

No, SPACs Do Not Dilute Investors – A Theoretical and Empirical Analysis

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Abstract

Over the past decade, special purpose acquisition companies (“SPACs”) have become a prominent alternative to initial public offerings as a method for private companies to go public, through a merger transaction (“de-SPAC”) between the SPAC and private company. The increase in SPAC activity has attracted significant public scrutiny from academia, the media, policymakers, and courts. Notably, articles published in 2022 and 2023 by Stanford Law Professor Michael Klausner and co-authors assert that SPACs result in significant dilution of the initial shareholders in a SPAC that remain invested over the lifecycle of the de-SPAC merger process. He measures this supposed dilution using a metric he refers to as “net cash per share” and finds that cash dilution for SPAC investors is approximately 50%. The Securities and Exchange Commission and the Delaware Court of Chancery have subsequently taken action, in part based on Klausner et al.’s “net cash per share” analysis, and SPAC activity has experienced a drastic decline in recent years, with the number of de-SPAC transactions decreasing by 55% in 2023 as compared to their 2021 peak.

In this paper, we show that net cash per share should be irrelevant to the regulation of capital markets. We demonstrate that cash represents only 7% of the value of the merged public company for the median SPAC. Thus, cash dilution has a relatively small effect on the value of a non-redeeming investor’s shares in the merged company. Indeed, the dilution of the *value* of SPAC shares held by non-redeeming investors through the de-SPAC process is just 5%, which is less than the 20% underpricing that is typical for initial public offerings (“IPOs”). We also evaluate Klausner’s claim that the reduction in cash as measured by net cash per share is strongly negatively correlated with the future performance of the merged company and conclude that the claim is invalid. We therefore conclude that “net cash per share” is not a useful measure for evaluating the impact of the de-SPAC process on investors. Instead, we find that the level of shareholder redemption requests before a de-SPAC merger contains valuable predictive power as to the future performance of the merged company. We therefore recommend that policymakers consider the potential benefits of requiring SPACs to disclose to shareholders the extent of redemption requests before a merger.

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Introduction

1. The Rise of SPACs

A special purpose acquisition company (“SPAC”) is a publicly traded shell company created for the purpose of merging with a private company, thus bringing the private company public. From the perspective of the private company, a SPAC merger is an alternative to an initial public offering (“IPO”) as a means of becoming a public company.

The SPAC entity is created by a sponsor, typically a private equity fund or former industry executive, who finances the SPAC formation and works with an underwriter to offer the SPAC’s shares publicly in an IPO. In return, the sponsor typically receives an equity stake in the SPAC equivalent to 20% of the IPO proceeds, and commonly purchases warrants for additional shares. Warrants represent a right to buy additional shares of the post-merger company. Investors in the SPAC IPO receive SPAC shares valued at \$10 per share and warrants to purchase additional shares. Each SPAC share contains a redemption right that allows the shareholder to redeem the share for \$10 plus interest prior to the merger. As in any IPO, the SPAC IPO shares are marketed and sold by investment bank underwriters and are most often allocated to large institutional investors and wealthy individuals with minimal to no participation by retail investors.¹

After the SPAC IPO, the SPAC’s management typically has two years to find a private company to merge with. This merger is referred to as a “de-SPAC.” The shareholder redemption option is triggered after the merger target is announced, but before the merger is completed, at which point shareholders can choose to redeem their SPAC shares for \$10 per share plus interest that has accrued between the time of the SPAC IPO and the de-SPAC. The shareholders who choose not to redeem become shareholders in the merged company, with the value of their stake determined by the valuation of the target company, which is in turn determined by the terms negotiated by the SPAC sponsor with the target company. A shareholder that believes the target company is overvalued would be more likely to redeem than a shareholder that believes the target company is undervalued.

The level of redemption requests is not transparent to investors and does not become public until after the merger. As a result, investors do not know how many other investors have requested redemptions when deciding to exercise their own option to redeem.

