they observe that a better SPAC would be characterized by the absence of warrants and rights, reduced remuneration for the sponsor (to align the sponsor's incentives with the share value after the merger) and reduced merger costs, compensation of underwriters linked to the number of nonredeemed shares, and a large PIPE by the sponsor and third parties.

In the second scenario, insofar as a sponsor plays a significant role in finding a firm that is ready to go public, counseling the firm after it goes public, and working with underwriters, the sponsor may fulfill the same tasks for an IPO. In this case, the sponsor would pick a firm in which to invest, support in taking it public, and seek PIPE investors for a private placement. After finding an interested target and securing equity investment, the sponsor would contact an underwriter for an IPO. In the case of a directing listing, the process would be easier since the sponsor would assist in raising capital via a private placement and act as an advisor. Moreover, options or warrants with strike prices at levels typical of SPAC earnouts today might be granted to company management and investors in IPOs or direct listings. Dilutive warrants for IPO investors would not be necessary since there would be no need to store cash for up to two years (as in a SPAC).

Nonetheless, these innovations are unlikely if SPAC investors keep accepting agreements that impose SPAC expenses on them and if there are no regulatory changes (certain companies will continue to prefer SPACs as a method of going public just for beneficial regulatory purposes).

### **6.3.1 The First Step: SEC Statement of 30<sup>th</sup> March 2022**

In order to erase the regulatory distinction between SPACs and IPOs and offer greater protection to SPAC investors, the first step was conducted by the SEC, which proposed new rules and amendments to increase the disclosure requirements for de-SPAC transactions, the technological requirements for SPACs, and the underwriter's liability [49].

A new proposed subpart of Regulation S-K would strengthen the disclosures made by SPAC sponsors, affiliates, and promoters to prospective investors. In this framework, new disclosures will be required: a statement from the SPAC regarding the fairness of the de-SPAC transaction (as well as a discussion of the bases for this belief) and if the SPAC has obtained any third-party assessment of the transaction's fairness, additional information concerning the sponsors and potential conflicts of interest, and a description of the dilution's sources and impact on shareholders under different scenarios [57]. A new Regulation S-X article and related amendments are proposed to match the financial statement reporting requirements of a de-SPAC target with those of a conventional IPO, limiting the use of forward-looking statements by SPACs.

A proposed amendment to Item 10(b) of Regulation S-K provides that [58]:

1. Projections that are not based on prior financial results or operational history should be clearly separated from those that are based on such data.
2. Non-GAAP financial measure projections should contain a clear definition or explanation of the metric, a description of the GAAP financial measure to which it is most closely linked, and an explanation of why a non-GAAP financial measure was chosen instead of a GAAP measure.

Under the new rules, the management of the target company would be obliged to sign the registration statement, thus bearing risk for liability under Section 11 of the Securities Act for false representations or omissions of significant facts.

The proposed regulations would also change the definition of "blank check company"<sup>47</sup> to make the PSLRA safe harbor for forward-looking statements definitely unavailable to SPACs, thus exposing them to liability for inaccurate projections. Nevertheless, even without the PSLRA safe harbor, SPACs (as well as target companies and underwriters) may still count on the common law "bespeaks caution" doctrine<sup>48</sup> to defend against allegations of misstatements or omissions in forward-looking statements.

Moreover, the SEC proposed a new safe harbor under the Investment Company Act of 1940 to allow a SPAC not to register as an investment company under the Investment Company Act [58]. In this respect, the SEC noted that, even if funds allocated in the trust account are invested in short-term

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<sup>47</sup> The "blank check company" would be defined as "*a company that has no specific business plan or purpose or has indicated that its business plan is to engage in a merger or acquisition with an unidentified company or companies, or other entity or person* [58]."

<sup>48</sup> According to the "bespeaks caution" doctrine, meaningful cautionary language would be a sufficient condition to negate such allegations. However, the application of such doctrine offered less protection than the PSLRA safe harbor in certain courts [58].



treasury securities and money market funds, SPACs satisfying the requisites<sup>49</sup> of the safe harbor do not qualify as investment companies because the sponsor would gain nothing from such deviation from the original purpose and it is unlikely that investors will ever view SPACs as a fund-like investment.

