

A Sober Look at SPACs

Finance Working Paper N° 746/2021

April 2021

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ECGI Working Paper Series in Finance

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We thank Elyssa Pak, Nikhil Aggarwal, Cindy Kang, Jeffrey Kim, Jessica Berman, Clara Daines, Jessica Shin, Tyler McClure and Victoria Pu all of whom provided research assistance on this project. We thank Todd Hines for library and data assistance. We thank Bobby Bartlett, Steve Choi, Kevin Davis, Jared Ellias, Ron Gilson, Rob Jackson, Marcel Kahan, Vic Khanna, Frank Partnoy, Paul Mahoney, Curtis Milhaupt, Ed Rock, Holger Spamann as well as seminar participants in the ETH, University of Hamburg, Berkeley, NYU, and CLAWS workshops and the BYU Winter Deals Conference for comments on earlier drafts. We also thank a large number of lawyers, bankers, and other professionals who work on SPACs for speaking with us regarding this project.

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Abstract

A Special Purpose Acquisition Company ("SPAC") is a publicly listed firm with a two-year lifespan during which it is expected to find a private company with which to merge and thereby bring public. SPACs have been touted as a cheaper way to go public than an IPO. This paper analyzes the structure of SPACs and the costs built into their structure. We find that costs built into the SPAC structure are subtle, opaque, and far higher than has been previously recognized. Although SPACs raise \$10 per share from investors in their IPOs, by the time the median SPAC merges with a target, it holds just \$6.67 in cash for each outstanding share. We find, first, that for a large majority of SPACs, post-merger share prices fall, and second, that these price drops are highly correlated with the extent of dilution, or cash shortfall, in a SPAC. This implies that SPAC investors are bearing the cost of the dilution built into the SPAC structure, and in effect subsidizing the companies they bring public. We question whether this is a sustainable situation. We nonetheless propose regulatory measures that would eliminate preferences SPACs enjoy and make them more transparent, and we suggest alternative means by which companies can go public that retain the benefits of SPACs without the costs.

Keywords: SPAC, Securities Law

JEL Classifications: G00, G30, G34, K2, K22

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A Sober Look at SPACs¹

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Abstract

A Special Purpose Acquisition Company (“SPAC”) is a publicly listed firm with a two-year lifespan during which it is expected to find a private company with which to merge and thereby bring public. SPACs have been touted as a cheaper way to go public than an IPO. This paper analyzes the structure of SPACs and the costs built into their structure. We find that costs built into the SPAC structure are subtle, opaque, and far higher than has been previously recognized. Although SPACs raise \$10 per share from investors in their IPOs, by the time the median SPAC merges with a target, it holds just \$6.67 in cash for each outstanding share. We find, first, that for a large majority of SPACs, post-merger share prices fall, and second, that these price drops are highly correlated with the extent of dilution, or cash shortfall, in a SPAC. This implies that SPAC investors are bearing the cost of the dilution built into the SPAC structure, and in effect subsidizing the companies they bring public. We question whether this is a sustainable situation. We nonetheless propose regulatory measures that would eliminate preferences SPACs enjoy and make them more transparent, and we suggest alternative means by which companies can go public that retain the benefits of SPACs without the costs.

Introduction

Special Purpose Acquisition Companies, or “SPACs” raise cash through an IPO and then have two years to search for a private company with which to merge and thereby bring public. When a SPAC proposes a merger, SPAC shareholders have an option to redeem their shares rather than participate in the merger and get back their full investment with an attractive return. If a SPAC fails to complete a merger, it liquidates and returns all funds to its shareholders with

¹ We thank Elyssa Pak, Nikhil Aggarwal, Cindy Kang, Jeffrey Kim, Jessica Berman, Clara Daines, Jessica Shin, Tyler McClure and Victoria Pu all of whom provided research assistance on this project. We thank Todd Hines for library and data assistance. We thank Bobby Bartlett, Steve Choi, Kevin Davis, Jared Ellias, Ron Gilson, Rob Jackson, Marcel Kahan, Vic Khanna, Frank Partnoy, Paul Mahoney, Curtis Milhaupt, Ed Rock, Holger Spamann as well as seminar participants in the ETH, University of Hamburg, Berkeley, NYU, and CLAWS workshops and the BYU Winter Deals Conference for comments on earlier drafts. We also thank a large number of lawyers, bankers, and other professionals who work on SPACs for speaking with us regarding this project.

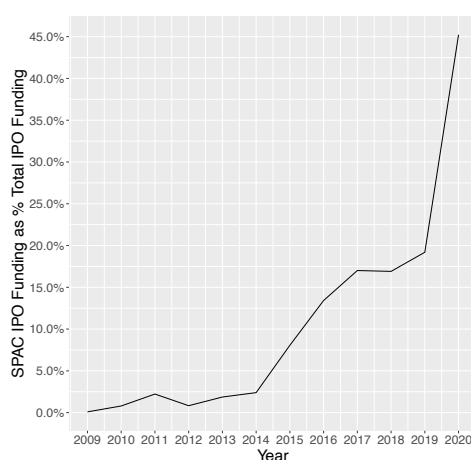
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interest. Once considered a “backdoor”⁵ to the public markets for companies closed out of the IPO market, SPACs have recently gone mainstream—with a bang. Figure 1 shows their growth over the past decade. In 2020, SPACs have already raised as much cash in their IPOs as they did over the entire preceding decade.⁶ As of October 21, 2020, there are 290 SPACs with \$86.5 billion in cash that have either filed for IPOs, are searching for targets, or have announced proposed mergers.⁷ Some recent commentary has referred to a SPAC “bubble” and SPAC “hype.”⁸ Perhaps fueling the hype are many more press reports that focus on a few successful, high-visibility SPACs.⁹

Figure 1: SPAC IPO Funding as a Percent of Total IPO Funding



⁵ E.g. Jacob Rund and Andrea Vittorio, “Blank Check” Companies See Revival as Big names Embrace Trend, Bloomberg Law, July 24, 2019; Alexander Osipovich, Blank-Check Boom Gets Boost From Coronavirus, Wall Street Journal, July 13, 2020, <https://www.wsj.com/articles/blank-check-boom-gets-boost-from-coronavirus-11594632601>.

⁶ Data from SDC Platinum New Issues File and SPAC Insider. In counting US IPOs, we ignore very small ones that raised less than \$40 million, which is the lowest amount raised by the SPACs we study. The total money raised among these very small IPOs is quite small, meaning they have a negligible impact on SPACs as a percentage of total US IPO funding.

⁷ Data from SPACInsider.com

⁸ Gillian Tett, Bubble Warning: even college kids are touting SPACs, Financial Times, October 8, 2020; Emily Graffeo, Former Goldman Sachs CEO Lloyd Blankfein says a wash of free money is creating ‘bubble elements’ citing SPAC market, Business Insider, October 8, 2020; Yoel Minkoff, DraftKings CEO calls for calm amid SPAC market hype, Seeking Alpha, August 30, 2020; Ben Winck, A new ETF will let investors participate in the stock market’s \$22 billion craze, Market Insider, August 3, 2020.

⁹ For instance, Virgin Galactic received a great deal of press attention when it went public via SPAC in 2019. See, e.g. <https://www.cnbc.com/2019/07/09/virgin-galactic-deal-sparks-interest-in-an-obscure-investment-vehicle-with-a-spotty-track-record.html>. Other prominent firms to go public recently via SPAC have included DraftKings and Nikola Corp. See for instance, “Why Nikola Decided to Merge With a SPAC. And Why More Such Deals Are Coming.” Barons, by Nicholas Jasinski, Aug. 2, 2020, available <https://www.barrons.com/articles/why-nikola-decided-to-merge-with-a-spac-and-why-more-such-deals-are-coming-51596369610>

In this paper, we take a closer look at SPACs. We find that their structure—built to support a circuitous two-year process from IPO to merger—creates substantial costs, misaligned incentives, and on the whole, losses for investors who own shares at the time of SPAC mergers. By contrast, there is an essentially separate group of investors that buy shares in SPAC IPOs and either sell or redeem their shares prior to the merger, and these investors do very well.

Commentators attribute four primary advantages to SPACs over IPOs as a means of going public. First, they claim that SPACs are a cheaper way of going public than an IPO because they avoid the IPO “pop”—the perceived underpricing that some believe shortchanges issuers.¹⁰ Second, they claim that SPACs provide more certainty in pricing and execution than IPOs and a faster path public.¹¹ Third, before the recent SPAC craze, SPACs were seen as a vehicle by which companies shut out of the IPO market—due to complexity or uncertainty in their businesses—could go public.¹² Finally, apart from the comparison with IPOs, SPACs have been described as “poor man’s” private equity in that anyone can invest in a SPAC and bet on the skills of its management in identifying an attractive target, negotiating a good deal, and helping the post-merger company produce value.

We evaluate these claims based on an analysis of all 47 SPACs that merged between January 2019 and June 2020. We find that, for the most part, the claims are overstated. Most centrally, we explain how the SPAC structure results in substantial dilution of the value of SPAC shares, and we measure that dilution. Although SPACs issue shares for roughly \$10 and value their shares at \$10 when they merge, as of the time of a merger, the median SPAC holds cash of

¹⁰ For instance, a recent Financial Times article notes that “[b]y using Spacs, [companies] can skip over the expensive and time-consuming IPO process.” See Aliaj, Ortenca et. al. “Can SPACs shake off their bad reputation?” - Financial Times, August 13, 2020. The article goes on to quote Bill Gurley, as saying “[c]learly, the rampant and worsening underpricing of IPOs has created a huge arbitrage opportunity for SPACs.”

¹¹ See, for instance, a recent Baker Botts memo, asserting that “[a]nother key factor in the recent SPAC boom is the turbulence in the traditional IPO market. A SPAC transaction provides a target company with a measure of certainty that a traditional IPO cannot. The target negotiates a fixed price per share with only one party – the SPAC – and though the amount to be raised is not guaranteed due to potential shareholder redemptions, the valuation is locked in.” <https://www.bakerbotts.com/thought-leadership/publications/2020/july/a-surge-of-spacs-in-a-turbulent-economic-climate>. See also <https://www.barrons.com/articles/why-nikola-decided-to-merge-with-a-spac-and-why-more-such-deals-are-coming-51596369610>. A Wachtell Lipton memo on SPACs similarly states that a benefit of SPACs compared to IPOs is greater price certainty.

<https://www.wlrk.com/webdocs/wlrknew/ClientMemos/WLRK/WLRK.27066.20.pdf>

¹² For instance, a 2016 news article in the Globe and Mail reported that SPACs target companies in “small-to-mid-market sectors” that attract less interest from pension funds and other investors who might buy in to an IPO. See Willis, Andrew and McKee, Niall, “Closing in on a deal to break SPACs’ silence” 19 July 2016. A recent article in the American Prospect quotes Andrew Park as saying “[i]f we go back ten years or so, SPACs were the back alley of finance.” The article continues “[u]sually only companies that had ... some other reason to avoid transparency would use [a SPAC] to go public...But that sentiment has almost completely flipped..

only \$6.67 per share. In other words, SPAC dilution amounts to roughly 50% of the cash they ultimately deliver to companies they bring public. These costs are much higher than those for IPOs, even accounting for underpricing, and are roughly twice as high as even SPAC skeptics have previously estimated.¹³ Most reporting on SPACs overlooks how redemptions amplify their expenses, and passes over how subtler SPAC costs translate into losses for investors that hold shares through SPAC mergers.

We find that SPAC shares tend to drop by one third of their value or more within a year following a merger. This suggests that it is the investors that hold shares at the time of SPAC mergers, and for a period of time thereafter, that are footing most of the bill for SPAC costs. From the perspective of companies going public, therefore, SPACs have indeed been cheap. But we wonder whether this is a sustainable situation. It is hard to believe that SPAC shareholders will continue to take these losses.

Some SPACs produce positive post-merger returns for their shareholders. We find that SPACs sponsored by large private equity funds and former Fortune 500 CEOs and senior executives are, on average, more successful than others. Those SPACs are still highly dilutive but not as dilutive as SPACs lead by other sponsors. In addition, those sponsors apparently can produce enough value through ongoing involvement with a post-merger company to fill the hole created by their SPAC's dilution. Even for those SPACs, however, the dilution is substantial, returns are mixed, and SPAC shareholders or target shareholders, or both, bear that cost. Furthermore, many SPACs with high profile sponsors have performed disastrously, suggesting that they provide no guarantee that they will make up for the costs embedded in the SPAC structure.

We find that commentators' claims that SPACs deliver greater price and deal certainty compared to IPOs, are overstated. One reason, among others, is that they do not fully appreciate the sources of SPAC dilution and as a result do not recognize that the extent of SPAC's dilution is not known until the time of the merger, when shareholders have decided whether to exercise their rights to redeem their shares.

¹³ Most SPAC skeptics estimate SPAC costs to be roughly 25% of money raised. This is mainly because they focus on the dilution caused by sponsor's taking a large block of shares at a nominal cost at the time of the IPO. See, e.g. "SPACs Aren't Cheaper Than IPOs Yet" by Matt Levine, Bloomberg Money Stuff, July 27, 2020; see also Rampell, Alex and Kupor, Scott: "In Defense of the IPO, and How to Improve it." available <https://a16z.com/2020/08/28/in-defense-of-the-ipo/>.

We agree with the claim that a SPAC merger may offer advantages over the IPO process for firms with information that is difficult to convey to investors or firms that investors have difficulty valuing. Some of this advantage is the result of regulatory leniency toward SPACs relative to IPOs. Perhaps most importantly, SPACs and their merger targets can avail themselves of a safe harbor against liability under the securities laws for projections and other forward-looking statements. Companies going public in an IPO, however, are not covered by this safe harbor and rarely provide such information. The extent to which this and other regulatory advantages explain SPACs' popularity is impossible to say, but as a policy matter the differential treatment is difficult to justify.

SPACs also have transactional means of conveying information to potential investors. When SPACs merge, they often make a private placement to one or more institutional investors. Those investors review confidential information regarding a SPAC's target, which goes beyond what is disclosed to many public investors in an IPO. These private placements are then disclosed to the market prior to the merger and hence serve to validate the merger. A company going public in an IPO typically does not issue shares in a private placement concurrently with its IPO, but there is no legal bar to doing so. To the extent the practice is common in SPACs and uncommon in IPOs, this is an advantage of SPACs. As we suggest in Part V, however, the transactional advantages of a SPAC can be achieved in what we term a "sponsored" IPO or direct listing, either of which could include private placements.

Finally, the characterization of SPACs as "poor man's" private equity is off the mark. SPAC shareholders are overwhelmingly large funds, not retail investors. Moreover, outward appearances notwithstanding, investment patterns in SPACs are not analogous to private equity investments. A SPAC typically sells shares to one set of investors in its IPO and another set of investors when it comes time to merge. Nearly all pre-merger shareholders exit at the time of the merger, either by redeeming their shares or selling them on the market. In effect, a SPAC pays IPO investors generously to get the SPAC up and running as a public company so that other investors can later buy shares once a target has been selected to bring public. As we explain, investors that buy later and hold shares through SPAC mergers bear the costs of the generous deal given to IPO-stage investors.

In Part I of this paper, we explain the SPAC structure and process. In Part II, we investigate who invests in SPACs at the IPO stage and who invests at the time of the merger,

showing that the two stages of investment are largely independent of one another. In Part III, we analyze the dilution and misaligned incentives inherent in the SPAC structure. In Part IV, we show that, by accepting the mergers that sponsors propose—and from which sponsors earn high returns—SPAC shareholders tend to bear the cost of the dilution embedded in SPACs. In Part V, we assess the regulatory and transactional advantages of SPACs over IPOs, and we propose a “sponsored IPO” or “sponsored direct listing” as a means of achieving the benefits of a SPAC at much lower cost. These proposals essentially amount to a SPAC without the two-year delay. We conclude by offering policy proposals to address SPACs’ regulatory preferences and to enhance the transparency of SPACs.

I. What Is A SPAC?

A SPAC is a publicly held investment vehicle created to merge with a private company and thereby bring it public. That simple description, however, misses key features of SPACs’ complexity and hidden costs. In this Part, we describe the structure of SPACs. In Part III, we analyze the costs inherent in their structure. We base our analysis on the cohort of all 47 SPACs that merged between January 2019 and June 2020 (to which we will refer as the “2019-20 Merger Cohort”).¹⁴

The creation of a SPAC begins with a sponsor forming a corporation and working with an underwriter to have the SPAC go public in an IPO. Sponsors range from large private equity funds to former S&P 500 CEOs to individuals with no particularly relevant background. Prior to the IPO, the sponsor acquires a block of shares at a nominal price that will amount to 25% of IPO proceeds (or, equivalently, 20% of post-IPO equity). This block of shares, known as the sponsor’s “promote,” is the sponsor’s compensation for work it does for the SPAC. In addition, concurrently with the IPO, the sponsor purchases SPAC warrants, shares or both at prices estimated to represent fair market values. The proceeds of the sponsor’s investment cover the cost of the IPO and operating costs while the SPAC is searching for a merger target.

¹⁴ We have also collected data on all 17 SPACs that went public in 2015 and merged between 2016 and 2018. We find that there are few substantial differences between these two groups of SPACs with respect to structure and terms. Because SPACs that went public in 2015 have had at least two years of post-merger performance, we use that group of SPACs to analyze performance over a longer term than is possible with SPACs that merged in 2019 and 2020. Therefore, we present data on the earlier SPACs only in Part IV, where we analyze post-merger price performance over a two-year period.

In its IPO, a SPAC sells units consisting of a share, a warrant, and in some cases, a right to a fraction of a share. SPACs uniformly set prices of units at \$10. Among the SPACs in the 2019-20 Merger Cohort, the number of shares that can be purchased with a warrant ranges from $\frac{1}{4}$ share to one share, with an exercise price uniformly set at \$11.50 per share. All 15 SPACs that included rights in their IPO units provided that a right could be exchanged for $\frac{1}{10}$ of a share at no cost if the SPAC consummated a merger. Across all the 2019-20 Merger Cohort, IPO proceeds ranged from \$39 million to \$690 million with a mean and median of \$251 million and \$220 million, respectively.