Because SPACs must use some of their cash to pay out redeeming shareholders, the SPAC often needs additional financing to complete the announced merger. This financing is typically obtained

¹ See, e.g., *Initial Public Offerings, Why Individuals Have Difficulty Getting Shares*, SEC INVESTOR.GOV, <https://www.investor.gov/introduction-investing/investing-basics/glossary/initial-public-offerings-why-individuals-have> (last visited June 20, 2024) (noting that “[m]ost underwriters target institutional or wealthy investors in IPO distributions.”); *Getting a Slice: How IPO Shares Are Priced and Allotted*, CHARLES SCHWAB (June 14, 2024), <https://www.schwab.com/learn/story/getting-slice-how-ipo-shares-are-priced-and-allotted> (noting that “[f]or retail investors who want to try their hand at IPO investing, the truth is that it can be pretty hard to get shares because most of them end up going to institutional investors.”).

through a private investment in public equity (“PIPE”). Because a PIPE is a private placement, securities laws generally restrict investment by retail investors (e.g., individual investors that are not high-net worth),² so only institutional investors and wealthy individuals invest in the PIPE offering.³ As a result, throughout the entire SPAC lifecycle, from IPO to de-SPAC, participation is predominantly by institutional investors. The only way for retail investors to invest in the SPAC is to purchase shares in the public secondary markets, and even these purchases are limited.⁴

Beginning in 2017 and peaking in 2021, SPACs emerged rapidly as an alternative to traditional IPOs as a means of taking companies public. The number of SPAC IPOs grew from 34 in 2017 to a peak of 613 in 2021.⁵ In 2021, SPAC IPOs raised \$162.5 billion and constituted 49% of total US IPO proceeds,⁶ and there were a record 199 de-SPAC transactions.⁷ By 2023 annual SPAC IPOs had decreased to 31, and there were only 89 de-SPAC transactions.⁸ Despite this subsidence, SPACs still constituted 15% of total US IPO proceeds in 2023.⁹

2. Professor Klausner’s Net Cash Per Share Metric and SPAC Shareholder Dilution

As a result of their rapid rise, SPACs have received significant attention from regulators, legislators, and academics. Professor Michael Klausner of Stanford Law School has emerged as a prominent critic of SPACs. In 2022 and 2023 he and co-authors published two articles arguing that SPAC investors who choose not to redeem their shares suffer dilution as a result of the shares that the sponsor receives (the “promote” shares) and transaction costs.¹⁰ He measures this supposed

² More specifically, securities laws generally restrict investment in private placements by individual investors that are neither accredited investors (e.g., individuals with a net worth of at least \$1 million) nor qualified purchasers (e.g., individuals with an investment portfolio of \$5 million). See, e.g., *Section 4(A)(2) And Regulation D Private Placements*, THE CHAWLA LAW FIRM, <https://www.chawlawfirm.com/blog/guide-to-raising-capital-4a2-and-reg-d-private-placement> (last visited June 20, 2024); *Qualified Purchaser*, CARTA (Apr. 3, 2023), <https://carta.com/learn/private-funds/regulations/qualified-purchaser/>.

³ See, e.g., *What’s the Deal? Private Investments in Public Equity (“PIPE”) Transactions*, MAYER BROWN (2020), <https://www.mayerbrown.com/-/media/files/perspectives-events/publications/2020/04/whats-the-deal--pipe-transactions.pdf> (last visited on June 20, 2024) (stating that “[t]ypically, the investors in PIPE transactions are institutional accredited investors and qualified institutional buyers,” and, “[a] PIPE transaction is structured as a private placement made pursuant to the Section 4(a)(2)...and possibly Rule 506(b) of Regulation D.”).

⁴ See *Nothing but the Facts: Retail Investors and Special Purpose Acquisition Companies*, COMM. ON CAPITAL MKTS. REGULATION (Oct. 2021), <https://www.capmktreg.org/wp-content/uploads/2021/10/CCMR-NBTF-SPACs-Retail-Investors.pdf>.

⁵ *SPAC and US IPO Activity*, SPAC ANALYTICS, <https://www.spacanalytics.com/> (last visited June 20, 2024).