Another rule proposed by SEC was the re-determination of Smaller Reporting Company (SRC) eligibility<sup>50</sup> within four business days after a de-SPAC transaction, calculating whether the public float of the company exceeds \$250 million [58]. A company exceeding the SRC thresholds after a de-SPAC would avail itself of disclosure requirements for Emerging Growth Companies (ECG), continuing to be ineligible for the scaled disclosure requirements applicable to SRCs until the next annual redetermination of its status.

The SEC also proposed a new Securities Act Rule 140a that impacts the classification of underwriters, redefining them as parties whose activities are essential to the effective completion of de-SPAC transactions, thus comprehending financial advisors and PIPE investors<sup>51</sup>. Under this new categorization, underwriters would be subject to an increase in their liability and burden of diligence. According to White & Case law firm, this rule may force de-SPAC transaction participants to align their practices with the conventional IPO practice of providing projections only orally to some institutional investors, which would have the opposite effect of the SEC's goals of increasing retail investor protection and information parity.

Even if these proposed regulatory changes in SPACs had an adverse effect<sup>52</sup> on the SPAC IPO market, I believe that in the long run their application may represent an essential step towards a better SPAC market consisting of less but more reliable companies.

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<sup>49</sup> These requisites are based on the nature and the management of the SPAC assets, SPAC activities, and duration limitation [58].

<sup>50</sup> The SRC status enables the company to rely on some scaled disclosure obligations available to SRCs after the de-SPAC transaction [58].

<sup>51</sup> They are defined as “statutory underwriters” under Section 2(a)(11) of the Securities Act.

<sup>52</sup> The SEC proposals caused an initial reduction in the number of SPAC IPOs [49].

## 7. Role of SPACs in the Space Industry

At the beginning of the space era, the United States and the Soviet Union competed for technological supremacy, which drove the advancement of space technology [59]. The post-Apollo mismatch between aspirations resulted in a drop in public space expenditures due to the high costs and lengthy timelines connected with financing space missions. In this scenario, space remained a playground for large government operations, with contracts awarded to few big commercial companies and enormous barriers to entry for new space businesses. As a result, private investments in space technologies almost disappeared in the 1980s.

Nevertheless, future private efforts<sup>53</sup> toward commercial spaceflight in the 1990s demonstrated the efficacy of tactical sponsorship and highlighted the potential for non-government space activities. These private initiatives resulted in a buildup of momentum for commercial opportunities in the space sector and opened new investment opportunities, leading the way for the New Space Era at the start of the twenty-first century. In this context, even if the aggregate investor base for space start-ups is mainly comprised of Venture Capital companies and angel investors, SPACs played a prominent role as a means for private space companies to go public, particularly between 2020 and 2021 (*see Figure 10*).

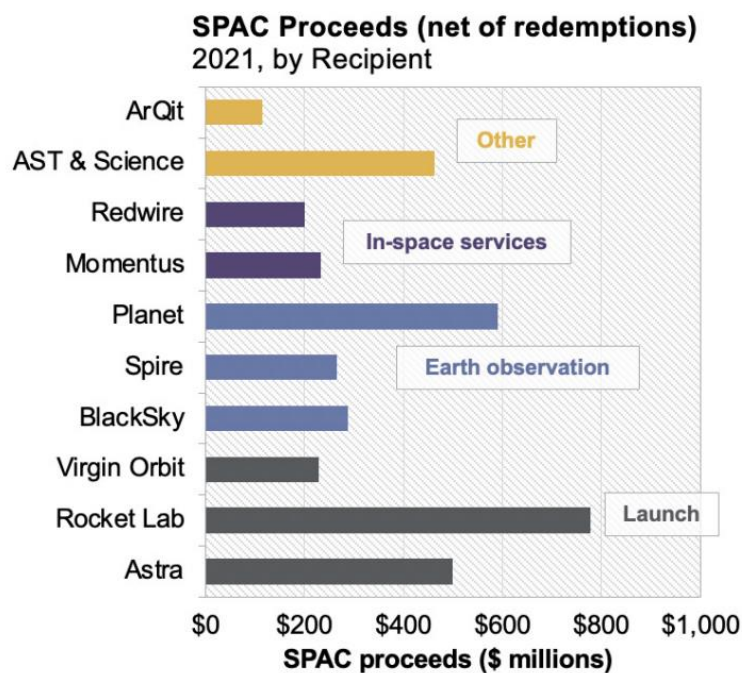


Figure 10. Significant start-up space funding raised via SPAC in 2021 [60].