The proceeds of a SPAC's IPO are placed in trust and invested in Treasury notes. Under the SPAC's charter, cash in the trust can be used only (a) to acquire a company, (b) to contribute to the capital of a company with which the SPAC merges, (c) to distribute to shareholders in liquidation if the SPAC fails to consummate a merger, or (d) to redeem shares, as discussed below. The SPAC has roughly two years to identify a merger target and to complete a merger. Subject to shareholders voting to extend either the SPAC's search period or the time it needs to consummate a merger already announced, if the SPAC does not merge within two years, it liquidates and distributes the funds in the trust to the public shareholders. In the event of a liquidation, the sponsor loses its investment.

The key feature of a SPAC, which drives much of our analysis of SPAC costs below, is that when a SPAC proposes a merger, its shareholders have a right to redeem their shares. The redemption price is the IPO price of the SPAC units plus interest that has accumulated in the trust. In some SPACs, a portion of the proceeds from the sponsor's investment at the time of the IPO is placed in the trust to subsidize the return to redeeming shareholders. Importantly, however, shareholders that redeem their shares keep the warrants and rights that were in the units sold in the SPAC's IPO. The warrants and rights are used to attract IPO investors by compensating them for parking their cash in the SPAC for two years.

Even a SPAC with little cash remaining after redemptions can bring a target company public with a merger.¹⁵ The result would simply be that SPAC shareholders own a small slice of

¹⁵ Nevertheless, a small number of companies that go public by merging with a SPAC struggle to meet stock exchange listing requirements and at times risk being de-listed from NASDAQ and NYSE. These firms still remain public, but subsequently move to trading on much less prominent and liquid platforms, such as OTC markets. Some firms get de-listed as a result of a dramatic drop in share price after a merger with a SPAC. Another challenge at times is meeting the requirements for the minimum numbers of shareholders in a listed company. NASDAQ Rule 5505 requires at least 300 holders of round lots, defined as blocks of at least 100 shares. NYSE Rule 102.01A

the post-merger company. But merger targets often need cash and commonly include in merger agreements conditions of closing that require a minimum amount of cash in the SPAC following redemptions.

SPACs and their sponsors have four ways to meet a target's minimum cash requirement when they expect redemptions to be high. First, the sponsor itself can make an additional investment at the time of the merger. Second, the SPAC can pitch the merger to third-party investors and attract a fresh round of funding. These investments by sponsors and third parties take the form of private placements conditioned on consummation of the proposed merger. Third-party investments are often made at a price below the redemption price of public shares, which is their minimum trading price prior to the merger. In addition, sponsors often provide side-payments to third-party investors in the form of shares or warrants, thereby reducing the effective price the third-party investors pay. A third way for a sponsor to preserve cash in the SPAC's trust is to make a side payment to one or more large public shareholders of the SPAC, or to investors that will buy shares on the public market, in exchange for a commitment not to redeem their shares. Finally, in some transactions, a major shareholder of the target makes an investment in the SPAC.¹⁶

The "A" in their name notwithstanding, SPACs do not acquire companies. Instead, SPACs typically merge with private companies in transactions that leave the former SPAC shareholders with minority interests in the merged company. The mean and median ownership of SPAC shareholders, including sponsors, in post-merger companies is 40% and 35%, respectively, in the 2019-20 Merger Cohort.

Median post-merger market cap of firms in the 2019-20 Merger Cohort is \$500 million. This is similar to the \$580 million median market cap for firms listed on the Russell 2000 Index. Roughly a quarter of the mergers resulted in firms with market caps of \$1 billion or more, and an eighth with targets worth \$2 billion or more. Thus, while firms going public via mergers with

requires at least 400 holders of round lots. Some SPACs have had difficulty retaining or attracting enough shareholders to meet this requirement. For instance, Xynomic Pharmaceuticals Holdings, Inc, which merged with the SPAC Bison Capital Acquisition Corporation in May of 2019, disclosed in its 10-Q on November 14th, 2019, that it had received notice of non-compliance with NASDAQ's initial listing requirements for the minimum number of round lot holders. The exchanges have more stringent initial listing requirements than continued listing requirements. Although a company that goes public via SPAC is technically merging with an already listed firm, NASDAQ requires that it re-certify compliance with initial listing requirements. See NASDAQ Question 1416, available https://listingcenter.nasdaq.com/Material_Search.aspx?materials=1416&mcd=LQ&criteria=2&cid=34.

¹⁶ SPACs where this occurred include Capitol Investment Corp IV and Mudrick Capital Acquisition.

SPACs are smaller than many high-profile firms that go public in IPOs, SPAC targets are hardly micro-cap companies.

Figure 2 summarizes the steps of a SPAC's lifecycle beginning with the IPO: (a) public investors buy units consisting of shares and warrants in a SPAC's IPO; (b) within two years, the SPAC proposes a merger by which a private company would go public; (c) often, well over two thirds of the SPAC's shares are tendered for redemption; (d) contemporaneously with the merger, the sponsor itself and/or third parties purchase shares in private placements (PIPEs) to replenish some of the cash the SPAC paid out to redeem its shares; (e) the merger proceeds; (f) the SPAC's remaining public shareholders own a small slice of the post-merger company's equity; and (g) the SPAC sponsor and third-party private investors similarly own small slices of the company's equity.

Figure 2: The SPAC Merger Process

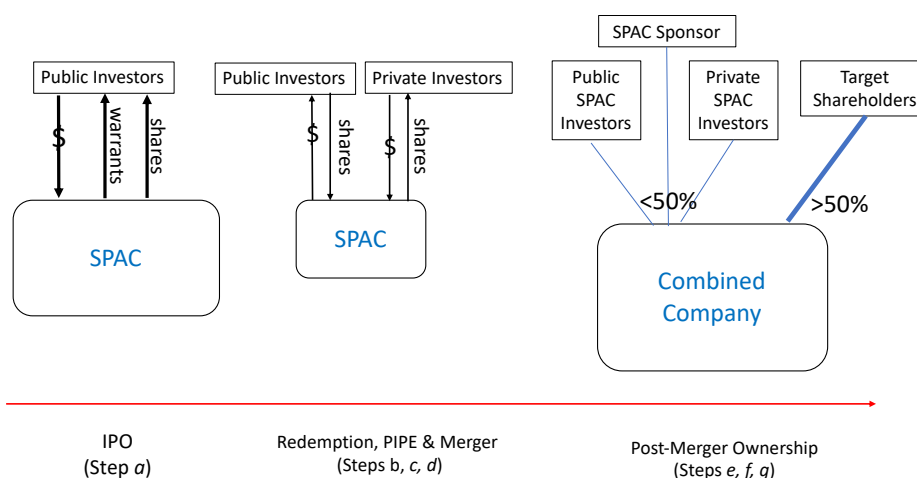


Table 1 provides data for each step in the SPAC process illustrated above.¹⁷ To reduce the impact of extreme values in this table and the tables throughout this paper, we present medians along with 25th and 75th percentiles rather than means. The median proceeds of a SPAC IPO are roughly \$220 million, but at the median, 73% of those proceeds are returned to

¹⁷ The data we present in this paper is partially based on data available on the SPAC Insider website. Most, however, is hand collected from SPACs' SEC filings. Some of these filings are highly opaque and at time inconsistent from filing to filing. While we did our best to ensure accuracy in what we collected and aggregate here, it is certainly possible that there were errors in our data collection. We are confident, however, that such errors would not have a material impact on the aggregate data that we report.

shareholders in redemptions. Much of the cash lost in redemptions is recouped in PIPE investments, although for most SPACs, the replacement is not full. Contrary to some reports that “[t]he ratio of PIPE to SPAC [IPO] money is typically between 2:1 and 3:1”¹⁸ only two SPACs among the forty seven SPACs in the 2019-20 Merger Cohort had PIPE deals this large. Of the cash a SPAC delivers in a merger, the median amount contributed by public investors is 64% and the median contributed by PIPE investors is 25%. The remainder is contributed by the sponsor.¹⁹ Following a merger, SPAC shareholders, including the sponsor, hold a median of 34% of the company that has gone public, and the sponsor alone holds 12%.

Table 1: Overview of SPAC Characteristics

	Median	25th Percentile	75th Percentile
IPO Proceeds (\$M USD)	\$220	\$141	\$328
Redemptions (% IPO Proceeds)	73%	18%	95%
Total Cash Delivered to Target in Merger (\$M USD)	\$151.6	\$26	\$353
Cash to Target as % IPO Proceeds	71.5%	16%	121%
Public SPAC Investors: % Total Cash Delivered	64.2%	28%	99%
3rd Party PIPE: % Total Cash Delivered	24.6%	0%	43%
Sponsor PIPE: % Total Cash Delivered	0%	0%	11%
Target Post-Merger Market Cap (\$M USD)	\$501.6	\$321	\$955
Post-Merger Shares (%) Held by All SPAC Shareholders (including sponsor)	34.5%	24%	50%
Post-Merger Shares (%) Held by Sponsor	11.7%	6%	15%

¹⁸ “SPAC Attack: everything a founder or investor should know, by John Luttig July 17, 2020, available <https://luttig.substack.com/p/spac-attack-everything-a-founder>. Half a dozen or more other sources also pick up on this claim, for example see <https://www.rcis.co.za/the-investor-september-2020/> and <https://themacropolo.wixsite.com/naman/post/what-the-hell-is-a-spac-chamath>.

¹⁹ Here and elsewhere, we note that median figures for components of a total (e.g. total SPAC funding) cannot simply be added to get a figure for the median of that total. Thus, in Table 1, for instance, adding the median figures for % cash contributed by public investors, % cash contributed by 3rd party PIPE investors, and % cash delivered by SPAC sponsors does not add up to 100% of cash delivered. This is simply a mathematical property of medians.

In sum, a SPAC provides circuitous path to the public markets. The SPAC's IPO simply gets the SPAC up and running as a public company so that it will be in a position later to raise new funds in order to bring a company public. From a functional perspective, the merger is the IPO. In Part II, we investigate investment patterns in SPACs, which show that the disconnect between the SPAC IPO and the SPAC merger is even greater than redemption rates suggest—and that the description of SPACs as “poor man’s private equity” is inaccurate. Then, in Part III, we explain how the temporal and functional separation of a SPAC’s IPO and merger is the source of dilution that creates a substantial cost overhanging the SPAC’s merger. In Part IV, we analyze who bears that cost, SPAC shareholders or the target firms that SPACs bring public.

II. Who Invests in SPACs and When?

Commentators have described SPACs as “poor man’s private equity,” suggesting that retail investors invest in SPACs as bets on the sponsors’ skills in identifying and merging with attractive private companies to bring public.²⁰ On the other hand, people involved in the SPAC market report that investments in SPAC IPOs are dominated by a group of hedge funds known colloquially as the “SPAC Mafia,” which invest in SPAC IPOs and trade SPAC shares between the IPO and merger but often have little intention to remain invested through the merger.²¹ In this section, we investigate two related empirical questions. First, who invests in SPACs from the time of their IPO until their merger? Second, to what extent do pre-merger investors hold their shares through the merger and thereafter? In other words, first, does the shareholder base of SPACs support the characterization of SPACs as “poor man’s private equity,” and, second, do

²⁰ Rodrigues and Stegemoller (2013)

²¹ To date, there has been only limited reporting on this group of investors, and much of what we report is based on our interviews with sector insiders. A recent article in the Financial Times, “The twisted logic of reverse listings” from August 4, 2020, mentions the SPAC Mafia as a group of hedge funds with trading strategies based on SPAC warrants. SPAC Insider, a leading resource for investors and others in SPACs, sells shirts emblazoned with “SPAC Mafia: Make us an offer we can’t refuse ...” referring implicitly to the fact that these investors can earn guaranteed returns above treasury rates by buying units in SPAC IPOs and redeeming or selling the shares. These shirts are available here: <https://spacinsider.com/product/spac-mafia-short-sleeve-t-shirt/>. The origin of the “SPAC Mafia” term stems at least as far back as an earlier generation of SPACs. Prior to the financial crisis, SPACs contained provisions in which an affirmative vote by shareholders was required in order to proceed with merger transactions. A July 16, 2016 article from the Globe and Mail, one of Canada’s primary newspapers, titled “Closing in on a deal to break SPACs’ silence” mentions that for these earlier SPACs, a group of hedge funds that came to be known as the “SPAC Mafia” would buy up shares and seek to vote down merger deals unless they were given inducements to support the deals. The terms of modern SPACs prevent investors from blocking and extracting payoffs in this way.

investment patterns support the description of SPACs as being analogous to “private equity”? The answers to these questions in turn shed light on a key question in the broader analysis of this paper: what useful role, if any, do the SPAC IPO and the two-year period between the IPO and the merger play in carrying out the function of SPACs, which is to bring companies public?

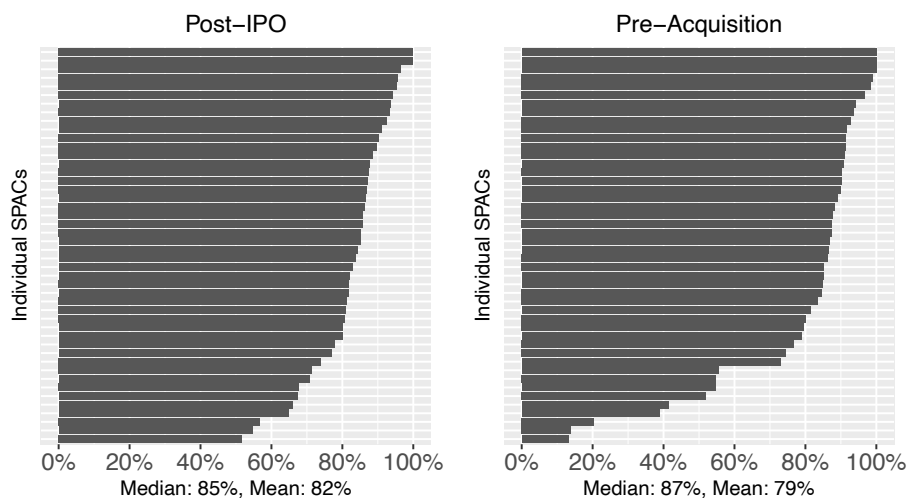
In order to investigate share ownership of SPACs, we use data from SEC Form 13F filings. Large funds are required to file Form 13F, in which they disclose their shareholdings on a quarterly basis.²² Data from those filings allow us to determine the extent to which large funds hold SPAC shares, and how long they hold their shares.

A. Who Invests in SPACs Between the IPO and the Merger?

Figure 3 shows the percentage of publicly traded shares held by 13F filers, as of the first 13F filing following a SPAC’s IPO and as of the last 13F filing date prior to its merger. Share ownership by 13F filers is essentially constant from the time of the IPO until the merger. Median ownership by 13F filers is 85% post-IPO and 87% pre-merger. Mean ownership is 82% and 79%, respectively. These figures understate the extent to which large investors hold SPAC shares. First, some shares not held by 13F filers are held by insiders. Second, some shares not owned by 13F filers are surely held by wealthy individuals and institutional shareholders that are not required to file Form 13F.

²² 13F filing requirements are established under §13(f) of the Securities Exchange Act, codified as 15 U.S.C.A. §78m. Roughly speaking, disclosure is required from “institutional investment managers,” which covers institutions with at least \$100 million in securities holding investing on their own account and natural persons with at least \$100 million in securities investing on behalf of another. Thus, most institutional investors will be covered, but wealthy individuals investing on their own behalf will not.

Figure 3: Percent of SPAC Shares Owned by 13F Filers Following SPAC IPOs

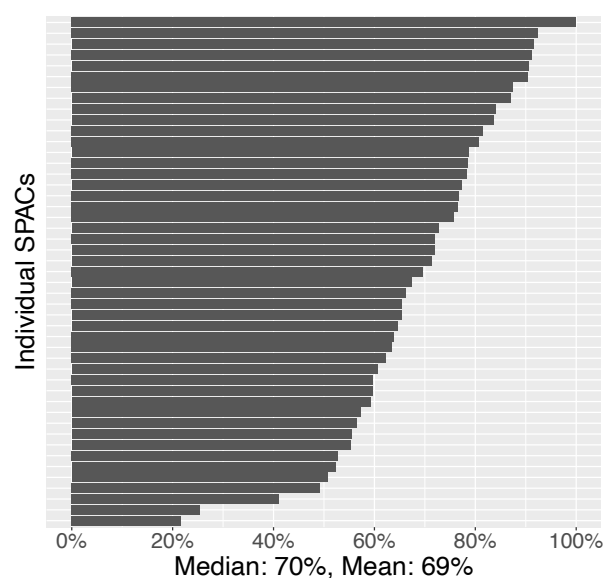


Based on these data, it seems clear that the description of SPACs as “poor man’s private equity” is off the mark. Some retail investors may own shares prior to a merger announcement and then hold shares in the post-merger company, but the figures contradict a description of SPACs as instruments of financial democracy.

What about the SPAC Mafia? How much of SPAC IPO funding comes from funds that reportedly invest regularly in SPACs at the time of their IPOs? Since “SPAC Mafia” is just a casual reference among industry insiders, there is no list or definition of its members. We define the group as 13F filers that, between the time of a SPAC’s IPO and its announcement of a merger, hold at least 100,000 shares in at least 10 SPACs that went public between 2010 and June 2020.

SPAC Mafia members, defined as we have, account for roughly 70% of total post-IPO shareholdings. The top five SPAC Mafia funds held 15% of total 2019-20 post-IPO shares. As Figure 4 shows, however, there are a small number of SPACs that rely far less on the SPAC Mafia.