⁶ *Id.*

⁷ *SEC Adopts Rules Regulating SPAC Formation and De-SPAC Transactions*, SULLIVAN & CROMWELL LLP 3 (Jan. 29, 2024), https://www.sullcrom.com/SullivanCromwell/_Assets/PDFs/Memos/SEC-Adopts-Rules-Regulating-SPACs-De-Spac-Transactions.pdf.

⁸ *Id.*

⁹ *SPAC and US IPO Activity*, *supra* note 5.

¹⁰ Michael Klausner et al., *A Sober Look at SPACs*, 39 YALE J. ON REGUL. 228 (2022); Michael Klausner & Michael Ohlrogge, *Was the SPAC Crash Predictable?*, 40 YALE J. ON REGUL. 101 (2023).

dilution using a metric he refers to as “net cash per share”¹¹ (which we sometimes refer to as “NCPS” for simplicity).

The SEC and the courts appear to be receptive to Klausner’s arguments. On January 24, 2024, the SEC adopted final rules requiring additional disclosures by SPACs to investors, including the equivalent of net cash per share for IPO and de-SPAC transactions.¹² SPACs are now required to disclose this figure to investors and identify sources of “potential dilution.”¹³ To justify this requirement, the SEC cited Klausner’s work, stating, “[a]ccording to one study, the median dilutive impact of sponsor compensation, underwriting fees, warrants, and rights equaled 50.4% of the cash raised in a SPAC initial public offering.”¹⁴ The SEC claims that “substantially all the information that would be conveyed to an investor by a net cash per share measure will be conveyed” by its now mandatory disclosures.¹⁵ The SEC’s rules do not require SPACs to disclose the level of redemption requests to shareholders before the merger.

In 2023 the Delaware Court of Chancery denied motions to dismiss in three cases alleging that SPAC sponsors breached their fiduciary duties to investors by failing to disclose net cash per share, referencing Klausner’s arguments.¹⁶ Klausner served as a plaintiff’s attorney in two of those cases.¹⁷

Perhaps as a consequence of increased court scrutiny and the SEC’s new SPAC restrictions – both driven in part by Klausner’s criticisms – SPAC activity has declined markedly. In the months following the March 2022 proposal of the new SEC rules, the SPAC market contracted by nearly 75%.¹⁸ And, as the data above shows, the number of SPAC IPOs in 2023 decreased by 95% relative to their 2021 peak, while the number of de-SPAC transactions decreased by 55% over the same period.

¹¹ Klausner et al., *supra* note 10, at 232-33 & n.11.

¹² Special Purpose Acquisition Companies, Shell Companies, and Projections, 89 Fed. Reg. 14,158 (Feb. 26, 2024) (the rule refers to the metric as “net tangible book value per share, as adjusted”).

¹³ *Id.* at §§ 229.1602 & 229.1604.

¹⁴ Special Purpose Acquisition Companies, Shell Companies, and Projections, 87 Fed. Reg. 29,458, 29,468 (May 13, 2022).

¹⁵ 89 Fed. Reg. at 14,189.

¹⁶ *Delman v. GigAcquisitions3, L.L.C.*, 288 A.3d 692, 722-28 (Del. Ch. 2023); *Laidlaw v. GigAcquisitions2, L.L.C.*, No. 2021-0821-LWW, 2023 WL 2292488, at *10-12 (Del. Ch. Mar. 1, 2023); *In re XL Fleet (Pivotal) S’holder Litig.*, No. 2021-0808, 2023 WL 4235207 (Del. Ch. June 27, 2023); *see also* Mason Grist, *Changing Ex-SPAC-tations: The Case for Requiring Fairness Opinions in de-SPAC Transactions*, 102 TEX. L. REV. 385, 402-03 & nn. 111, 118 (2024) (citing the telephonic bench ruling of Chancellor Kathaleen St. J. McCormick).

¹⁷ *Delman*, 288 A.3d at 699; *Laidlaw*, 2023 WL 2292488.