<sup>53</sup> Kristler Aerospace, Beal Aerospace, Mircorp, and the XPRIZE Foundation were the private key players in the space industry during the 1990s [59].

Although the SPAC trend is a consequence of financial dynamics, its emergence has influenced the space industry. The recent growth in public interest in the space sector, fueled by the widely publicized achievements of private and public participants, has augmented the sector's attractiveness [61]. Under these circumstances, due to declining launch costs and continuous advances in technologies, Citi forecasts the space industry's annual revenue to reach \$1 trillion by 2040, providing support to the previous forecasts of other major investment banks such as Morgan Stanley or Bank of America [62]. The space industry will serve broadband internet, delivery of packages, and, of course, space travel.

Nevertheless, as we saw in the previous chapters, the SPAC phenomenon generates considerable criticism regarding the significant risks it may offer (*see paragraph 6.2*), particularly to the promising and strategically vital ecosystem of emerging space startup companies.

## **7.1 Why a SPAC?**

The SPAC mechanism seems to be an ideal match between the necessity for space startups to acquire more capital and the need to compensate early investors, without having to go through the lengthy and complex IPO process [63]. As they strive to establish themselves in a "frontier industry", space companies that want to go public may regard SPAC's quickness over traditional IPOs as a crucial element to achieving a first-mover advantage [64].

Moreover, SPACs' reduced regulatory and transparency requirements, in particular the PSLRA safe harbor related to forward-looking statements, may have been an important supply-side driver in the context of space startups seeking to go public. Nevertheless, as we saw in the previous chapters, the regulatory framework surrounding SPACs is changing, and this may lead to a decrease in the supply of space companies going public via SPAC.

According to Sameer Garg, managing director of the Global Investments Bank at RBC Capital Markets, the increased popularity of SPACs as a method to go public for growth companies with innovative and disruptive technologies (such as space companies) was a result of several factors, in particular the low-interest rate environment, the market volatility, and the growing SPAC domain expertise between 2020 and the first months of 2021 [65]. As a result, during this period investors shifted from value stocks to growth stocks, undertaking more risks in order to reap larger profits and allowing space companies to raise more capital.

Matthew Christie, a graduate business development engineer at Surrey Satellite Technology, argues that three characteristics of the space industry have made space companies interesting for SPAC mergers [59]: an innovative nature where the business models of New Space start-ups are uncertain and riskier than those of comparable-sized firms in other industries, a high degree of competition which stimulates continuous innovation, and high operational costs than other industries.

## 7.2 Risks of Going Public via SPAC for Space Companies

Since SPACs are allowed to disclose future revenue projections via forward-looking statements, the space industry's image might be tarnished if investors' expectations for significant profits are not satisfied, especially if the revenue and market estimations are presented under over-optimistic scenarios (and, as I will show in *Paragraph 6.3*, this is often the case). The concern that SPAC mergers include highly-optimistic projections is supported by Blankespoor et. al, who analyze a sample of SPACs that went public from 2000 to 2021 and find out that only 35% of revenue projections are respected [66].

Moreover, the high short-term costs of going public via SPAC (sponsors' promote, underwriting fees) may have a negative impact on the performance and profitability of the combined company.

Another risk of going public via SPACs for space companies is that some of them have lately experienced high redemption rates among the SPAC's initial investors, thus negatively impacting the combined company's raised capital and share price.

This risk may be partially mitigated by raising funds from PIPE investors. For instance, with almost 82% of the SPAC shares redeemed, Virgin Orbit was only able to generate \$68 million (instead of the initially forecasted \$383 million) from its SPAC [67]. However, the company was able to raise additional capital from PIPE investors<sup>54</sup>, who provided a total of \$160 million (instead of the initially forecasted \$100 million). Therefore, the total capital raised by Virgin Orbit corresponded to \$228 million as opposed to the anticipated \$483 million. Similar results were obtained by the CubeSat manufacturer and data analytics company Spire, which experienced a 90% redemption rate [67].