Figure 4: 'SPAC Mafia' Ownership of Total SPAC Shares - First Quarter Post-IPO

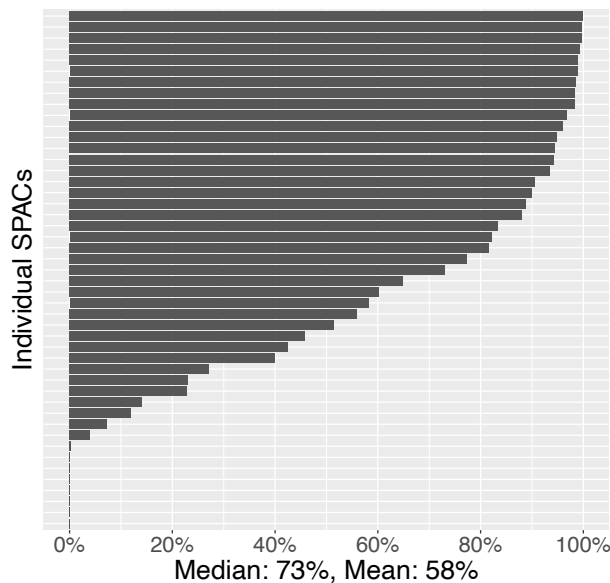


B. Redemptions and Refinance

A key feature of SPACs is their generous redemption right. At the time a merger is proposed, shareholders can redeem their shares for the \$10 price of units sold in the SPAC's IPO, plus interest—and keep their warrants and rights to boot. This redemption right raises the possibility that, when a SPAC merges, it will have to obtain new equity to meet a target's cash needs. In this section, we analyze the extent to which SPAC shareholders redeem their shares, and the extent to which SPACs refinance through private placements.

As Figure 5 shows, the mean and median redemption rates among our 2019-20 Merger Cohort are 58% and 73%, respectively. A quarter of those SPACs saw redemptions over 95%.

Figure 5: SPAC Redemptions



To replace cash lost to redemptions, 77% of SPACs raised additional money at the time of their mergers from a combination of sources. Of the SPACs that raised additional money, 83% raised money from third-party investors, 61% raised money from the sponsor, and 44% raised money from both.²³ Across all SPACs, the mean amount of funding from sponsor and third-party investments at the time of the merger was 40% of the cash a SPAC delivered in its merger, and in over a third of SPACs, the majority of funds delivered to targets came from such equity infusions—as opposed to funds the SPAC had raised in its IPO.²⁴

Even these figures understate the extent to which SPACs rely on new investors at the time of their merger—and thus overstate the role of SPAC IPOs. It is not uncommon for SPAC sponsors to make side-payments to existing shareholders in exchange for commitments not to redeem or sell their shares, nor is it uncommon for sponsors to make side payments to investors

²³ Among SPACs with third-party investments, the mean and median third-party investments came to 42% and 36% of cash delivered to targets. Among SPACs in which sponsors made additional investments at the time of the merger, their mean and median investments constituted 30% and 14%, respectively, of cash delivered.

²⁴ Some SPACs negotiate “Forward Purchase Agreements” (FPAs) at the time of their IPOs in which a third-party or the SPAC sponsor pre-commit to make PIPE investments at the time of the merger. The firmness of these commitments varies. We count purchases pursuant to these FPAs as equivalent to other PIPEs.

that commit to purchase shares on the market and not to redeem them.²⁵ These side deals are much the same as private placements made to replenish cash lost to redemptions.²⁶

C. Market Exit

The extent of redemption and refinancing in connection with SPAC mergers show that a SPAC's IPO and its financing of a target are largely independent of one another as an empirical matter. In most SPACs, over two-thirds of IPO proceeds are returned to shareholders and new equity is raised at the time of the merger.

What about the shares that are not redeemed? Do these reflect instances where early-stage SPAC investors express confidence in the sponsor's proposed deal by holding their shares through the merger and thereafter? If so, then characterization of SPACs as analogous to private equity would not be entirely off the mark. SPACs would be private equity with an exit option.

To investigate this, we examine the extent to which 13F shareholders that hold shares immediately prior to the merger announcement continue to hold after the merger.²⁷ To quantify this, we define a "divestment rate," analogous to the redemption rates discussed above.

Divestment can occur as a result of either redemption or sale of shares on the market. If, for instance, a given 13F investor reports holding 100,000 SPAC shares immediately before the merger announcement, and it holds 50,000 shares immediately after the merger closes, then that investor will have a 50% divestment rate.²⁸ We then aggregate investor divestment rates to a

²⁵ See, for instance, the proxy statement issued by Chardan Healthcare Acquisition Corp on September 23, 2019, which discloses several such transactions under the heading of "*Shareholder Agreements*." Health Sciences Acquisition Corp disclosed similar arrangements in its 14A proxy statement from November 29, 2019, under the heading of *Other Agreements*. This disclosure notes "As of the Record Date, HSAC [the Sponsor] had entered into voting agreements with holders of 4,547,000 HSAC Shares pursuant to which such stockholders, ... agreed to ... not redeem or sell their shares. In addition, as of the Record Date, HSAC had entered into agreements with other investors that agreed to purchase up to 2,374,400 HSAC Shares at HSAC's request and not to redeem such HSAC Shares in connection with the closing of the Business Combination." Yet no details about payment terms are provided about these arrangements.

²⁶ SPAC disclosures do not always disclose material aspects of the transactions, such as the compensation provided in exchange for commitments not to redeem. It is also not clear that these arrangements are always disclosed. Therefore, we do not attempt a quantitative accounting of these agreements. Our analysis of the extent to which SPACs depend on new money coming into the SPAC at the time of the merger understates the extent of this phenomenon.

²⁷ For shareholdings after the merger, we look to the first 13F filings made after the merger is completed. For shareholdings before the merger, we look at 13F filings six months before the merger, but the results of these computations are very similar regardless of which pre-merger 13F filings we use, including those immediately following the SPAC IPO.

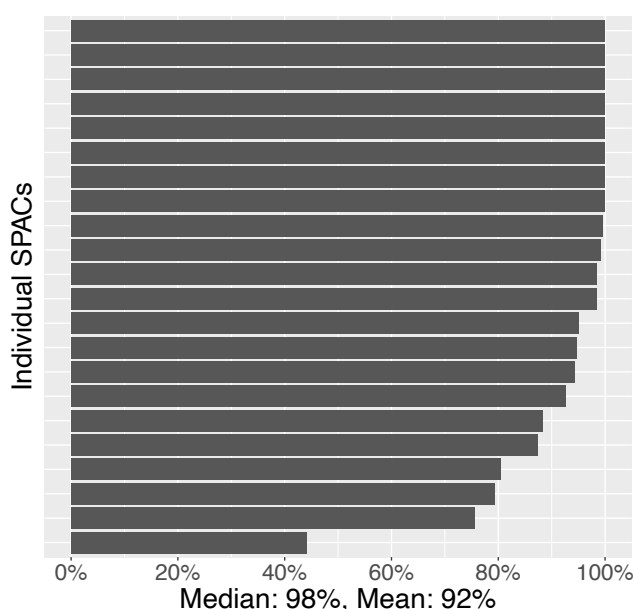
²⁸ Technically speaking, the most precise time we would want to measure shareholdings would be immediately after shareholders have made their final decisions on whether to redeem their shares or not. This is the first point when shareholders are directly exposed to the fundamental value of the target company. This generally comes shortly

SPAC-level calculation. Thus, a SPAC with a 75% divestment rate means that 75% of the shares held by 13F filers prior to the SPAC's merger announcement were either redeemed or sold to new investors after the prospective target was announced. Due to delays in reporting of 13F filings, we report these for SPACs that merged in 2019, but not those that merged in 2020.

Figure 6 plots the distribution of these divestment rates. The mean and median SPAC divestment rates are 90% and 98%, respectively. For the SPAC Mafia, divestment rates are even higher, with mean and median divestment rates of 97% and 100% respectively.²⁹

Even where redemptions are quite low, divestment rates indicate that very few pre-merger shareholders hold their shares until after the merger's completion. For instance, among the SPACs that saw 30% or fewer redemptions, the average divestment rate was still 85%.

Figure 6: SPAC 13F Divestment Rates (2019 Mergers)



This pattern of investment and subsequent divestment by 13F filers further supports our analysis of SPAC IPOs and mergers as transactions that are essentially independent of one another. The primary role that investors in a SPAC's IPO play is to get the SPAC up and

before the merger closes. But, 13F data are not available with sufficient time granularity to distinguish between the period between the redemption decision date and the merger date. Thus, we simply look at the first 13F filing following the merger.

²⁹ A 100% median divestment rate amongst SPAC Mafia members indicates that more than half of these funds retained no post-merger holdings amongst any of the SPACs they initially invested in.

running, and ready to bring a private company public in a later merger for which new equity is raised. IPO shareholders are well compensated for this role. They have the right to redeem their shares before a merger at a redemption price equal to the price they paid for the full units plus interest, and they keep the warrants and rights that were included in the units. Most shareholders take this deal and redeem their shares, and most of those that do not redeem their shares exit the SPAC by selling their shares on the public market when the market price is higher than the redemption price. Among the 2019-20 Merger Cohort, the mean annualized return for IPO investors that redeemed their shares was 11.6% – for a risk-free investment. Returns to redeeming investors include the redemption price plus the market value of their warrants and rights at the time of the SPAC mergers.

Thus, most shareholders that invest in a SPAC's IPO or that buy shares between its IPO and its merger play no role in the sole function for which SPACs are organized—to bring private companies public. They are not investing in SPACs as a form of private equity. Other investors of course buy the shares that pre-merger shareholders sell after a merger is announced, but once a merger has been announced, those investors are investing in the target company, just as any investor would invest in any other public company. The “private equity” element is no longer present.³⁰

III. Dilution Costs and Misaligned Incentives Inherent in the SPAC Structure

In Part I, we described the structure and terms of SPACs. In this Part III, we analyze the hidden costs inherent in the SPAC structure. The primary costs take the form of dilution that overhangs a SPAC's eventual merger. The dilution stems from the sponsor's “promote,” the underwriting fees, and dilution of post-merger shares caused by SPAC warrants and rights. These sources of dilution are in place at the time of a SPAC's IPO, but redemptions at the time of the SPAC's merger increase their impact on the dilution of remaining SPAC shares.³¹ This is the flip side of the 11.6% return that the pre-merger shareholders earn. The high return to

³⁰ It is true that shareholders that sell rather than redeem may sell when a SPAC's shares are trading at a premium above the redemption price due to the market's positive outlook on the proposed merger. But this is still not analogous to private equity because the shareholders do not remain invested while the sponsor works with the target to develop its business.

³¹ The dilution costs are largely fixed, either as a dollar value or as a number of securities given to holders without money backing them. When redemptions increase, these largely fixed costs become larger as a percentage of total cash delivered by the SPAC and hence a larger percentage of total value of the combined company.

redeeming investors does not come from any magic in the SPAC structure; it comes at the expenses of non-redeeming investors.

We measure the eventual cost of each element of this dilution in two ways: as a percentage of pre-merger cash that the SPAC delivers when taking a company public; and as a percentage of post-merger equity. We measure cash delivered as cash proceeds from the SPAC's IPO and PIPE(s) minus redemptions. We measure post-merger equity as the sum of post-redemption SPAC shares outstanding plus shares issued to target shareholders in the merger. The first figure is analogous to the cost of an IPO. We present it this way in order to compare SPAC costs with IPO costs below. The second figure represents the extent to which a merger must generate surplus to make it a value-increasing transaction for the parties jointly—that is, how much surplus is needed to fill the hole created by the dilution inherent in the SPAC's structure.

Assuming SPAC and target shareholders are reasonably well-informed and behave rationally, they will enter into a merger only if they expect the surplus from the deal to be large enough to cover the dilution that the SPAC will impose on the post-merger company. That surplus may stem from the value of going public, the uses to which the target can put the cash it will receive, and/or the value the SPAC's sponsor and management will bring to the post-merger company through continued engagement. But because a SPAC's surplus is difficult to predict in advance, and because a SPAC's dilution costs relative to either pre- or post-merger equity will not become evident until after the merger closes, when the extent of redemptions become known, SPAC and target shareholders could well make mistakes by entering into value-reducing transactions. Even when this occurs, however, the sponsor can do well. As we discuss below, the SPAC structure creates incentives for sponsors to recommend deals to SPAC investors even if the merger does not generate enough surplus to compensate them for the SPAC's significant costs.

In this Part III, we do not address the question of who bears the cost of dilution inherent in a SPAC, target shareholders or SPAC shareholders. That cannot be observed at the time of the transaction without knowing the true value of the target and any intangible value the sponsor brings to the target, neither of which is knowable. In Part IV, however, we analyze SPACs' post-merger price performance, and, on that basis, we make inferences regarding the extent to which target and SPAC shareholders bear the costs.

A. The Sponsor's "Promote" and Cash Investment

As explained in Part I, sponsors compensate themselves for the work they do for a SPAC by taking, at a nominal price, a block of shares equal to 25% of IPO proceeds, or equivalently, 20% of shares outstanding after the IPO. As is true of the other sources of dilution discussed below, the promote is in effect a tax on a SPAC's merger, the ultimate impact of which will depend on the extent of shareholder redemptions and on adjustments in the promote to which the sponsor may agree at the time of the merger.

The promote also creates a divergence of interests between the sponsor and the SPAC's shareholders. The sponsor's upside parallels the shareholders' upside. But the sponsor's downside does not. If the SPAC gives up more than it receives in a merger, and the post-merger shares decline in value, the SPAC shareholders lose while the sponsor still gains. As a result, especially as the two-year life of a SPAC nears its end, and a sponsor's options for consummating a merger narrow, the sponsor has an incentive to enter into a losing deal for SPAC investors if its alternative is to liquidate.

In addition to taking a promote, a sponsor typically invests several million dollars in its SPAC at the time of its IPO. The proceeds of that investment are used to cover underwriting fees and expenses that the SPAC incurs during its search for a target and, in some SPACs, to augment the return to redeeming shareholders. This additional investment by the sponsor, however, may actually worsen the misalignment of a sponsor's incentive. Because the investment will be lost if the SPAC does not merge, the sponsor will have more of an interest in merging on terms that are unattractive to SPAC shareholders than it would with the promote alone.

In Table 2, we show the dilution that the sponsor's promote imposes on a SPAC's eventual merger. We begin with the promote as a percentage of SPAC shares sold in the IPO—uniformly 25% in the 2019-20 Merger Cohort. The next line of Table 2 accounts for the fact that in some cases, when the SPAC merges, the target or a third-party investor negotiates for the sponsor to cancel some of its shares or warrants.³² We define the sponsor's "net promote" as its initial promote minus shares the sponsor cancels at the time of the merger or shares the sponsor

³² In addition to canceling some of their shares or warrants in negotiating a merger and third-party investments, sponsors often transfer shares or warrants as side payments. For purposes of calculating the dilution associated with the promote, we do not deduct those shares and warrants.

agrees to receive only if earnout targets are met.³³ If the sponsor cancels warrants, we deduct from the sponsor's promote the market value of the cancelled warrants, measured at the date of the merger.

The median net promote as a fraction of a SPAC's pre-merger equity is 31.3%. The 75th percentile for the sponsor's net promote is above 100%--meaning the sponsor's essentially free shares outnumber post-redemption public shares plus shares purchased in PIPEs. Thus, in over a quarter of all deals, the SPAC merges with more free shares given to the sponsor than shares issued to investors for cash. In order to deemphasize the extremes, we focus primarily on medians, rather than means, but still present the 25th and 75th percentiles.

The promote as a percentage of post-merger equity is of course lower because it takes account of the size of the target. As a percentage of post-merger equity, the median net promote is 7.7%. This figure can be viewed as the tax on the deal after taking account of redemptions and adjustments made to the sponsor's holdings at the time of the merger.

Table 2: The Sponsor's Promote

	Median	25th Percentile	75th Percentile
Promote as % IPO Proceeds	25%	25%	25%
Net Promote as % IPO Proceeds	25%	18%	25%
Net Promote as % Cash Delivered in Merger	31.3%	14%	140%
Net Promote as % Post-Merger Equity	7.7%	5%	12%

B. Underwriting Fees

SPAC underwriting fees are typically between 5% and 5.5% of IPO proceeds, which is slightly less than typical fees in a traditional IPO of comparable size.³⁴ Of that amount, about 3.5% of proceeds is typically conditioned on the SPAC consummating a merger, and payment is

³³ By not including such shares subject to earnout targets, we are being conservative in calculating the value of the sponsor's promote, as clearly, even shares subject to earnout requirements do have some value, even if their worth is less than that of unrestricted shares.

³⁴ Price Waterhouse Coopers, <https://www.pwc.com/us/en/services/deals/library/cost-of-an-ipo.html#:~:text=Underwriting%20makes%20up%20the%20largest,directly%20attributable%20to%20the%20IPO>

deferred until the merger is consummated.³⁵ The 5.5% fee appears reasonable, but recall that in most SPACs, most shares are redeemed. The underwriting fee, on the other hand, is not redeemed, and only rarely is it adjusted at the time of the merger.³⁶ So, if one measures the fee in relation to the funds ultimately invested in a company that goes public—an apples-to-apples comparison with an IPO—the underwriting fee is quite high. For example, if 50% of a SPAC's shares are redeemed, the effective fee is 11%.

From the perspective of the merged entity, underwriting fees represent depleted cash. To the extent the post-merger company receives cash from the SPAC, the underwriting fee is a cost of receiving that cash. But to the extent SPAC shares have been redeemed and the cash has been returned, the underwriting fee has generated no benefit to the post-merger company. The more shares that have been redeemed, the less benefit the merged company gets.

In Table 3, we show underwriting fees for the 2019-20 Merger Cohort. We first scale fees by IPO proceeds, as an underwriting fee is typically measured. The median is 5.5% of IPO proceeds. We then show the fee as a percentage of proceeds from IPO shares that are not redeemed and that are therefore invested in the target company. Measured that way, median fees are 16.3%. This reflects what we have already seen in Figure 5, above—in most SPACs, redemptions are over 73%, and redemptions over 90% are not unusual. Effective underwriting fees in SPACs are thus a lot higher than in IPOs.

We next show the underwriting fee as a percentage of all cash delivered in a merger, including cash raised in PIPEs issued to third-party investors. The underwriting fee does not cover funds raised in private placements, and to the extent the underwriter or another intermediary assists in raising those funds, it may charge a separate fee. Thus, we do not mean to

³⁵ Technically, the initial 2% underwriting fee is typically paid by cash contributed by the SPAC sponsor. But this cash is raised by selling warrants to the sponsor. Thus, we could choose either to value these warrants given to the SPAC sponsor as a SPAC expense, or to count as a SPAC expense the 2% underwriting fee that is paid for with the sale proceeds from the warrants. Counting both as a SPAC expense would be double counting, but ignoring both would be undercounting SPAC costs. We choose to count the underwriting fee as a SPAC expense, but not the sponsor's warrants, as the value of the underwriting fee is much simpler to measure.

³⁶ A few SPACs in our 2019-20 cohort, such as EdTechX Holdings Acquisition Corp and Greenland Acquisition Corp provided that the deferred underwriting fee would be adjusted downward based on redemptions. https://www.sec.gov/Archives/edgar/data/1735041/000161577418006003/s111083_s1.htm#a_019, p. 149; https://www.sec.gov/Archives/edgar/data/1746468/000121390018012958/fs12018a1_edtechxholdings.htm, p. 94. The underwriting fee for this SPAC, however, was 7% to start—considerably higher than the average fee for SPACs. In addition, a few SPACs negotiated the deferred fee downward at the time of the merger.

imply a relationship between underwriting fees and equity raised outside the IPO.³⁷ But as explained below, our goal is ultimately to measure all dilution in relation to the cash that a SPAC delivers in a merger, so we include that calculation here with respect to underwriting fees. The median underwriting fee as a percentage of cash delivered to the target company is 7.2%, with 25th and 75th quantiles of 4% and 34% respectively.

Table 3: Underwriting Fees

	Median	25th Percentile	75th Percentile
UW Fee as % IPO Proceeds	5.5%	5%	6%
UW Fee as % Non-Redeemed Share Proceeds	16.3%	7%	101%
UW Fee as % Cash Delivered in Merger	7.2%	4%	34%
UW Fee as % Post-Merger Equity	2.3%	1%	3%

C. Publicly Held Warrants and Rights

Warrants and rights included in SPAC units are the third feature of SPACs that dilute post-merger share value. Units in the 2019-20 Merger Cohort, which uniformly sold for \$10 in the IPO, contain a warrant for between $\frac{1}{4}$ and one share. The exercise price of the warrants is uniformly set at \$11.50 per share. Some units include rights as well. Among those that do, the right converts into $\frac{1}{10}$ of a share at the time of a merger at no cost. After the SPAC's IPO, warrants and rights trade separately from shares, and as explained in Part I, they are not subject to redemption. So, when a shareholder redeems shares, it keeps its warrants and rights (unless it has sold them).³⁸

The role of SPAC warrants is to attract IPO investors and compensate them for investing in a vehicle that will hold Treasury notes between the time of the SPAC's IPO and the time of its

³⁷ Indeed, traditional IPOs can include contingent private placements analogous to SPAC PIPE deals, and these can be subject to lower fees than the IPO, or even no fees. See, for instance, the recent IPO by Dun & Bradstreet, S-1A, June 26, 2020. Thus, measuring SPAC underwriting fees in relationship to SPAC money raised in PIPEs, rather than just that raised in SPAC IPOs, likely leads us to *underestimate* SPAC costs, compared to what a similar arrangement achieved would cost if achieved via an IPO and contingent private placements.

³⁸ In the discussion below, for simplicity, we will omit rights and assume a SPAC's units contain only shares and warrants. The analysis of the impact of rights is no different from the analysis of warrants.

merger.³⁹ But from the perspective of a post-merger company, warrants and rights are legacy claims that dilute post-merger share value.

The dilution caused by the warrants and rights associated with redeemed shares is clear. The redemption price equals the IPO price of a full unit, and yet a shareholder that redeems its shares keeps the warrants. Warrants, therefore, are in effect given out for free to the extent of redemptions. As we explain above, redeeming shareholders earned annualized returns of 11.6%. That return is primarily attributable to the warrants they retain. For post-merger shareholders, this is straightforward dilution.

Less obvious, however, is the fact that *all* warrants are dilutive in the context of the SPAC structure. One way to see this is to view a SPAC merger as an IPO, which it is as a functional matter (but of course, not as a formal matter). In this would-be IPO, the target issues shares and warrants to the SPAC's shareholders and receives the SPAC's cash in exchange. To compete with the SPAC shareholders' redemption option, the target must convince the SPAC shareholders that it is providing \$10 per share in value—that is, for shares alone. If the target actually does provide the SPAC shareholders with value worth \$10 per share, the target will lose on the deal because it will be issuing the warrants for free, which will dilute the value of the shares. On the other hand, if the target delivers less than \$10 per share in value, then the SPAC shareholders will bear at least some of the loss. In Section IV, we present evidence of post-merger price drops that is consistent with the view that SPAC investors are in fact getting shares worth less than the redemption amounts.⁴⁰ Of course, as is true of the promote and the underwriting fee, it is possible that the combination of the SPAC, the target and the sponsor's ongoing engagement will produce enough value to compensate for the SPAC's dilution costs.

³⁹ A shareholder of course need not hold its shares for two years. SPAC shares are tradeable. The trading price of a SPAC share should equal at least the discounted value of redemption in two years. So, an IPO shareholder can sell its share for that amount at any time and keep the warrant. The sum of the trading price and the value of the warrant will compensate the shareholder for holding the share as long as it holds it.

⁴⁰ Does the presence of warrants, however, somehow compensate investors for post-merger drops in share price? As explained above, nearly all public shareholders that own shares at the time of a SPAC merger purchased those shares on the market shortly before the merger, paying at least the redemption price to acquire them. For these investors, a post-merger drop in share price is a pure loss. But more generally, for any shareholder regardless of when they purchased shares, a drop in post-merger share price below the redemption price would be a loss. Furthermore, as we state above, the presence of warrants is generally viewed as compensating investors for the opportunity cost of locking up their funds in a SPAC for two years while it searches for a target. If one views the warrant as also compensating investors for losses when their shares drop in price, the same value then is used to compensate two different losses—an odd accounting at best. Finally, as we explain below, the loss to shareholders on account of warrant dilution, as with many SPAC costs, is completely avoidable if SPACs were to be restructured along one of several lines we propose.

As with the sponsor's promote and SPAC underwriting fees, redemptions amplify the costs associated with SPAC warrants by leaving fewer SPAC investors to bear the cost of the dilution. Continuing our characterization of the merger as an IPO of target shares, if the price the SPAC shareholders pay for these units is \$10 and the warrants are worth roughly \$1.00, then the value of the shares will be roughly \$9.00 in the absence of deal surplus.⁴¹ Suppose, however, this SPAC experiences 50% redemptions. There will still be the same number of warrants outstanding. Effectively, then, the number of warrants per unit—and the resulting dilution per share—has doubled.

Table 4 presents data on warrants and rights and the cost of the dilution they create. Most SPACs provide warrants for $\frac{1}{2}$ of a share; one quarter provide warrants for a full share. Rights are present in roughly one third of the SPACs. Rights are exchangeable for $\frac{1}{10}$ of a share at the time of a merger, so we value them at \$1.00. We value warrants at their trading price as of the date each SPAC merger closes. The mean and median prices for warrants are \$1.68 and \$1.04, respectively. We measure the aggregate dollar value of warrants and rights by taking these values and multiplying them by the number of each security held by public investors.⁴²

As we have done with respect to the sponsor's promote and the underwriting fee, we next show the cost of warrants and rights as a fraction of cash that the SPAC delivers to the post-merger company. The median cost of warrants and rights is 16.6%—that is, \$1.66 for each \$10 delivered in the merger. Warrant costs of this magnitude will occur, for instance, if a SPAC has one warrant per share trading at \$1.66 prior to the merger, and the SPAC experiences no redemptions. If a SPAC has only half a warrant per share, but experiences 50% redemptions, then the cost of the warrant would be the same.

⁴¹ Of course, the less the SPAC's shares are worth, the less valuable the warrants become. Yet even for shares worth \$9.00 post-merger, a standard Black-Scholes value for a SPAC warrant will be at least a dollar, and actual trading prices for these warrants reflect this.

⁴² We do not count warrants and rights owned by sponsors towards these costs. This is because the money raised by selling those warrants and rights to SPAC sponsors goes to pay SPACs' initial underwriting fees. If we counted as costs both the initial underwriting fees, and the securities sold to pay for those fees, we would be double counting this cost.

Table 4: Costs from SPAC Warrants and Rights

	Median	25th Percentile	75th Percentile
Warrant Shares per Unit	0.5	0.5	1
Rights Shares per Unit	0	0	0.1
Warrant+Right Cost as % Cash Delivered in Merger	16.6%	8.5%	77.4%
Warrant+Right Cost as % Post-Merger Equity	4%	2.7%	6.6%

4. The Bottom Line on Dilution Costs for SPAC Mergers

In sum, the sponsor's promote, the underwriting fee for redeemed shares, and the warrants and rights included in publicly issued units create an overhang of dilution for the SPAC's eventual merger, and the redemption right amplifies that dilution. The promote is reflected in shares with no cash behind them. The underwriting fee for redeemed shares is reflected in cash drained from the SPAC to attract investment that has been returned. That cash has produced no value for the post-merger company and yet SPAC shares remain outstanding for the cash that has been spent. The rights are claims against the combined company and the warrants are contingent claims. Each extracts value from the shares. Finally, the more shares that are redeemed, the greater the dilution will be on a per-share basis for shareholders that do not redeem.

If the SPAC merger generates enough surplus to fill the hole created by this dilution, then the target and the SPAC shareholders can come out ahead—although the dilution is still present as a cost. That surplus may come from value inherent in the target becoming a public company, from the uses to which the target can put the SPAC's cash, and from the value of the continuing engagement by the SPAC's sponsor. If the merger does not generate enough surplus, either the SPAC or target shareholders, or both, will lose out as a result of the merger. The deal the SPAC and the target strike will determine the allocation of losses. We analyze that allocation in Part IV, below.

Table 5 shows the total cost of these three sources of dilution—the sponsor’s promote, the underwriting fee and the warrants and rights.⁴³ The first panel of the table shows the total cost as a percentage of the cash SPACs deliver to target companies. The cost shown here is staggering. The median cost of dilution is 50.4% of money raised. In other words, if the median SPAC has \$100 to deliver to the combined, post-merger company, the company will bear a cost of \$50.40 in dilution.⁴⁴

Table 5: Total SPAC Cost Summary

	Median	25th Percentile	75th Percentile
Costs as % Cash Delivered in Merger			
Net Promote	31.3%	14%	140%
Underwriting Fee	7.2%	4%	34%
Warrant+Right Cost	16.6%	9%	77%
Total Costs	50.4%	29%	261%
Costs as % Post-Merger Equity			
Net Promote	7.7%	5%	12%
Underwriting Fee	2.3%	1%	3%
Warrant+Right Cost	4%	3%	7%
Total Costs	14.1%	10%	21%

The 25th percentile of costs reflected in Table 5 is 29% of cash raised, which is still high, but may be a price worth paying if the sponsor’s engagement can add greater value to the post-merger company. On the other hand, the 75th percentile of costs is 261% of cash raised. These

⁴³ Note that the median total cost need not equal the sum of the medians for each individual cost. To take an extreme example, consider each of our three costs (sponsor promote, underwriting fees, and warrants). Suppose that each SPAC happened somehow to have zero cost for two of these expenses, and only paid one. That is, suppose each cost were paid only by one third of all SPACs. In this case, the “median” figure for each individual cost would be zero, since more than half of SPACs would not pay it. But, since each SPAC did pay one of the costs, the median for total costs of each SPAC would be above zero.

⁴⁴ For purposes of valuing these shares and other claims, we use a \$10 per share valuation, which is roughly the value for which shareholders can redeem shares and the value they paid for units in the IPO.

SPACs have more shares given for free to the sponsor than shares paid for by non-redeeming investors—as well as costs from underwriting fees for shares redeemed and warrants and rights to boot.

As an example, consider Twelve Seas Investment Company which raised an initial \$207 million by selling 20.7 million units to the public. After experiencing 82% redemptions and raising no new money at the time of its merger, Twelve Seas was left with just 3.7 million public shares, compared to over 4 million shares given to the sponsor for its promote.⁴⁵ Despite only having \$37 million in its trust after redemptions, Twelve Seas paid \$11 million in underwriting fees, and issued an additional 375,000 shares to its underwriter as further compensation for services provided in connection with the merger.

Twelve Seas' units included rights to 0.1 shares exercisable at the time of the merger regardless of whether a shareholder redeemed its shares. So, at the time of the merger, Twelve Seas issued over two million additional shares for free. With 82% redemptions, the vast majority of shares issued pursuant to these rights went to redeeming shareholders who had been repaid a price per share equal to the full unit price in the IPO (plus interest). Hence, these former shareholders contributed no equity to the merger. Each unit from Twelve Seas' IPO also contained a warrant exercisable for another full share. Like the rights, 82% of these warrants were held by shareholders that had redeemed their shares and contributed nothing to the post-merger company.⁴⁶ At the time of the merger, these warrants were trading at \$0.80 each. The value of the rights and warrants retained by redeeming investors was thus \$30 million. The value of the rights and warrants retained by investors that held shares in the SPAC at the time of the merger was \$6 million.

In sum, as a result of Twelve Seas' merger, the combined company received \$37 million in cash, but it had shares outstanding that reflected 4 million shares that had been issued as the sponsor's promote, and \$15 million that had been paid in fees paid to the underwriter for shares that had been redeemed. In addition, the combined company assumed warrants outstanding that amounted to \$36 million in value. Total dilution was thus 254% of the cash Twelve Seas

⁴⁵ Twelve Seas' sponsor originally received 5 million shares (the customary 25% of shares sold in the IPO) but cancelled 1 million of them at the time of the merger.

⁴⁶ To be precise, redeeming shareholders may have sold their warrants and rights, or they may have bought their shares on the market and never owned warrants or rights. The point is that these warrants and rights originated in units and that the shares in those units were redeemed.

delivered in the merger, putting this transaction just below the 75th percentile of SPACs in our 2019-20 Merger Cohort in terms of costs.⁴⁷

Dilution as high as we report here may seem hard to accept as credible. Why would target and SPAC shareholders agree to a transaction that will drain this much value from their collective investments? For companies going public by merging with a SPAC, we provide an answer in Part IV: They appear to bear little if any of the cost of the dilution SPACs bring to a merger. The prices and share exchanges they negotiated in the 2019-20 Merger Cohort left the costs with the SPAC shareholders, which incurred substantial post-merger losses. But that just raises the question why SPAC shareholders have accepted those losses. We have no definitive answer to that question. But part of the explanation may lie in the fact that information at the time of a proposed merger is incomplete. The target is a private company, so its value is subject to uncertainty. The surplus created by bringing the company public is also uncertain, and the value of the sponsor's continued involvement with the post-merger company is uncertain. In addition, the extent of dilution will not be known until after the shareholder vote, when shares tendered for redemption are reported. Finally, the sponsor has an incentive to be persuasive in urging public investors not to redeem.

Finally, high redemptions mean that some SPACs simply end up delivering very little cash in their mergers, leading to high costs relative to cash delivered, but not relative to the total value of the post-merger company. In such instances, the second Panel of Table 5, which presents costs as a percent of post-merger equity, is informative. Contextualized this way, SPAC costs still seem high, but perhaps less staggeringly so than in the top panel of Table 5 suggests. Median SPAC costs as a percent of post-merger equity are 14.1%, with 25th and 75th percentiles of 10% and 21%, respectively. These figures provide a useful perspective on how much surplus a SPAC merger and the continuing engagement of the sponsor must create for a merger to be a value-increasing transaction for SPAC and target shareholders.

5. Are SPACs Cheaper than IPOs?

⁴⁷ Twelve Seas' original merger agreement specified a minimum of \$125 million cash in trust as a condition of closing the transaction. Had this condition been met, expenses as a percent of cash delivered would have been far lower. But Twelve Seas' merger target waived this condition in order to enable the deal to go through despite high expected redemptions. See filing under SEC Form 425 by Twelve Seas on December 11, 2019.

Comparing SPAC and IPO costs raises two questions. First, how do total SPAC costs compare to those for IPOs? Second, to what extent do companies that SPACs bring public bear those costs? We defer the second question to Part IV and address just the first question here.

Underwriters typically charge their clients 5-7% of IPO proceeds. The greater concern among commentators on IPOs, however, is the perception that investment banks that underwrite IPOs deliberately underprice shares in order to transfer value to their preferred clients. This underpricing, it is sometimes argued, is reflected in a tendency for shares to close on the day of IPOs at prices significantly above the listing price – generating the so-called “IPO pop,” and potentially representing “money left on the table” that the issuer could have captured by selling shares at the higher price.⁴⁸ Many academics⁴⁹ and venture capitalists⁵⁰ have questioned whether the IPO pop really represents money left on the table. Nevertheless, for the sake of argument, we assume that the IPO pop does indeed reflect the price at which a company could have sold its shares and is not a cost for SPACs. The IPO pop is typically reported as the percentage by which a firm’s shares increase on the first day following its IPO. Thus, if a firm sells its shares for \$10 in the IPO, but closes the trading day at \$12, this will be described as a 20% pop, which roughly matches historical measurements for average first-day price increases.⁵¹

To recast a SPAC merger in terms comparable to an IPO, a company going public via a SPAC merger, in effect, sells shares to paying SPAC shareholders for \$10 each, but then gives away additional shares for free. Analogously to an IPO, the cost imposed by the sponsor’s free shares, for example, can be seen as the amount of extra money the target could have raised had the sponsor’s shares been sold at the price public shareholders paid. If a SPAC raises \$800 by selling 80 public shares and gives 20 to the sponsor for free, then the SPAC could have raised

⁴⁸ See, e.g. Loughran, Tim, and Jay R. Ritter. “Why don’t issuers get upset about leaving money on the table in IPOs?” *The Review of Financial Studies* 15.2 (2002): 413-444.