Phil Ingle, managing director at Morgan Stanley, reported that macroeconomic risks, mainly rising inflation and interest rates, pose a significant obstacle to the growth of SPACs in the space sector and may reduce the amount of capital available to companies operating in capital-intensive industries.

Government contract issues may also impede the quotation process for possible SPAC targets because certain government contracting programs are not easily adaptable to a company's rapid quotation on public markets [59]. In this regard, companies operating with classified or sensitive technology will be re-evaluated by the government prior to going public, while certain contracts issued under small company qualification programs may no longer be applicable when a company goes public.

Furthermore, the increased regulatory constraints and scrutiny by the SEC, which I have analyzed in the previous chapters, may represent a major obstacle to the development of SPACs in the space economy. For instance, space company Momentus and its SPAC, Stable Road, drew the ire of

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<sup>54</sup> Among them, Boeing was the lead investor on the PIPE [67].

authorities for deceiving investors about the successful test of a propulsion system<sup>55</sup>, culminating in a \$8 million settlement before to listing in August 2021 [68].

### 7.3 Key Players in the SPAC(E) Sector

While several space companies<sup>56</sup> have gone public in this manner in recent decades, there has been substantial interest in the SPAC phenomenon after Virgin Galactic went public via a SPAC in October 2019, merging with Social Capital Hedosophia [69].

Between the last quarter of 2020 and the first quarter of 2021, some space firms have announced business deals with SPACs, such as RocketLab, BlackSky, Astra, Momentus, AST SpaceMobile, Spire Global, and Redwire (*see Figure 11.*). The SPAC craze of 2021 culminated on December 30<sup>th</sup> 2021, with the listing of Virgin Orbit, a commercial launch company specializing on small satellites [64].



Figure 11. Timeline of space industry SPAC announcements until 2021 [70].

Participation in capital-intensive activities and position in the upstream market are characteristics shared by these companies [69]. The space upstream market includes research, space manufacturing, and ground systems<sup>57</sup> [71]. Therefore, the rising popularity of SPACs in the space industry is restricted to a specific segment because no downstream firms have lately engaged in such a move. Although there are several reasons for going public, the majority of these firms emphasize that going public via SPAC will enable them to be completely funded for the next years without having to spend time organizing funding rounds.

In addition, going public would certainly allow space companies to have the necessary capital to engage in the strategic acquisition of other companies. According to the 2022 Start-Up Space Report of BryceTech, these companies utilized funding from the SPAC IPO process to acquire smaller companies with the aim of increasing their vertical integration or boosting short-term revenues in the market. For example, Redwire acquired Oakman Aerospace, Deployable Space Systems, and

<sup>55</sup> The SEC accused the company of falsifying the results from a prototype spacecraft test in July 2019 [68].

<sup>56</sup> Two examples are Iridium (\$IRDM) in 2008 and Avio (€AVIO.MI) in 2016 [69].

<sup>57</sup> The main activities involved in the space upstream segment are: fundamental and applied research activities, scientific and engineering support activities, material and components supply, manufacturing of space systems, subsystems and equipment, telemetry, tracking and command stations [71].

TechShot in 2021, after acquiring Made In Space and ROCCOR in 2020 [60]. Astra's acquisition of Apollo Fusion (electronic propulsion systems), Rocket Lab's acquisition of Advanced Solutions Inc. (flight software, simulation, and GNC systems) and SolAero (supplier of space solar power products), Planet's acquisition of VanderSat (Earth surface conditions), and Spire's acquisition of exactEarth (ship-tracking) are additional examples [60].

Two categories of space companies that have announced a merger with a SPAC may be distinguished [69]:

1. *Companies that have already provided operational or commercial services*: these companies raise capital to pursue a long-term growth strategy based on funding the development of capital-intensive products or services, the enhancement of existing ones, or the entry into new markets. Being the first firm operating in a new market, such as the LEO constellation connection or the in-orbit economy, would offer a first-mover advantage by establishing a major difference and competitive edge as compared to rival companies.
2. *Companies that have not yet provided operational or commercial services*: these companies raise capital mainly to repay their daily operations. They may exploit forward-looking statements to present, often under an optimistic scenario, their expected future growth to potential investors.