⁴⁹ Academics have noted, for instance, that since returns for investors who buy in IPOs and hold longer-term tend to, at best, roughly track the market, IPO investors do not appear to be getting unfairly good deals, and the pop may simply reflect short-term price-stabilizing activities of underwriters, or small numbers of overly optimistic investors who bid up prices well beyond what an issuer could sell their entire public float for. See Jay R., and Ivo Welch. “A review of IPO activity, pricing, and allocations.” *The Journal of Finance* 57.4 (2002): 1795-1828., Ruud, Judith S. “Underwriter price support and the IPO underpricing puzzle.” *Journal of Financial Economics* 34.2 (1993): 135-151, and Krigman, Laurie, Wayne H. Shaw, and Kent L. Womack. “The persistence of IPO mispricing and the predictive power of flipping.” *The Journal of Finance* 54.3 (1999): 1015-1044.

⁵⁰ See Rampell, Alex and Kupor, Scott: “In Defense of the IPO, and How to Improve it.” available <https://a16z.com/2020/08/28/in-defense-of-the-ipo/>.

⁵¹ For up to date data from Jay Ritter, see https://site.warrington.ufl.edu/ritter/files/IPOs2019_Underpricing.pdf

\$1000 if those sponsor's shares had been sold for full price.⁵² The assumption here is that the target *could have* sold the sponsor's shares at \$10. This is the same assumption made with respect to the IPO pop—that all of the shares issued in an IPO *could have* been sold at the “popped” price. Each of these assumptions can be disputed. Our point is not to argue that either is true. Rather our point is to compare SPAC dilution costs with perceived IPO pop costs on an apples-to-apples basis.

How do SPAC costs compare to the cost of IPOs? The mean pop in 2019 was 23.5%, though the average for the 2001-2019 period was 14.8%, and the average since 1980 has been 18%.⁵³ If we take 20% as generally representative of these figures and add to that a 7% underwriting fee⁵⁴ we have a total IPO cost of 27%. This is far lower than the median SPAC cost of 50.4% shown in Table 5. We move on now to analyze whether companies going public by merging with SPACs in our 2019-20 Merger Cohort have borne this cost.

IV. Who Bears the Cost of Dilution? — Post-Merger Price Performance

In this Part, we analyze post-merger returns to SPAC shareholders and, on the basis of those returns, we make inferences regarding whether SPAC or target shareholders in our 2019-20 Merger Cohort have tended to bear the cost of SPAC dilution. We find that SPAC shareholders experience substantial losses following a merger, and that there is a strong correlation between the amount of dilution present in a SPAC and the size of the fall in share price it experiences following its merger. We therefore infer that SPAC shareholders have borne at least the lion's share of the dilution that a SPAC brings to a merger. This implies that SPAC sponsors have proposed losing propositions to their shareholders, which is one of the concerns raised by the incentives built into the SPAC structure. Consistent with the incentives we discussed in Part I, we find that sponsors do quite well, even where SPAC shareholders have experienced substantial losses.

⁵² The underlying substance of costs is not changed by how one measures them. A SPAC becomes no more or less expensive if the sponsor's promote is viewed as 25% of shares sold to investors, or as 20% of total shares outstanding. The same goes for measuring the IPO pop. Suppose a firm sells shares for \$10 each but they close at \$15 at the end of the first day's trading. The traditional view is that this represents a 50% pop, since the firm could have raised 50% more cash had it sold the shares for “full” price. But one could also view this by saying that *had* the firm sold for full price, it would have gotten \$15, and the price it actually got was 33% lower than this.

⁵³ https://site.warrington.ufl.edu/ritter/files/IPOs2019_Underpricing.pdf

⁵⁴ 7% is on the high end of IPO underwriting fees, but we use it for the sake of being conservative when comparing SPAC costs to those of IPOs. See note 34 *supra*.

When a merger occurs, the question whether target or SPAC shareholders bear the cost of dilution depends on the price or share exchange the parties negotiate. Suppose a SPAC has raised \$800 by selling 80 shares, giving 20 shares to the sponsor for a nominal fee.⁵⁵ Assume the SPAC experiences 50% redemptions,⁵⁶ leaving it with \$400 in cash and 60 shares outstanding. There is now \$6.67 cash in the SPAC for each share remaining. The SPAC proposes a merger with a target that also has 60 shares outstanding with each valued at \$6.67 for a total pre-merger value of \$400. If the target insists on a one-for-one share exchange, viewing the value of the SPAC solely in terms of the cash it will provide, the target shareholders will receive full value for their shares. But the SPAC shareholders will see their shares drop in price from \$10 prior to the merger to \$6.67 after the merger.⁵⁷ Conversely, if the SPAC negotiated an exchange of one SPAC share for 1.5 target shares, SPAC shareholders would get \$10 in post-merger value for their shares and come out even – at the target’s expense. And, as we have said, if the merger creates enough surplus, it is possible that both target and SPAC shareholders come out ahead.

A. Shareholder Returns

To measure post-merger returns to SPAC shareholders, we begin with a SPAC’s redemption price, which generally is the price at which the SPAC trades immediately before the merger is announced. We thus begin by computing returns for a given SPAC at time t as:

$$Return_t := \frac{\text{Adjusted Price}_t}{\text{Redemption Price}} - 1$$

Adjusted Price _{t} is the price of the SPAC’s common shares at time t , adjusted for any stock splits or dividend payments. We compare SPAC returns to those of the Russell 2000 index and the Renaissance Capital IPO index.⁵⁸ The IPO index is a natural basis for comparison since a SPAC’s merger is functionally the same as an IPO.

⁵⁵ For simplicity, we set aside here the SPAC’s underwriting fees, warrants, and other costs.

⁵⁶ In reality, redemptions will not be known until the merger closes. An informed target may therefore negotiate merger terms based on their best expectation of what redemptions will be (here, for instance, 50%).

⁵⁷ In this example, we stipulated that the target’s business is worth a known amount of \$400. In reality, the value of a target’s business will be highly uncertain. If SPAC shareholders knew the pre-merger business were worth \$400, they would reject a one-for-one share exchange, but if they believed that the target’s pre-merger business was worth \$800, then the merger would appear to be a good deal for them, and they would chose not to redeem. As we show in this section, post-merger price performance suggests that SPAC investors have been far too optimistic in appraising the value of the targets with which their SPACs merge.

⁵⁸ This index, developed by Renaissance Capital, follows companies for two years post-IPO. For more information on the index, see <https://www.renaissancecapital.com/IPO-Investing/US-IPO-ETF>

In analyzing post-merger returns, we distinguish among SPACs based on the nature of their sponsors. Press reports that tout the success of SPACs focus on those whose sponsors are high-visibility funds or individuals with substantial expertise and credibility. We therefore define a set of sponsors as “high quality” and compare their performance to that of other SPACs. We define high-quality sponsors based on two criteria. First, is the sponsor affiliated with a fund listed in PitchBook with assets under management of \$1 billion or more? Second, is the sponsor or SPAC manager a former CEO or other senior officer (for example, corporate president)⁵⁹ of a Fortune 500 company?⁶⁰ We classify a sponsor as “high quality” if it meets either or both of these criteria. Twenty four of our 47 SPACs meet this definition.⁶¹ This definition surely omits sponsors that are in fact “high quality” and that have backgrounds equivalent to sponsors that are included within the definition. We obviously are making no personal judgments regarding quality and mean no offense to sponsors that we define as “non-high quality.”

SPACs with high-quality sponsors could produce greater post-merger returns for their shareholders in two ways. First, their SPACs may not be as dilutive as SPACs sponsored by others. This would be true if their shareholders redeem fewer shares than do shareholders of other SPACs. This is not to say their pre-merger shareholders will not exit. We know that they do. But if a SPAC selects an attractive merger target, its pre-merger shares will rise in price above their redemption price, which in turn would lead the pre-merger shareholders to sell their shares on the market rather than tendering them for redemption. In addition, high-quality sponsors may be able to attract more PIPE investment than can others, which would reduce dilution. Second, high-quality sponsors may be able to add value to a post-merger company

⁵⁹ We considered an alternative, more restrictive definition that only looked at former CEOs (rather than former senior officers) of Fortune 500 companies. Yet, this would exclude, for instance, Diamond Eagle Acquisition Corp, the single most successful SPAC to date (with its acquisition of DraftKings). The sponsor for Diamond Eagle is a former president, rather than CEO, of CBS Entertainment.

⁶⁰ We include both the Fortune 500 – the largest 500 companies in the United States, and the Fortune Global 500, the 500 largest companies in the world as a whole.

⁶¹ We recognize that this definition of high-quality sponsors is imperfect. Inevitably, any definition will be subject to dispute. We considered an alternative designation of “high quality” sponsors as including those who had run at least one SPAC in the past. This yielded 28 total SPACs qualifying as “high quality.” But we find that average post-merger price performance results for this less exclusive list of “high quality” sponsors are much worse than for the more restrictive definition we use. Thus, in the interest of presenting the most sympathetic view towards the proposition that some sponsors can add value sufficient to overcome SPAC dilution, we focus on the more exclusive set of “high quality” sponsors. We also find that increasing the threshold for assets under management for a sponsor’s affiliated fund to \$5 billion or \$10 billion results in modestly worse average results for high quality sponsors, so again, we aim to err on the side of presenting a more sympathetic picture of high quality sponsor returns. Finally, we find similar results when we use a minimum IPO size criteria (such as \$200m) to define high quality SPACs.

through their ongoing engagement. In doing so, they could fill the dilution hole created by the inevitable dilution still built into the SPAC structure.

We start by considering overall performance of all SPACs in the 2019-20 Merger Cohort, and then proceed to separately investigate performance differences based on sponsor quality. Table 6 presents returns for all SPACs as well as separate results for “high-quality” and “non-high-quality” sponsors, as we have defined them. The last SPAC in our 2019-20 Merger Cohort merged in June 2020, so three-month returns are the longest available for the full cohort as of the date of this draft.⁶² As shown in Table 6, three-month returns across all SPACs are not good. Mean returns are negative 2.9% overall and negative 13.1% compared to the IPO Index. Median returns are worse, with half of SPACs losing 14.5% or more of value within three months and performing even worse when compared to benchmark indices. Returns as of six and twelve months post-merger, for those SPACs that have that much performance data, are increasingly worse. By six and twelve months post-merger, SPACs have mean returns of negative 12.3% and negative 34.9%, respectively. Median returns are even worse, as are returns compared to the IPO index.

Table 6: Post-Merger SPAC Returns – 2019-2020 Merger Cohort

	Three-Month			Six-Month			Twelve-Month		
	All	HQ	Non-HQ	All	HQ	Non-HQ	All	HQ	Non-HQ
Mean Return	-2.9%	31.5%	-38.8%	-12.3%	15.8%	-37.6%	-34.9%	-6.0%	-57.3%
Median Return	-14.5%	-4.6%	-46.9%	-23.8%	-15.9%	-43.0%	-65.3%	-34.6%	-66.3%
Mean Return (Excess over IPO Index)	-13.1%	25.1%	-53.0%	-33.0%	0.4%	-63.1%	-47.1%	-11.8%	-74.6%
Median Return (Excess over IPO Index)	-32.8%	7.1%	-52.1%	-43.2%	-31.0%	-56.3%	-56.5%	-54.8%	-89.9%
Mean Return (Excess over Russell 2000)	-1.3%	37.5%	-41.9%	-10.9%	22.5%	-41.0%	-21.5%	9.7%	-45.7%
Median Return (Excess over Russell 2000)	-16.1%	16.9%	-47.2%	-17.5%	-2.4%	-57.0%	-44.9%	-36.3%	-55.0%
N SPACs	47	24	23	38	18	20	16	7	9

⁶² Another metric would be to look at closing prices on the first day following SPAC mergers. This might be seen as giving the market’s best sense of target value, before any intervening news developments. Nevertheless, practical matters may mean that markets take more than one day to accurately appraise a company that just went public via a merger with a SPAC. Especially for companies that are difficult to value—the type of target for which SPACs are supposedly best suited—the market may need time and additional quarters of financial results to arrive at accurate valuations. Limited liquidity, and a potential dearth of shares available to borrow for short selling, may further slow post-merger price adjustments. The mean price for the first day post-merger for our SPACs was \$10.70, with a median of \$10.20. Some SPACs did exceptionally well, going up to \$33, though over 10% dropped to \$5.00 per less. It is hard to argue that SPACs have performed well for their investors based only on these first day’s returns. Some savvy investors have undoubtedly made money by buying SPAC shares and selling quickly before prices tank.

We now separate SPACs with high-quality sponsors, as we have defined that concept, and SPACs with sponsors that do not meet that definition. As Table 6 shows, three-month returns for the twenty-four SPACs with high quality sponsors are fairly high, with mean returns of 31.5% and excess returns over the IPO index of 25.1%. By six-months following their mergers, however, mean returns of high-quality SPACs essentially match the IPO index and median returns are far worse. Only seven SPACs affiliated with high-quality sponsors have at least a year of post-merger price performance to observe. As the rightmost segment of Table 6 indicates, these seven SPACs with high-quality sponsors saw mean returns of negative 6% and mean returns in excess of the IPO index of negative 11.8%. Median results for high-quality sponsored SPACs are far worse.⁶³ Yet, SPACs that do not meet our definition of high-quality sponsor have performed even worse. As the columns for “Non-HQ” in Table 6 show, mean and median losses for these SPACs are 39% and 47%, respectively, at the three-month mark, and those with a year of performance history have lost much more.

Figure 7 considers the dispersion of individual SPACs’ returns, excess of the IPO index, as of six-months post-merger. While the high-quality sponsor SPACs are roughly evenly split between positive and negative excess returns, only three out of twenty of the non-high-quality sponsored SPACs outperformed the IPO index as of six-months post-merger.

Overall then, SPAC post-merger performance in our 2019-2020 Merger Cohort has been weak. In order to get a longer-term perspective on SPAC post-merger experience, we consider one-year returns, excess of the Russell 2000, for all SPACs that have merged in each year since 2010. Figure 8 presents these results, with each bar representing average returns for SPACs that merged in a given year. As the results show, there has never been a year in which SPAC mergers outperformed the Russell 2000. Even the best of years underperform by 10% within the first year post-merger, and many years see excess returns of negative 40% or more. SPAC returns compared to the IPO index are even worse, but that index has coverage going back only to 2013, so we use the Russell 2000 to allow a longer time period for comparing historic SPAC returns.

⁶³ Furthermore, if we apply our definition of “high-quality” sponsor to earlier SPACs that launched their IPOs in 2015, for which we are able to track post-merger performance over longer periods, we find three SPACs meeting our “high-quality” definition and find that they too had poor post-merger performance. For instance, at two-years post-merger, they had returns of negative 64% and 55% in excess of the IPO index and Russell 2000, respectively.

Figure 7: Individual SPAC Six-Month Returns (Excess over IPO Index)

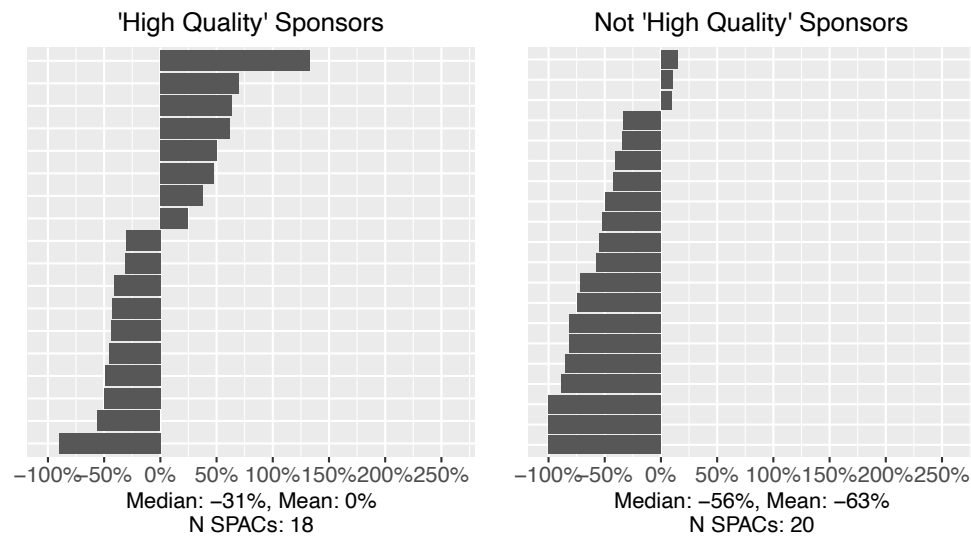
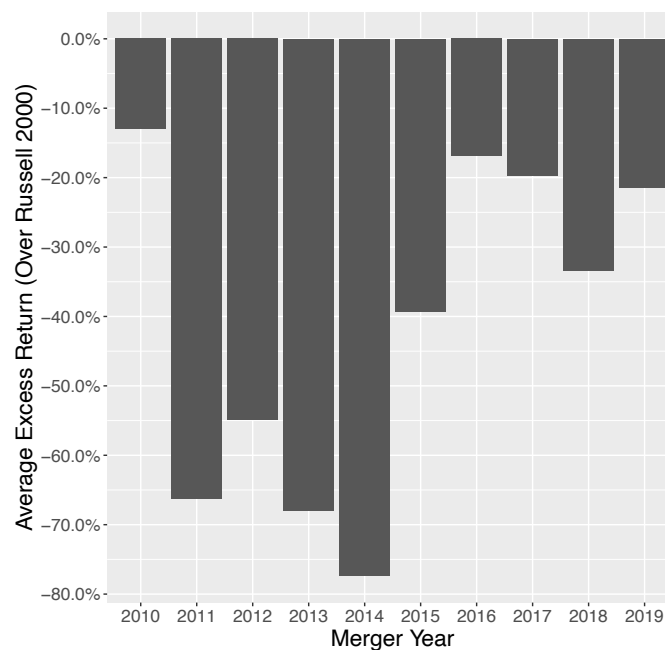


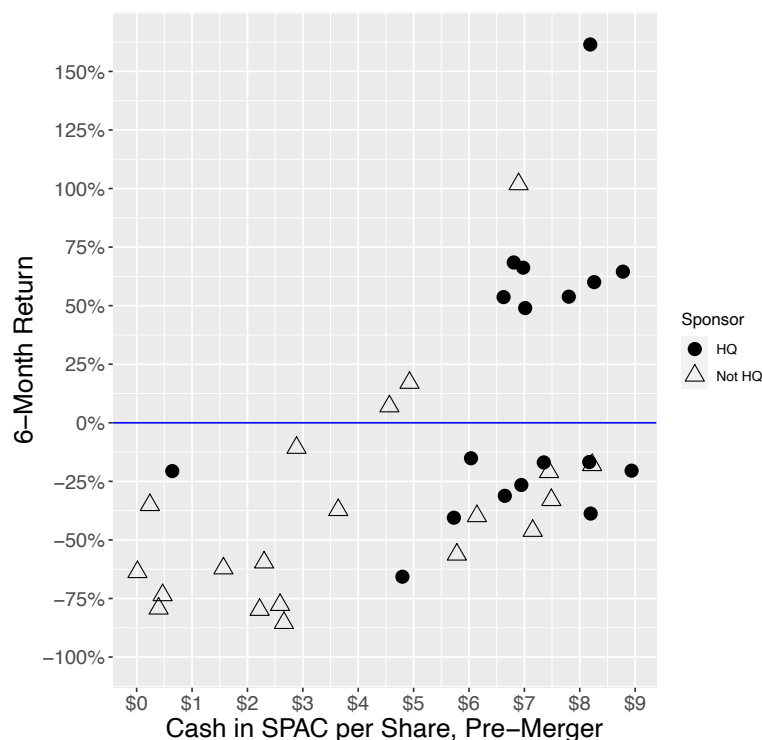
Figure 8: Average One-Year Post-Merger Returns (Excess Russell 2000) for Earlier SPACs



Large losses to non-redeeming SPAC investors suggest that, on the whole, SPAC shareholders have borne the cost of the dilution present their SPACs. We investigate this possibility further by analyzing the relationship between the amount of dilution in a SPAC and post-merger returns. In Figure 9 we plot dilution against SPACs' six-month post-merger returns,

measuring dilution as dollars per share remaining in each SPAC at the time of its merger. We find that SPAC dilution is highly correlated with SPAC shareholder losses ($p = 0.00016^{***}$). SPACs with high dilution, and thus little cash per share at the time of their mergers, do much worse following a merger than do those with less dilution.⁶⁴ This strongly implies that the source of SPACs' poor performance is the dilution embedded in their structure. Targets apparently negotiate mergers with SPACs based on the cash they will receive. Figure 9 also shows that SPACs with high-quality sponsors are grouped toward the right side of the graph, which indicates that they were less dilutive than other SPACs. In addition, proportionately more high-quality sponsors generated positive returns, which suggests that they were able to generate sufficient surplus to fill holes created by dilution embedded in their SPACs.

Figure 9: SPAC Dilution and Post-Merger Six-Month Returns



⁶⁴ The adjusted R^2 of this regression (which also includes a constant) is roughly 0.31, indicating that SPAC dilution costs can predict close to one third of all variation in SPAC returns. In many settings, an R^2 value this high for a regression with a single predictor is considered exceptionally high. As to why dilution costs aren't even more strongly predictive, we note that a sponsor of a SPAC with high dilution costs may have a particularly large incentive to choose a very risky merger because there is at least some chance that luck will be enough to dig the company out of the dilution hole the SPAC has dug. In addition, factors following the merger surely affect share prices.

Commentators who have touted SPACs as a cheap way of going public are thus correct, but they have misunderstood what makes SPACs cheap for companies seeking to go public. It is not that the SPAC structure or process makes them cheap. To the contrary, the SPAC structure and process make them extremely expensive. But so far, SPAC shareholders have borne much of the cost. Why that is, is a mystery, but it is difficult to believe that it is a sustainable arrangement. At some point, SPAC shareholders will become more skeptical of the mergers that sponsors pitch.

D. Return to Sponsors

Our analysis suggests that one reason returns to SPAC shareholders have been poor is because sponsors have proposed mergers in which the surplus created was not large enough to fill the hole created by dilution inherent in the SPAC's structure. Although sponsors would prefer a merger that results in positive post-merger returns for shareholders, they can earn highly positive returns even in a bad deal for shareholders, and if they fail to merge at all, they will lose their investment. In light of the poor returns to shareholders documented above, we now look at returns to sponsors.

We begin by taking the sum of investments the sponsor makes at the time of the SPAC IPO and at the time of the merger. We call this the "Sponsor's Total Investment." We next identify the number of shares and warrants that the sponsor holds at the time of the merger.⁶⁵ Following the merger, we determine the value of the sponsor's investment, which we call the "Sponsor's Asset Value." We compute:

$$Sponsor\ Return_t := \frac{Sponsor\ Asset\ Value_t}{Sponsor\ Total\ Investment} - 1$$

Sponsor securities are generally subject to lockup agreements through the first year following mergers. Thus, we assume that sponsors will retain their holdings during this period.

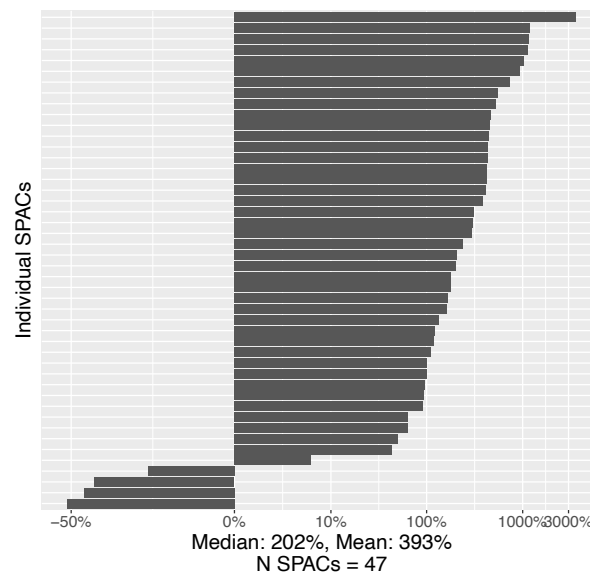
Figure 10 summarizes returns to SPAC sponsors three months following a merger. The most successful sponsors saw returns of over 1000%, though a few sponsors lost money.⁶⁶

⁶⁵ This accounts for any cancellation or transfers of shares or warrants the sponsor makes at the time of the merger.

⁶⁶ With SPACs structured so favorably to SPAC sponsors, how is it that these sponsors could possibly lose money on their deals? In every case, it is because the sponsors made large additional investments at the time of the merger—apparently, investing good money after bad. In two of these cases, the sponsors roughly tripled their total

Mean sponsor returns are close to 400%. Returns are essentially the same for those SPACs that have six months of post-merger history. For the set of SPACs with twelve months of post-merger performance, sponsor returns are somewhat lower, down to a mean of 187% and a median of only 32%. Sponsors thus tend to do very well even where SPAC investors do quite poorly.

Figure 10: Returns to SPAC Sponsors – 3 Months Post-Merger



V. Why Do SPACs Persist?

The costly structure of SPACs and their related poor post-merger price performance raise the question why SPACs persist. A simple, and incomplete, answer is that SPACs have been a good deal for IPO-stage investors that redeem their shares and for targets, and a great deal for sponsors. But SPACs' post-merger shareholders are footing the bill for sponsors', targets', and redeeming IPO-stage investors' good fortune—and a very expensive bill at that. It is hard to believe that SPAC shareholders will continue for long to buy and hold shares through mergers that leave them bearing the costs of the SPAC structure.

investment at the time of the merger. In the other two, the sponsors increased their investments by a factor of eight and a factor of twenty at the time of the merger. In each of these four cases, the sponsor would have come out well ahead had it maintained only its initial investment as of the time of the SPAC IPO—if the target would have agreed to merge without the additional cash.

Thus, for SPACs in general, the precise question is: why do SPAC shareholders accept the deals they are offered when SPACs merge? Contrary to what we have found, non-redeeming SPAC shareholders apparently believe that SPAC costs are low, that target shareholders will bear those costs, or that surplus created by merging with a target will generate value sufficient to counterbalance SPAC costs. Descriptions of SPACs in the business press support those views,⁶⁷ frequently portraying SPACs as efficient new vehicles that allow investors to profit from providing companies better and cheaper paths to the public markets than previously available.⁶⁸ Without an understanding of the dilution inherent in the SPAC structure, investors could well view an investment in a post-merger SPAC as they would view shares in any other risky, early-stage company.

A second question raised by SPACs' persistence is whether they have a unique role in bringing public companies that have no other options. Prior to the current SPAC craze, SPACs were seen as vehicles by which companies with difficulty accessing public markets through an IPO could go public. These might be companies with an unusual business or too few comparables among public companies, or they might face legal uncertainty, a complicated tax situation, or some other uncertainty or complexity that would make price discovery in the

⁶⁷ A particularly common belief is that targets will bear SPAC costs. For instance, in a recent PitchBook article on SPACs notes "The original IPO fees are ... implicitly passed on to the company [going public] along with the sponsor's promote and any investment banking fees related to the acquisition itself." See "The 2020 SPAC Frenzy: Blank-check vehicles offer many benefits but are not a cure-all for IPO process." PitchBook, September 1, 2020 by Cameron Stanfill, and Joshua Chao. Similarly, a post in the Harvard Corporate Governance Blog argues that it is SPAC targets who will bear the costs of SPAC warrants: "The public warrants compensate the IPO investors for investing in a blind pool. The warrants essentially dilute any PIPE investors and any equity retained by the seller of the target business." "Special Purpose Acquisition Companies: An Introduction" by Ramey Layne and Brenda Lenahan, Vinson & Elkins LLP, on Friday, July 6, 2018, Harvard Corporate Governance Blog. Commentators also often assert that SPACs become less expensive if they merge with larger targets. These statements are also based on a presumption that the owners of a firm going public via SPAC will bear most or all of its costs – if SPAC investors bear their costs, then clearly the size of the target isn't relevant. For instance, a recent Winston and Strawn publication states "IPO raise is typically about 1/4 to 1/3 third of expected enterprise value of target to minimize effect of dilution resulting from founder shares and warrants." "SPAC 101: Transaction Basics and Current Trends" Winston & Strawn, LLP, available <https://www.winston.com/images/content/1/3/v2/135061/Winston-Strawn-SPAC-Basics-Presentation-2018.pdf>. Similarly, a Tech Crunch article on SPACs states "In fact, it's typical for a SPAC to combine with a company that's two to four times its IPO proceeds in order to reduce the dilutive impact of the founder shares and warrants." See "Almost everything you need to know about SPACs" by Connie Loizos, Tech Crunch, August 22, 2020.

⁶⁸ For instance, a recent Financial Times article notes "By using Spacs, [companies] can skip over the expensive and time-consuming IPO process." See Aliaj, Ortenca et. al "Can SPACs shake off their bad reputation?" - Financial Times, August 13, 2020. Similarly, a recent Tech Crunch article on SPACs quotes a SPAC sponsor as saying "Some [companies] need a relatively frictionless way to get out the door [to become public], and there are plenty of investors who would like to give them that push." See "Almost everything you need to know about SPACs" by Connie Loizos, Tech Crunch, August 22, 2020

traditional IPO underwriting process difficult.⁶⁹ The SPAC process was viewed as addressing the information asymmetry present in some companies better than the IPO process does.⁷⁰ We thus investigate, for this niche market or perhaps any company, whether SPACs have specific abilities to address asymmetric information.

A. Regulatory Preferences for SPACs Over Traditional IPOs

Many claims in the popular press regarding SPAC regulatory advantages are spurious. Commentators have asserted that SPACs allow firms to go public while avoiding Sarbanes Oxley compliance,⁷¹ that companies going public through SPACs do not need to register with the SEC,⁷² and that SPACs reduce the “prodigious amounts of paperwork” required in traditional IPOs.⁷³ None of these assertions are accurate. If anything, SPACs have slight disadvantages regarding Sarbanes Oxley compliance compared to firms going public via traditional IPOs, though the differences are not large.⁷⁴ Companies going public through SPACs most definitely

⁶⁹ For instance, a PitchBook article mentioned that a classic SPAC merger target “in theory would be with an innovative company that otherwise would not have been able to list on the public markets.” “The 2020 SPAC Frenzy: Blank-check vehicles offer many benefits but are not a cure-all for IPO process” PitchBook, September 1, 2020 by Cameron Stanfill, and Joshua Chao. Similarly, Martin Alvarez of LTSE notes, “For most companies that use them, a SPAC may have been the only viable alternative for the company to get public.” “The fast food of IPO alternatives” by Martin Alvarez, August 12, 2020 available <https://blog.ltse.com/the-fast-food-of-ipo-alternatives-574a8f6d205e>. A client memo by Weil similarly notes that SPACs are “[a]ble to take public companies that are not obvious IPO candidates.” “Exit Strategies: IPOs versus SPACs” - Weil Global Private Equity Watch. March 19, 2018, Douglas P. Warner, Alexander D. Lynch, Barbra J. Broudy. <https://privateequity.weil.com/features/exit-strategies-ipos-versus-spacs/>. A CNN article recently noted “There was a time when investors viewed SPAC deals with derision. The belief was that if you needed to go public through a reverse merger with an already existing shell company, then you probably weren’t healthy enough to do a more traditional IPO.” Why 2020 is the year of the SPACs (And what the heck is a SPAC?), CNN, by Paul R. La Monica, August 6, 2020

⁷⁰ In particular, one commentary notes, “In a SPAC merger, companies can ... attach earn-outs, reduce insider lockups, and more, giving the private company more flexibility to tailor a transition to the public market around its wants and needs. This customizability caters well to companies that have a complicated story or would be a more difficult sell to traditional public market investors.” Interestingly though, as we discuss below, features like earn-outs, here described as unique to SPACs, can actually be accomplished in traditional IPOs. For the source of this quote, see Why 2020 is the year of the SPACs (And what the heck is a SPAC?), CNN, by Paul R. La Monica, August 6, 2020

⁷¹ See “Almost everything you need to know about SPACs” by Connie Loizos, Tech Crunch, August 22, 2020, quoting a SPAC sponsor as claiming that that SPACs’ “popularity ties in part to ‘Sarbanes Oxley and the difficulty in taking a company public the traditional route.’”

⁷² See Dayen, David “Wall Street’s Newest Way to Part Investors From Their Money.” American Prospect, August 6, 2020, quoting a representative from the Center for Economic and Policy Research as saying “[t]he main advantage [of SPACs] is the lack of transparency, since the company doesn’t have to register with the SEC and provide the level of detail to potential public investors.”

⁷³ “Wall Street’s Hottest Financing Tool Makes Me Worry About the Market,” Wall Street Journal, James Mackintosh, Oct. 17, 2020

⁷⁴ See <https://www.kirkland.com/publications/article/2019/02/sec-should-revisit-its-spacs>

do need to register with the SEC, and the disclosures SPACs provide to investors are largely comparable in terms of content and detail to those provided in IPOs.⁷⁵

Nevertheless, SPACs do enjoy certain regulatory advantages that stem from the fact they bring companies public in merger transactions, and as a result they are regulated under merger rules, not public offering rules. Two implications stem from this. First, SPAC mergers are covered by a safe harbor for inclusion of forward-looking statements in their proxy statements. Second, SPACs, their targets, and their underwriters face much lower liability risk under Section 11 and 12 of the Securities Act, which cover misstatements and omissions in disclosures made in connection with a public offering. These elements of regulatory leniency may help explain why some private companies go public by merging with a SPAC rather than through an IPO.

1. *Safe Harbor for Forward-Looking Statements*

The Private Securities Litigation Reform Act (PSLRA) provides a safe harbor from liability under the securities laws for projections and other forward-looking statements so long as they are accompanied by appropriate cautionary language.⁷⁶ The objective of the safe harbor is to encourage public companies to provide information to the market even where that information is subject to uncertainty—as projections and other forward-looking statements necessarily are. If such statements turn out to be false, the issuer is not subject to liability for making a misstatement unless it knew the statements were false when making them. The safe harbor covers proxy statements, annual reports, and other SEC filings. Importantly, however, it does not

⁷⁵ As one leading law firm that advises on SPAC transactions commented: "The [SPAC] proxy statement includes substantially the same information for the merger parties as would be included in an IPO registration statement for the company going public (including PCAOB audited financial statements)." See "Alternative Routes to Going Public, Initial Public Offering, De-SPAC or Direct Listing" by E. Ramey Layne, et. al, Vinson & Elkins, Fall 2020.

⁷⁶ See 15 U.S.C. §§ 77z-2, 78u-5. The PSLRA safe harbor excludes statements made "in connection with an offering of securities by a blank check company" and specifies in 78u-5(i)(5) that "blank check company" will be defined by SEC regulations. Rule 419(a)(2) - 17 C.F.R. § 230.419 – defines blank check companies as companies that issue penny stocks, which would not include SPACs. The SEC could, however, define blank check companies to include SPACs, and the issuance of SPAC shares in a merger, for purposes of the PSLRA safe harbor. For more information, see Schneider, Carl W., and Jay A. Dubow. "Forward-Looking Information-Navigating in the Safe Harbor." *Bus. Law.* 51 (1995): 1071.

cover IPO prospectuses.⁷⁷ As a result, IPO prospectuses rarely include financial projections or other forward-looking statements.⁷⁸

SPAC targets, on the other hand, can and routinely do include projections in their joint proxy statements, which are otherwise similar to IPO prospectuses. For companies that face challenges bridging information asymmetries with potential investors, as some SPAC targets reportedly do, the freedom to provide and explain projections may be important. On the other hand, the exclusion of IPOs from the safe harbor reflects a concern that Congress and the SEC have had regarding the integrity of information provided to potential investors when a company makes its initial entry to the public markets. The loophole for SPACs potentially undermines the protection otherwise in place.