A common trait among these companies is that they have neither properly shown their business models nor achieved profitability. Nevertheless, all of them projected future expected revenues under optimistic, perhaps unrealistic, scenarios. For instance, Momentus Space forecasted to reach the \$3 billion revenue threshold by 2026, with an EBITDA of approximately 60%, despite only having reported \$2 million in revenue for 2020 [63]. Another example supporting this conclusion is provided by RocketLab and Astra, which projected cumulated revenues between 2021 and 2026 to exceed the total value of the small satellite launcher market over the same time span, excluding the chance that major launcher providers such as SpaceX and Arianespace would take a portion of the market with rideshares on larger rockets.

## 8. Rocket Lab Case Study

Just like how the internet created a massive disruption on emerging companies on the stock market, we might witness a similar disruption on the space industry as several private space companies start to become public and available to invest in the open markets. The question remains on which companies from the Space Race will still be successful in the future and which, as many of the dot-com companies, will collapse due to a lack of profitability.

Among the several space companies that went public via SPAC in 2021, RocketLab was the one that produced the highest gross proceeds. I have decided to focus on RocketLab's business and quotation via SPAC because I believe that it exhibits a solid potential to strengthen its position as a global leader in the space industry over the next years.

### 8.1 What is RocketLab?

Founded in New Zealand by Peter Beck in 2006 and now headquartered in Long Beach (California), Rocket Lab is an established space systems company that manufactures satellite and spacecraft solutions for a variety of commercial and government mission services, ranging from low-Earth orbit constellations to complicated deep space and interplanetary missions [72]. Rocket Lab's customer base is evenly divided between government and commercial organizations, including the National Aeronautics and Space Administration (NASA), the National Reconnaissance Office (NRO), and the Defense Advanced Research Projects Agency (DARPA), as well as commercial satellite leaders.

Rocket Lab's Photon spacecraft series provides a satellite-as-a-service option that reduces the traditional high cost, time, and complexity that clients experience when constructing their own satellites [72]. Rocket Lab currently has two functioning Photons in orbit, with further missions to the Moon, Mars, and Venus in the works<sup>58</sup>, including NASA's Artemis-supported CAPSTONE mission to lunar orbit.

Since Rocket Lab's first orbital launch in January 2018, their Electron launch vehicle has become the second most frequently launched U.S. rocket annually and, as of June 2022, it has sent 146 satellites into orbit for over 20 public and private sector organizations and industry-leading constellation operators [72]. Delivering satellites into orbit is a fundamental task in the space industry because it enables operations in national security, scientific research, space debris mitigation<sup>59</sup>, Earth observation, climate monitoring, and easier communications.

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<sup>58</sup> Photon spacecraft platform has been selected to enable NASA missions to the Moon and Mars, as well as the first private commercial mission to Venus [72].

<sup>59</sup> Thousands of manmade objects orbit the earth, and the majority of them are no longer operational. There is a chance that this space debris might crash with satellites that deliver important services, such as GPS and weather alerts [84].

Besides designing and manufacturing the Photon satellite platform and the Electron rockets, Rocket Lab started developing the larger<sup>60</sup> Neutron rocket, which is expected to debut in 2024. Neutron was intended to be partially reusable, with the rocket stage returning to an ocean platform for refurbishment and subsequent launch [73]. Rocket Lab forecasts that Electron and Neutron will be able to carry 98% of all satellites expected to launch until 2029, eliminating the necessity for an additional heavy-lift rocket. Rocket Lab has two launch sites: a New Zealand-based private orbital launch site and a recently opened launch site (known as Launch Complex 2) located in Wallops Island, Virginia, United States.