2. *Reduced Risk of Section 11 Liability for Material Misstatements and Omissions*

IPOs are a flashpoint for securities class action lawsuits. Since 2015, approximately 15% of traditional IPOs have been the target of shareholder suits under Sections 11 and 12 of the Securities Act of 1933.⁷⁹ Of those, roughly 90% name the underwriter in addition to the issuer as a defendant.⁸⁰ SPACs, by contrast, provide substantial protection against such suits.⁸¹

⁷⁷ The judicially created “bespeaks caution” doctrine does provide some protections for projections made in IPO, but our discussions with lawyers who advise on SPAC and IPO transactions indicate that there is more uncertainty in how much protection courts will afford issuers under this judicial doctrine, leading most lawyers and underwriters working on traditional IPOs to avoid using projections.

⁷⁸ For instance, Andrew Bary notes “one of the challenges of investing in an IPO is that prospectuses contain little, if any, forward-looking information in a document that can run hundreds of pages.” “Facebook IPO Forecasts Should Be for Everyone” in Barons, By Andrew Bary. May 22, 2012. David Martin & Frederick Knecht of Covington and Burling similarly note that “the SEC has deliberately avoided encouraging the use of financial projections in IPOs because of the potential inappropriateness of such information in that context,” and that “in most cases, companies and their legal counsel determine that the omission of ... projections from prospectuses is not material to investors.” The IPO Climate: In the Wake of Facebook, Are IPOs Really Broken? Wall Street Lawyer. August 2012, Vol 16, Issue 8.

⁷⁹ For simplicity, we will refer only to Section 11. Nearly all cases with Section 12 claims also have Section 11 claims.

⁸⁰ These data come from the Stanford Securities Litigation Analytics database. <https://sla.law.stanford.edu/>. Although underwriters are routinely indemnified by their clients, their protection is only as good as a client’s financial ability to make good on its commitment. In addition, as repeat players in the public offering market, underwriters may have reputational concerns.

⁸¹ SPACs and the companies with which they merge are not immune from liability under the securities laws. They do face liability risk under Section 14(a) of the Securities Exchange Act, which covers misstatements and omissions in a SPAC’s proxy statement for a shareholder vote in a proposed merger. Whereas a company is strictly liable under Section 11, however, Section 14(a) requires proof of negligence. There have only three section 14(a) suits filed against SPACs in the past ten years. In addition, SPACs and their officers and directors are liable under Section 10(b) for misstatements and omissions made with scienter.

Under Section 11, investors that purchase shares directly in a public offering or shares traceable to that public offering have standing to bring a suit against the issuer, its underwriter and its directors and officers for material misstatements and omissions in the registration statement filed for the offering.⁸² A company that issues securities in a public offering is strictly liable under Section 11. The underwriter, officers and directors are liable as well, though they have a “due diligence” defense.⁸³ By contrast, a SPAC, its officers and directors, and its underwriter are significantly insulated from Section 11 liability. When a SPAC goes public, it has little to disclose and therefore little to misstate or omit.⁸⁴ It is simply collecting cash that will be put in trust until it either finds a merger target or liquidates. Furthermore, since SPAC shares are redeemable and their shares trade at their redemption price, even if there were a misstatement, shareholders would bear no loss and therefore could collect no damages under Section 11 except perhaps after a merger. Not surprisingly, there have been no Section 11 suits against SPACs based on their IPOs, going back at least ten years.

When a SPAC merges, it registers shares that it issues to the target’s shareholders and to private placement investors. This potentially exposes the SPAC and its officers and directors to Section 11 liability. But because these issuances are not underwritten, no underwriter liability is involved. Furthermore, even the issuer, its officers and directors—and a bank that may serve as a financial advisor—face little liability risk. This is true for two reasons. First, to the extent target shareholders are aware of a misstatement or omission, they have no standing to sue.⁸⁵ This, in all likelihood, will preclude target management and major target shareholders from bringing a suit. Second, after the shareholders of the target company sell their shares, the requirement that

⁸² Under Section 12 of the Securities Act, the same shareholders have standing to bring a suit based on misstatements and omissions outside the registration statement but related to the public offering. For simplicity we address Section 11 here, but the same points apply to claims under Section 12.

⁸³ As a result, issuers and underwriters engage in painstaking due diligence in preparation for an IPO. The underwriting agreement for an IPO typically provides that the lawyer for the issuer and the lawyer for the underwriter will provide a “negative assurance letter” to the underwriter stating that, based on their own due diligence, they believe the prospectus is not materially misleading or incomplete. Both sets of lawyers, therefore, engage in extensive due diligence. Due diligence for an IPO is thus an expensive, time consuming process—as is the litigation that ensues despite issuers’ and underwriters’ efforts to protect themselves. Preparation for an IPO is universally described as a lengthy and difficult process. This is due, in no small part, to avoidance of liability under Section 11.

⁸⁴ The SEC did challenge one SPAC that went public in 2004 for allegedly failing to disclose that it had selected a target before its IPO. See the discussion of the SPAC International Shipping Enterprises presented in *Special Purpose Acquisition Companies; SPAC and SPAN, or Blank Check Redux?* (Daniel Riemer - Washington University Law Review - 2007).

⁸⁵ 15 U.S. Code § 77k(a)

plaintiffs' shares be traced to a particular public offering creates a substantial hurdle for a plaintiffs' lawyer.⁸⁶ Once the SPAC's newly issued shares mix in the market with the SPAC's IPO shares, they typically cannot be traced to the registration statement filed in connection with the merger. Not surprisingly, there have been very few Section 11 cases brought against post-merger SPACs or their underwriters based on the registration statements filed in connection with their merger in the past ten years.⁸⁷

Differential treatment for SPACs and IPOs under Section 11 does not necessarily provide an advantage to SPACs in providing information to the market on their proposed merger targets. But, combined with SPACs' abilities to use forward looking statements, it may contribute to the attraction of SPACs for companies that expect difficulty communicating their story to the market. In addition, it may well explain why banks are willing to underwrite a SPAC IPO and advise on its merger with a target, and yet be unwilling to take the same target public in an IPO.

On the other hand, protection from Section 11 liability could lead to less due diligence and sloppier disclosure. The insulation of the underwriter in particular could reduce the discipline on the SPAC and its target to take care in its disclosures related to their merger. If Section 11 is viewed as important in the IPO context, it is difficult to see why it should not be applied in the context of a SPAC merger.

B. Transactional Benefits of SPACs Over IPOs

Commentators also describe a variety of non-regulatory advantages they see SPACs enjoying over IPOs. We find that many are overstated, and that to the extent they offer real benefits, those same benefits could be captured at much lower cost through modifications to traditional IPOs and direct listings.

1. *Price and Deal Certainty*

⁸⁶ Circuits differ in how large a barrier the tracing requirement is. Furthermore, there is some possibility courts may loosen tracing requirements for plaintiffs seeking to sue post-merger SPACs. As direct listings become more frequently used, courts have considered loosening tracing requirements for them, and similar logic could be applied to SPACs. See for instance *Dennee v. Slack Technologies Inc.*, No. 19-cv-05857-SI (N.D. Cal. Apr. 21, 2020).

⁸⁷ There have been two such cases. In re Akazoo S.A. Securities Litigation, United States District Court for the Eastern District of New York, Case No. 1:20-cv-01900-BMC, September 8, 2020; In re Ability Inc. Securities Litigation, United States District Court for the Southern District of New York, Case No. 16-cv-03893 (VM), June 15, 2017. The Akazoo complaint alleged that the plaintiffs' shares were traceable to the registration statement filed in connection with the merger. The Ability complaint alleged that the shares issued in the merger were different from those issued in the SPAC's IPO and therefore traceable to the registration filed in connection with the merger.

A common claim is that SPACs offer greater price and deal certainty compared to IPOs,⁸⁸ a feature that might be particularly appealing for a company with large information asymmetries. The offering price of an IPO is not set until the day before the IPO, whereas a SPAC merger agreement appears to set the price or share exchange ratio well before the closing of the merger. But there is less certainty than meets the eye. First, SPAC merger agreements are often amended as a SPAC negotiates with public investors and potential PIPE investors to ensure that there will be sufficient cash in the SPAC at the time of the merger.⁸⁹ Price certainty is at best achieved only after a final merger agreement is reached, which may be only a few weeks prior to the merger.

Consider for instance Nesco Inc. which on July 30, 2019 merged with Capitol Acquisition Corp IV, the fourth SPAC run by a veteran SPAC sponsor. The original merger agreement was disclosed in an 8-K filing on April 8, 2019, but that agreement was amended on July 11, 2019,⁹⁰ less than three weeks prior to the merger closing. Among other key changes, the amended agreement eliminated \$75 million in cash consideration that the target's owners were to receive as part of their compensation and substituted this with 7.5 million additional SPAC shares to be issued – shares which quickly saw their price drop from \$10 to \$3 following the merger. Similarly, the amended agreement introduced a requirement that the target's owners make a new cash investment of \$25 million (by purchasing 2.5 million additional new shares) at the time of the merger. Thus, while the deal may have looked certain as of April 8, the final terms, worked out just weeks before closing, were substantially less advantageous to the target's owners.

Even after the final merger agreement is reached, the amount of cash a target receives per share depends on how many shares the SPAC redeems. If a target agrees to a one-for-one share exchange and expects that this to yield \$8.00 in cash for each SPAC share, and then 75% of the SPACs publicly held shares are redeemed, the target will receive only \$5.00 per share in cash.⁹¹ A target can try to predict how many shares will be redeemed, but it will have no certainty until

⁸⁸ See note 11, *supra*.

⁸⁹ A recent memo by Wachtell Lipton on SPACs makes this point as well. See <https://www.wlrk.com/webdocs/wlrknew/ClientMemos/WLRK/WLRK.27066.20.pdf>

⁹⁰ This was disclosed in a 424B3 filing by Capitol IV on that date.

⁹¹ As above, this is easiest to see with just the sponsor's promote. Assume that at the time the target signs the merger agreement, the SPAC has 100 shares outstanding, 20 of which are the sponsor's promote and 80 of which are public shares for which there is \$10 each in the SPAC. The SPAC will have \$8 per share in cash. If 60 of the 80 public shares are redeemed, the SPAC will have 40 shares outstanding, 20 of which are public shares with \$200 remaining in the SPAC. This comes to \$5 per SPAC share.

the amount of redemptions is known, which is roughly a day before the merger closes. So, just as with an IPO, some uncertainty exists until the last minute.

Some SPAC merger agreements ameliorate uncertainty regarding redemptions by requiring a minimum amount of cash in the SPAC for the merger to close. Targets, however, may end up waiving the minimum cash requirement, if it becomes clear that the only alternative is to abandon months of effort and expense and forgo the opportunity to go public. The merger target for the Twelve Seas SPAC discussed in Section III did just this, originally stipulating a minimum of \$125 million in cash, but ultimately accepting a deal that delivered just \$37 million.⁹² In addition, a small number of merger agreements provide that the sponsor will cancel a fixed number of its shares if the SPAC has less than a specified amount of cash as of the time of the merger, and in a few SPACs, the underwriter has agreed to adjust its fee in response to redemptions. These are just partial measures, however. Unless the sponsor cancels its shares and the underwriter reduces its fee in proportion to redemptions, these sources of dilution create uncertainty regarding the cash per share that a target will receive.⁹³ Thus, claims about price certainty in SPAC mergers are overstated. Just as in IPOs, targets will often learn how much cash they receive per share not long before the merger closes.

As for deal certainty, there are two scenarios that may concern a target. First, if the target negotiates for a minimum amount of cash in the SPAC as a condition of closing, there is a risk that redemptions will deplete cash below that threshold, in which case the merger will not close. From January 2019 through June 2020, 6 SPACs failed to merge and therefore liquidated compared to 47 that successfully merged – a failure rate of 11%.⁹⁴ Even among the 47 SPACs that merged, eight merged with \$10 million or less in cash. These SPACs saw very high redemptions and little to no replacement of cash via PIPEs. Depending on a target's goals, completing a SPAC merger and receiving so little cash might or might not constitute a failure.

⁹² Furthermore, unless a minimum cash condition is backed up by locked in PIPE funding, it simply represents trading deal certainty for price certainty. That is, it is equivalent to a firm being willing to cancel its IPO if the “window of opportunity” closes and the firm cannot sell its shares for its desired price.

⁹³ SPAC warrants are even more difficult to adjust, as modifying these will generally require agreement among a disparate group of investors.

⁹⁴ This largely follows recent historical failure rates for SPACs. For instance, among all SPACs that had IPOs between 2015 and 2017, the failure rate was roughly 10.5%. Many SPACs that had IPOs in 2018 or later are still looking for targets, meaning that a failure rate cannot yet be computed for them. For SPACs that had IPOs between 2010 and 2014, the failure rate was 30%.

Overall, therefore, SPAC mergers do not inherently provide much price certainty, deal certainty, or certainty regarding how much total cash the target will receive. On the other hand, a sponsor can provide more certainty if it secures large enough advance commitments of funding, either from PIPE investors or from the sponsor itself. As we describe below, however, large advance commitments such as these could provide comparable certainty in an IPO or a direct listing, without the large SPAC costs.

A related claim that commentators have made is that a company can go public through a SPAC more quickly than it can in an IPO, perhaps in part due to the liability risk posed by Section 11.⁹⁵ Other commentators, however, disagree that there is a meaningful difference.⁹⁶ As one top law firm representing SPACs recently commented “the differences between the minimum time necessary to get to closing [for SPACs, IPOs, and direct listings] are not meaningful... The practical difference is that companies preparing for an IPO or direct listing often begin preparing for the needed financial statements, internal and financial controls and any necessary staffing changes earlier than companies that pursue ...SPACs.”⁹⁷ In practice, it can be hard to accurately measure whether SPACs are faster than IPOs, since both processes involve prep work before the deals are publicly announced. Also, if different types of firms are going public via SPACs versus IPOs, then differences in speed may have more to do with the specifics of the firms rather than the SPAC vs. IPO process itself. Claims about relative time to market are thus debatable at best.⁹⁸

⁹⁵ <https://luttig.substack.com/p/spac-attack-everything-a-founder>

⁹⁶ see <https://www.gibsondunn.com/wp-content/uploads/2019/03/Spedale-Pacifici-9-Factors-To-Evaluate-When-Considering-A-SPAC-Law360-03-11-2019.pdf>

⁹⁷ See "Alternative Routes to Going Public, Initial Public Offering, De-SPAC or Direct Listing" by E. Ramey Layne, et. al, Vinson & Elkins, Fall 2020.

⁹⁸ Furthermore, some justifications that are given for supposed SPAC speed advantages are clearly incorrect. For instance, many commentators assert that SPACs are faster because they have lower paperwork requirements, a misconception we dispel above. Similarly, other commentators assert that SPACs are faster because a company going public needs only to pitch a single party – the SPAC sponsor, rather than many investors as in an IPO. In reality, SPACs have their own roadshows to sell proposed mergers, and must negotiate with many parties to close PIPE deals and convince public shareholders not to redeem their shares. For claims that SPACs are faster than IPOs due to only negotiating with a single party, see "The 2020 SPAC Frenzy: Blank-check vehicles offer many benefits but are not a cure-all for IPO process" PitchBook, September 1, 2020 by Cameron Stanfill, and Joshua Chao. For a counterpoint, see comments by SPAC financial advisor Chris Weeks, noting “the SPAC and the target will need to market the transaction similar to a regular way IPO. In order to raise equity capital and to solve for appropriate free float and other exchange-related requirements, the company will market the transaction to equity investors. They will go on a roadshow, market the story and sell the stock.” See “SPACs Now Part Of Conversation With Most Companies Seeking Public Listing: SPAC Roundtable Series” Feb 26 2020, by Chris Weekes, Cowen & Co.

2. *PIPEs*

Another advantage that commentators see in SPACs is the private placements often made in conjunction with a merger. These investments are not only a source of equity for the post-merger company, they are a means of conveying information about a target to public shareholders. Investors that buy shares in private placements are able to investigate a SPAC's proposed merger target much more rigorously than can investors in an IPO. A SPAC and its target bring potential private placement investors "over the wall" and, with the protection of a nondisclosure agreement, provide them with confidential information not provided in an IPO roadshow.⁹⁹ Moreover, a PIPE investor's due diligence can be an iterative process as it analyzes information from the target company and goes back for more. This is less common in IPOs, though wall-crossing is becoming increasingly common there too.¹⁰⁰ For companies with important information that cannot be made public or soft information that is not conveyed effectively through the formalized communications of the IPO process, the private placement process can be a better means of price discovery than is the roadshow and book-building process of an IPO.

In addition, some private placements are made at a discount to the IPO price. Roughly one third of the SPACs in our 2019-20 Merger Cohort that issued shares in PIPEs sold those shares at a 10% discount or more to the IPO price, with the discount frequently coming in the form of a side payment made to the PIPE investors by the SPAC sponsor. A lower price may allow PIPE investors to be compensated for making a binding commitment earlier than other investors, and perhaps for expending resources investigating targets, thereby generating information externalities that benefit other investors.¹⁰¹ As we discuss below, however, private

⁹⁹ Under the SEC's Regulation FD, investors that receive material non-public information about a company (i.e. investors "brought over the wall") must agree to keep the information confidential and not to trade publicly in the company's securities until the information becomes publicly disclosed. For more information, see "Bringing Investors Over the Wall," Practical Law Practice Note 4-422-1741

¹⁰⁰ *Id.* noting that wall-crossing is "increasingly prevalent as a favored strategy to manage market volatility in the context of underwritten public offerings."

¹⁰¹ Of course, a lower price may also indicate that after further investigation, investors decided the deal was not attractive at the price offered to public investors, but is appealing if given a lower price. Furthermore, as we note in Section III, sponsors can achieve the equivalent of a private placement if they negotiate with investors who commit to buy shares and not redeem them. Presumably in most or all of these deals, the investors receive compensation from the sponsors in exchange for their commitments to not redeem, yet the details of this compensation are generally not disclosed, making it unclear to public investors what price other parties are effectively buying in to the SPAC deal for.

placements can also be incorporated into IPOs or direct listings much as they are in SPAC mergers.

3. *The Use of Earnouts for Sponsors and Target Shareholders*

SPACs are also portrayed as attractive compared to IPOs because the terms of a merger with a SPAC can include an earnout for a target's controlling shareholders. About 53% of mergers in our 2019-20 Merger Cohort provide for earnouts for controlling shareholders of targets, and 32% include earnouts for sponsors. These earnouts typically provide that if the combined company's post-merger share price reaches specified thresholds—often \$12, \$14, and \$16—additional shares will be issued.¹⁰² An earnout payable to the target's controlling shareholders addresses asymmetric information, in effect, by deferring the pricing of the merger until the post-merger company has performed and the market has had a chance to evaluate it.

C. Can the Advantages SPACs Be Achieved Without the Costs?

The costs associated with a SPAC raise the question whether the benefits of SPACs can be captured without the high costs. Consider the following “sponsored” IPO. It would begin with a sponsor that plays the same role that a sponsor plays in a SPAC. It would identify a company in which it wants to invest, and that it wants to help bring public and support thereafter. The sponsor would then seek third-party investors for a private placement. Once the sponsor has identified an interested target and has lined up an amount of equity investment that satisfies the target as a minimum acceptable equity infusion, the sponsor would either approach an underwriter for an IPO¹⁰³ or work with the company on a direct listing.

This arrangement parallels capital raising in a SPAC. The private placement investors will have done extensive due diligence, just as they do when investing in a SPAC, and their purchase will validate the transaction to the public market. Locking in funding in advance would promote deal and price certainty. Contingent private placements are already used in some traditional IPOs. Dun & Bradstreet's 2020 IPO, for example, was accompanied by a private

¹⁰² <https://www.winston.com/images/content/1/3/v2/135061/Winston-Strawn-SPAC-Basics-Presentation-2018.pdf>

¹⁰³ The underwriting of a sponsored IPO could be on a firm commitment or best efforts basis. For companies that are shut out of the IPO market, the latter may be their only alternative. But that would parallel what we see today in the underwriting of a SPAC. Since the underwriter makes no guarantee regarding redemptions and typically does not adjust its fees to reflect redemptions, it is in effect providing a very expensive best efforts underwriting.

offering in which a consortium of investors purchased shares at a percentage discount to the IPO price, contingent on the closing of the IPO.¹⁰⁴ Likewise, Uber's IPO included a commitment by PayPal to purchase \$500 million in shares, contingent on the IPO closing.¹⁰⁵ And the SEC has recently approved direct listings coupled with direct sales of shares.¹⁰⁶

In our sponsored IPO, the sponsor would play the same role it plays in a SPAC, except that it would search for a company to bring public before it raises funds. It would negotiate compensation with the company it helps bring public. Sponsors would no longer be put in the position of needing to decide between proposing a merger that is likely to be bad for SPAC investors or liquidating and thus losing millions of dollars of their own money. Thus, a sponsor's endorsement of a deal would likely be a more credible signal regarding the quality of the firm it is bringing public, and for particularly prominent and trusted sponsors, the effect would be even more significant.

Furthermore, because there would be no parking of funds for two years, there would be no need to compensate IPO investors with dilutive warrants and rights. The company going public would issue only shares. Additionally, there would be no expenses associated with paying SPAC IPO underwriting fees for shares that are never invested in a business. To the extent earnouts are useful in SPACs, they can be used in these transactions as well. Company management and the sponsor could be issued out-of-the-money warrants with strike prices at levels typical of SPAC earnouts today. If instead of an IPO, a company wanted to go public in a direct listing with the aid of a sponsor, the structure would be even simpler. The sponsor would help raise equity and serve as an advisor to the extent needed.

¹⁰⁴ See, e.g., Dun & Bradstreet's S-1A, filed with the SEC on June 26, 2020. See "Club IPOs and Insider Participation in IPOs" by Morrison & Forrester, available <https://media2.mofo.com/documents/161213-insider-participation-ipos.pdf>

¹⁰⁵ See, e.g., Uber's S-1A, filed April 26, 2019. See also the SEC's no-action letter to Black Box Incorporated, (June 26, 1990). Black Box sought staff's guidance on interpreting SEC Rule 152 and whether a private offering of securities would be integrated with its planned IPO. The transaction pursued by Black Box was more complex than the contingent private offerings pursued by Uber and Dun & Bradstreet more recently. Nevertheless, it shared similar features, such as an effective price paid by private placement investors that would be determined based on a fractional formula of the IPO price. We see similar practices in the capital markets of other countries as well. The UK, much of Europe, Hong Kong, and India use "cornerstone," or "anchor," investors in IPOs, which often make binding commitments to invest in IPOs, sometimes at the IPO price and sometimes at a discount.¹⁰⁵ We have simply added a sponsor to his sort of arrangement.

¹⁰⁶ See "SEC Approves NYSE Direct Listing Proposal", Forbes, by Elana Lyn Gross, Aug 26, 2020 <https://www.forbes.com/sites/elanagross/2020/08/26/sec-approves-nyse-direct-listing-proposal/#8dbff2e6bc55>

This sponsored IPO or direct listing could thus provide the same transactional benefits as a SPAC, but at much lower cost. Why do we not see IPOs similar to the sponsored IPO we propose? It may simply be that established practices have some force. SPACs have become largely standardized. Documentation is standardized, merger and private placement processes are standardized, and there is a clientele of investors familiar with the SPAC process. Taking SPAC elements, such as PIPE deals at a discount to the price paid by public investors and combining them with an IPO may be seen (accurately or not) as sending a negative signal about an issuer. We can only speculate. But we can confidently say that SPACs entail transaction costs and misaligned incentives that make it difficult to explain their persistence.

D. Pershing Square Tontine Holdings—The Exception That Proves the Rule?

In July 2020, shortly after the time period covered in the empirical analyses above, Pershing Square Tontine Holdings (PSTH) broke the mold—with a different type of SPAC. PSTH went public as the largest SPAC in history, and with a structure entirely different from what we have described above. Most importantly, Pershing Square TH (“Pershing Square”) the sponsor of PSTH, will take no promote at all. It will invest \$65 million in PSTH in exchange for warrants that are twenty percent out of the money and that are not saleable or exercisable until three years after a merger. So, Pershing Square will earn a return on its investment only if the shareholders earn a return of 20% or more over ten years – the term of the warrants. In addition, Pershing Square’s affiliates entered into a forward purchase agreement under which they are committed to invest \$1 billion at the time of a merger and have an option to invest another \$2 billion. They will make those investments in exchange for units consisting of one share and 1/3 of a warrant at a price of \$20 per unit. So, like its initial investment, these investments will yield a positive return only if PSTH’s public shareholders earn a positive return.

Another unique aspect of PSTH is its redemption commitment. As is true of other SPACs, shares of PSTH are redeemable with an interest rate somewhat higher than the Treasury note rate. But unlike other SPACs, PSTH units contain warrants for a much smaller fraction of a share than do other SPACs—just one ninth of a share. Furthermore, PSTH will reward nonredeeming shareholders with additional warrants—a number that will bring its public warrants up to at least one-third per share for those shareholders that do not redeem their shares. But in addition, PSTH’s “tontine” feature provides that the warrants left behind by shareholders

that redeem their shares will be reallocated to nonredeeming shareholders. So, the more shares that are redeemed, the more warrants nonredeeming shareholders will receive. This will encourage shareholders not to redeem.

Pershing Square is explicit regarding PSTH's advantages over other SPACs. In its prospectus it states:

Our stockholders are subject to far less potential dilution than is the case with many other blank check companies. Unlike other blank check companies, our Sponsor is not being afforded the opportunity to purchase 20% of our stock at a nominal price; our Sponsor will instead purchase the Sponsor Warrants at their fair market value, and the Sponsor Warrants will generally not be salable, transferable or exercisable until three years after the date of our initial business combination. Thus, unlike other situations in which the Sponsor is entitled to a portion of the value of the company regardless as to whether the company increases or decreases in value, our Sponsor will only participate in the value of our company if our stock price is at least 20% higher than the initial offering price in this offering (and only then if the Sponsor Warrants are salable, transferable or exercisable at that time). . . . We believe that this incentive structure is better aligned with our stockholders and potential merger partners, substantially less dilutive than typical incentive arrangements in other blank check companies, and therefore will be more attractive to potential investors in this offering.¹⁰⁷

Is PSHT the exception that proves the rule—that is, the rule that traditional SPACs have adopted a dysfunctional structure? Shortly after its IPO, PSHT's shares rose to about 15% above their IPO price and have remained there – something exceptionally rare among other SPACs.¹⁰⁸ This suggests that the market places substantial value on the lower dilution and incentive compatibility of PSHT's structure coupled with Pershing Square's abilities. Other SPACs, with traditional SPAC structures, have impressive sponsors as well. For instance, TPG sponsored a SPAC that went public in 2020. Its share price has remained around its \$10 redemption price since its IPO. It thus appears that PSHT supports our analysis, at least to some extent.

¹⁰⁷ Pershing Square Tontine Holdings Form 424B4, filed July 26, 2020, p.7.

¹⁰⁸ In particular, we identify only three other SPACs that have maintained prices 15% or more above their IPO price for at least a week during the first two-months following their IPOs. These other SPACs are Panacea Acquisition Corp, Dragoneer Growth Opportunities, and Therapeutics Acq. Corp.

Will other SPACs follow the PSHT structure? That remains to be seen. Over 90 SPACs have completed IPOs in the less than three months since PSHT completed its IPO in July of 2020 and only a handful have significantly deviated from traditional SPAC terms.¹⁰⁹ Alternatively, especially now that the stock exchanges will allow companies to combine direct listings with private placements, perhaps those transactions will displace some SPACs. Or perhaps our proposed sponsored IPOs or direct listings will.

Conclusion and Policy Implications

SPACs are a poorly designed vehicle by which to bring a company public. Investors that buy units in a SPAC's IPO and redeem their shares at the time the SPAC merges are paid a handsome return for parking their cash with the SPAC. The bulk of that return takes the form of the warrants or rights included in the units they purchase in the SPAC's IPO and keep for free after they redeem their shares. Those warrants and rights, however, dilute the SPAC's shares at the time of its merger—along with the sponsor's promote and the underwriting fees paid on cash raised rather than cash delivered. The brunt of that dilution has been borne by a largely separate group of SPAC shareholders that acquire shares around the time of SPAC mergers and hold them through the mergers and thereafter. Of the 2019-20 Merger Cohort that we studied, few SPACs have generated positive returns for their non-redeeming shareholders. The same is true of SPACs that went public in prior years and that have had longer to prove their value to the market. SPACs' poor performance reflects the depth of the dilution hole out of which they must dig to break even.

Commentators have widely misunderstood the structure of SPACs and how that structure hurts investors that hold SPAC shares at the time of their mergers. It is true that a few SPACs sponsored by high-profile funds or individuals have performed well. But these are the exceptions, not the rule.

SPACs are also misunderstood as providing "poor man's private equity" to ordinary investors. In reality, they neither function like private equity nor serve a clientele of ordinary investors. SPACs' initial investors are overwhelmingly large funds that buy units in a SPAC's IPO and either redeem or sell the shares before its merger. Other institutions buy shares around

¹⁰⁹ These include Executive Network Partnering Corp. which includes among its sponsor team former House Speaker Paul Ryan, and Ribbit LEAP, Ltd. Both of these SPAC impose significantly more post-merger price contingencies before the sponsors enjoy as large of a payout as sponsors in traditional SPACs do.

the time of the merger and either hold or trade those shares as they would with shares of any a public company. Very few shareholders buy prior the announcement of a merger and hold through the merger, as a private equity investor would do by investing in a private equity fund.

The survival of SPACs, let alone the current SPAC craze, is difficult to explain. For companies with stories that are difficult to convey, SPACs have historically provided a means of going public that may well have been more effective than an IPO, and perhaps some firms' only option for going public. But the poor post-merger performance of SPACs suggests that these benefits were achieved on the backs of investors that held shares of SPACs at the time of their merger and thereafter.

This raises the question whether the lenient regulatory treatment of SPACs is justified. The differential treatment of SPACs and IPOs never was intended. It is an inadvertent loophole. There is no way to know whether SPAC investors are lured into declining to redeem their shares prior to a merger because of the freedom SPACs and their targets enjoy to provide projections and other forward-looking statements to potential investors. Nor can one know whether SPACs' relative insulation from Section 11 is related to SPAC shareholders' losses. The SEC has long maintained that Section 11 is an important source of investor protection in IPOs, and has shown no inclination to urge Congress to amend or repeal it. To the extent Section 11 is considered important as applied to IPOs, it follows that if the regulatory playing field between SPACs and IPOs is to be leveled, the leveling should take the form of bringing SPAC regulation up to the level of IPO regulation. Similarly, to the extent that requiring an IPO underwriter to assume liability for the accuracy of statements in a prospectus adds meaningful investor protections, it would be reasonable to impose the same responsibility on banks that advise SPACs on their mergers. These advisors are often the same banks that underwrote the SPAC's IPO, and part of their fee is contingent on the consummation of the merger.

Furthermore, our analysis suggests two relatively straightforward reforms. First, SPAC sponsors frequently make side payments in the form of shares or warrants to public shareholders in return for commitments not to redeem their shares, but they do not always disclose the full details of those payments.¹¹⁰ A requirement that these payments be fully disclosed would convey

¹¹⁰ See note 25, *supra*, for some examples of SPAC filings that acknowledge these arrangements but do not provide information on compensation offered to investors not to redeem. Since some SPACs have evidently decided that details of these arrangements were not material information for their investors, it is also possible other SPACs have

information to other shareholders regarding the value they will get out of the proposed merger. Second, a SPAC could be required to disclose the amount of cash per share that it will deliver in a merger under a range of redemption scenarios. This would be useful to targets, which seem to have taken care of themselves, but it would also be useful to SPAC shareholders in projecting the impact of the merger on their shares.¹¹¹ It would focus attention on whether a target has adjusted the terms of the merger agreement in response to the SPAC having less actual cash per share than the nominal value of \$10 per share. In addition, it would focus attention on whether SPAC's sponsor can add sufficient value post-merger to make up for whatever shortfall in cash-per-share the SPAC has pre-merger. This would also be congruent with SEC requirements to transparently disclose fees and costs in other financial arrangements.¹¹²

On the other hand, one can reasonably conclude from our analysis that SPAC investors have only themselves to blame for losing money on their post-merger SPAC shares. Although our assessments of SPACs' high costs and losses to post-merger investors is contrary to popular reports in the press, all our analyses are based on public information. Furthermore, unlike what some have asserted,¹¹³ we find no evidence that SPACs are hotbeds of fraud or outright investor

decided that it is not material to their investors to disclose such arrangements at all. Thus, we do not even have a full picture of just how common such arrangements are.

¹¹¹ Some might imagine that cash per share is already effectively disclosed because investors know the basic terms of the SPAC: e.g. the sponsor's up front 20/25% promote. In reality, it took a team of researchers months of work to collect the cash per share remaining in SPACs that we present in this paper. In addition to the underlying uncertainty in cash per share on account of redemptions, there are a multitude of potential deals and arrangements by which sponsor shares and underwriting fees get adjusted. New money may come in via PIPE deals at different pricing amounts, and there might or might not be additional fees associated with raising those PIPE funds. Similarly, minimum cash per share might or might not be specified by merger agreements requiring minimum cash to close, and these agreements might or might not be waived by targets. Merger agreements may stipulate different provisions for how transaction costs of the merger are paid. And the list goes on.

¹¹² For instance, an investor can look at the first page of an IPO prospectus and see precisely spelled out how much cash per share the issuing firm will receive, net of underwriting expenses. Something similar for SPAC merger proxies could be helpful for SPAC investors. For other examples of SEC requirements on fee disclosures, see, e.g., <https://www.sec.gov/investment/faq-disclosure-conflicts-investment-adviser-compensation>.

¹¹³ For instance, a recent Financial Times article quotes Gabriel Grego as saying "The [Spac] structure itself seems engineered to attract fraud." See "Can Spacs shake off their bad reputation?" by Ortenca Aliaj, Sujeet Indap, and Miles Kruppa, Financial Times, August 13, 2020. Similarly, a recent article in The American Prospect states that companies going public via SPAC "like the idea of hiding their true financial outlook from regulators and the investing public," and points to alleged misstatements made by Nikola Corp in its disclosure documents as typical of the type of deceptions that make companies favor SPACs as routes to go public. The article goes on to state that "[t]he main advantage [of SPACs] is the lack of transparency, since the company doesn't have to register with the SEC and provide the level of detail to potential public investors." Quote from Eileen Appelbaum of the Center for Economic and Policy Research, as quoted by Dayen, David "Wall Street's Newest Way to Part Investors From Their Money." American Prospect, August 6, 2020. To be clear, we do not doubt that some SPAC deals may have contained fraudulent disclosures, we simply do not yet see evidence that this typifies SPAC transactions, or that SPACs necessarily have any more fraud than other types of offerings.

deception. So perhaps investor protection should be left to market forces. If one adopts this perspective, however, at the very least congress and the SEC should alter IPO regulations to match those for SPACs. Surely it is the worst of both worlds to let companies effectively opt-out of certain regulations for IPOs, but only if they use such an expensive and inefficient structure as a SPAC to go public.

Even if the regulatory advantage of SPACs is eliminated, the SPAC merger process may still be better than the IPO process in conveying information, especially for companies that are difficult for the market to value. As we have explained, SPACs convey information to investors through PIPEs and use earnouts to allow prices to adjust over time based on the post-merger company's performance. In addition, while sponsors' incentives are not necessarily well aligned with shareholder interests, the endorsement of a prominent sponsor with a reputation at stake conveys information as well. So, SPACs do seem to offer valuable features with respect to addressing asymmetric information. Nonetheless, the sponsored IPO or direct listing that we have suggested would achieve these benefits without the high costs of a SPAC. To the extent these mechanisms are valuable, and the costs of SPACs more widely understood, the market will move toward these more straightforward means of going public.

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