## 8.2 Rocket Lab's Quotation via SPAC

Rocket Lab announced its intention to go public by merging with Vector Acquisition Corporation, which is a blank check company founded and managed by the experienced<sup>61</sup> technology investor Alex Slusky, who is also the founder and Chief Investment Officer of Vector Capital, a technology-focused private investment company [72]. According to Rocket Lab CEO Peter Beck, the experience of Slusky and Vector Acquisition Corporation was one of the determining reasons in the company's decision to go public via SPAC. In this regard, he stated that "*after about two days of them working with us, we were already starting to talk about orbital dynamics*" [74], highlighting how this chemistry was at the basis of Rocket Lab's quotation.

Rocket Lab received a total of \$777 million in gross proceeds from the combination of capital held in the trust account of Vector Acquisition Corporation and capital provided by PIPE investors [72]. Going public was intended as a strategic move to enhance Rocket Lab's role as a leader in end-to-end space services<sup>62</sup>. The proceeds of the transaction were necessary to satisfy several company's objectives: stimulate both organic and inorganic<sup>63</sup> growth in the space systems market, sustain potential future expansion into space applications initiatives to deliver data and services from space, and, most importantly, develop the new reusable 8-ton payload class Neutron rocket.

On 20<sup>th</sup> August 2021, the merger was accepted by Vector's shareholders at their annual general meeting. The combined company retained Rocket Lab's name and began trading on the NASDAQ on 25<sup>th</sup> August 2021, under the new ticker symbols "RKL B" for its common stock and "RKL BW" for its warrants.

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<sup>60</sup> The Neutron rocket expected to have 27 times the payload capacity of the Electron rocket [83].

<sup>61</sup> Alex Slusky has over 25 years of experience investing in and managing private and public technology firms, as well as a profound awareness of trends, market cycles, sector expertise, and the demonstrated ability to find, structure, and develop technology companies [72].

<sup>62</sup> These services include launch, spacecraft manufacturing, and on-orbit spacecraft management [72].

<sup>63</sup> Mergers and acquisitions, rather than an expansion in the company's own business activities, are the sources of inorganic growth. Through effective mergers and acquisitions, companies that want to develop inorganically may get access to new markets [82].



As a result of the merger, Peter Beck continued to manage the combined company, while Slusky joined the Directors Sven Strohband of Khosla Ventures, David Cowan of Bessemer Venture Partners, Matt Ocko of DCVC, Mike Griffin, Merline Saintil, and Jon A. Olsen on the Board of Directors of the combined company [72].

### **8.3 Stock Performance and Future Projections**

As we may see from *Figure 12.*, the performance of Rocket Lab stock is a clear example supporting the literature findings of the performance of companies going public via SPAC (*see Paragraph 6.1*). In order to show the similarities between Rocket Lab's stock performance and previous results from the literature, I analyzed<sup>64</sup> the stock performances during three different phases: from the SPAC IPO to the merger, before and after the merger announcement, and, finally, the 6-months after the merger conclusion.

Firstly, I found that the return between the SPAC IPO (24<sup>th</sup> November 2020) and the merger (25<sup>th</sup> August 2021) is equal to 7.08%, supporting the common thesis that SPACs' returns are moderately positive in this time span due to investors' possibility of redeeming shares and selling warrants in the market.

Secondly, we may observe a peak at the merger announcement date on 1<sup>st</sup> March 2021, where the SPAC's stock achieved its all-time-high of \$13.95 before merging with the target company, exhibiting a massive first-day return of 36.09%. These results are consistent with the prior studies conducted by Lakicevic and Vulcanovic, Howe and O'Brien, and Tran and Dimitrova.

Lastly, I calculated a 6-months post-merger return of -9.4%, strengthening the thesis of negative post-merger returns over the long run (Datar et. al, Dimitrova, Jenkinson and Sousa, Gahng et. al). I was unable to account for a longer period of time because Rocket Lab went public only nine months ago; consequently, I could not verify the previous results from the literature regarding the market performance of SPACs one or more years after the merger.

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<sup>64</sup> I used the adjusted closing prices from Yahoo! Finance database [75].



Figure 12. Rocket Lab USA, Inc. (RKLB) stock performance as of June 7<sup>th</sup>, 2022 [75].

A strong first-mover advantage in the small launch industry and a proven business execution can play a significant role in Rocket Lab’s future market performance. Nevertheless, Rocket Lab’s future market performance and profitability are highly dependent on a number of uncertain variables that might cause future events to vary dramatically from the company’s forward-looking statements. In particular, these factors include: the allocation of capital provided by SPAC and PIPE investors, factors hampering the development of the Neutron rocket, and Rocket Lab’s ability to drive growth in its space systems business.

## 9. Conclusion

Before examining the SPAC phenomenon, this thesis introduces the traditional methods available to companies to go public. As regards the most common IPOs, underwriters play a crucial role in promoting the issue and establishing the initial offering price. Even though the IPO process involves fewer risks than other ways of going public, it requires time and, most importantly, high capital and revenue thresholds. Since these requirements cannot always be satisfied, especially by companies whose business models rely on future growth in a given market, other methods to go public are taken into consideration, such as Direct Listings and Reverse Mergers. Among non-traditional methods of going public, Special Purpose Acquisition Companies (SPACs) experienced a boom in the period between 2020 and the first quarter of 2021, reaching an all-time high in the number of SPAC IPOs. Correspondingly, the frequency of SPAC IPOs has remained significantly lower in Europe and Asia, but this trend is shifting due to regulatory advantages and increasing interest from investors in both markets. The most innovative features of SPACs in comparison to IPOs are offering price stability, a reportedly faster execution (even if this statement is not shared by all commentators), the exploitation of strategic partnerships, active involvement of retail investors, the presence of warrants included in the units issued by SPAC IPOs, and the possibility to redeem shares before the completion of the merger between the SPAC and the target company. Redemption rights constitute an essential component that has a major impact on the parties involved in the SPAC: we find that the number of redemptions is positively correlated with the expenses borne by non-redeeming shareholders and, therefore, negatively correlated with the target company's share price. Analyzing the SPAC mechanism, we observe that sponsors play a key role, establishing the SPAC, selecting the SPAC's management, identifying the merger with a target company, and eventually acquiring shares in PIPEs. In return for their services, sponsors are compensated with a substantial reward (purchasing a block of shares at a nominal price that will be adjusted to equal 25% of the IPO proceeds or, equivalently, 20% of post-IPO equity), as well as an additional earnout component. Consequently, the surplus of sponsors, which is estimated to be \$4.30 per share, is offset by non-redeeming shareholders and target shareholders. This sponsors' promote is what I consider the biggest problem inherent in the SPAC mechanism because, besides implying substantial costs for the target company and diluting the value of SPAC shares, it favors moral hazard scenarios in which mergers are approved without considering the effective reliability and expected market performance of the target company, thus resulting in long term losses for investors. In this framework, the SEC made the first step by proposing several rules and amendments aimed at evolving to a more sustainable equilibrium in the SPAC's structure. In the SEC Statement of 30<sup>th</sup> March 2022, regulators focused on erasing the regulatory distinction between SPACs and IPOs by strengthening the disclosure requirements for de-SPAC transactions, increasing the liability of underwriters through a broader reclassification under a new Securities Act

Rule 140a, redetermining the SRC eligibility and, most importantly, erasing the PSLRA safe harbor. Lastly, SPACs represented a huge innovation for private space companies, which, starting from 2020, found an easier and shorter way to go public. In this way, space companies raised additional capital more rapidly, thus allowing for a faster expansion of their business through strategic acquisitions and technological improvements. On the other hand, almost all of these space companies are now trading far below their initial offering price. In this regard, I calculated Rocket Lab's returns over three different periods, obtaining a ROI of 7.08% between the SPAC IPO and the merger, a ROI of 36.09% in the first trading day after the merger announcement, and a ROI of -9.04% six months after the completion of the merger. All of these results provide support to the conclusions drawn by the literature regarding market performances of companies going public via SPAC, namely that there are moderately positive returns in the period between the SPAC IPO and the merger, substantially positive returns after the merger announcement, and negative post-merger returns over the long term. We can conclude that the SPAC mechanism has a strong potential to represent a major way of allowing companies to go public, but currently it presents several inherent flaws that should be addressed as soon as possible. Hopefully, further studies on SPACs' market performances after the implementation of new SEC regulations may shed more light on the SPAC phenomenon.

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