¹⁸ Hal Scott & John Gulliver, Op-Ed., *Gary Gensler’s Assault on U.S. Capital Markets*, WSJ (July 17, 2022, 4:39 PM), <https://www.wsj.com/articles/gary-genslers-assault-on-u-s-capital-markets-partisan-activist-sec-shareholders-investors-funds-executive-office-11658077526>.

3. Debunking Net Cash Per Share

The reliance of the SEC and courts on Klausner’s work means that the validity of his “net cash per share” metric is of significant relevance to the regulation of US capital markets. However, in this paper, we show that net cash per share should be irrelevant to the regulation of capital markets.

This paper proceeds in two parts.

In Part I, we demonstrate that cash represents only 7% of the value of the merged public company for the median SPAC. Thus, cash dilution has a relatively small effect on the value of a non-redeeming investor’s shares in the merged company.

In Part II, we evaluate Klausner’s claim that the reduction in cash as measured by net cash per share is strongly negatively correlated with the future performance of the merged company¹⁹ and conclude that the claim is invalid. In theory, a reduction in the cash raised as part of the de-SPAC merger process could make it more difficult for a newly public company to invest and grow and therefore negatively affect its performance causing investor losses. However, we find that there is no statistical relationship between net cash per share and the future performance of the post-merger company.

We therefore conclude that “net cash per share” is not a useful measure for evaluating the impact of the de-SPAC process on non-redeeming investors.

We also find that the level of shareholder redemption requests before a de-SPAC merger contains valuable predictive power as to the future performance of the merged company. We therefore recommend that policymakers consider the potential benefits of requiring SPACs to disclose to shareholders the extent of redemption requests before a merger, as a means of increasing the information available to investors and allowing them to make better informed decisions about the choice of whether to redeem or participate in the de-SPAC.

¹⁹ Klausner et al., *supra* note 10; Klausner & Ohlrogge, *supra* note 10.

Part I: Do SPACs Dilute Investors?

In Part I, we examine the assertion by Klausner that the de-SPAC process is highly dilutive and therefore harmful to non-redeeming SPAC shareholders. For example, in a *Sober Look at SPACs (2022)* (“Klausner (2022)”), Klausner states that for the median SPAC in his sample, a non-redeeming SPAC investor’s initial \$10/share cash investment is diluted to \$5.70/share prior to the de-SPAC merger, representing a substantial 43% dilution.²⁰

To do so, we examine three types of dilution – (1) Klausner’s “net cash per share,” (2) dilution of a non-redeeming investor’s percentage ownership stake of the post-merger company, and (3) dilution of the *value* of the non-redeeming investor’s ownership stake in the post-merger company. For each SPAC characteristic that could cause dilution, such as sponsor promote, PIPE investment and investor redemptions, we apply the median SPAC figure provided by Klausner’s 2022 paper, as Klausner does not provide similar data for his more recent paper, *Was the SPAC Crash Predictable? (2023)* (“Klausner (2023)”).

First, we probe Klausner’s net cash per share methodology. Klausner refers to “dilution” as the reduction of cash that a SPAC brings to the de-SPAC merger.²¹ To estimate cash dilution, Klausner converts SPAC characteristics, including sponsor promote, PIPE investment and investor redemptions, into costs that reduce the amount of cash *per share* that the SPAC will bring to the merger.²² He calls the resulting figure “net cash per share.”²³

Second, we evaluate dilution as a reduction in a non-redeeming shareholder’s ownership stake of the combined company. We start with a baseline merger scenario, which we define as a merger with no SPAC characteristics, and then show what happens when each SPAC characteristic is added to the deal.

Third, we calculate the value of each share of the combined company immediately after the de-SPAC merger – a simple exercise of dividing the value of the combined entity by the number of shares in the combined entity. We find the value per share to be \$9.45 immediately after the de-SPAC merger, representing a 5.5% reduction in value. This is substantially lower than the typical IPO underpricing of 20%, which represents a cost of going public through an IPO.²⁴

1. Pre-Merger Cash Dilution of Non-Redeeming Investors - Klausner’s “Net Cash Per Share” Applied

“Net cash per share” is defined by Klausner as “cash in the SPAC minus underwriting fees and other fees incurred in connection with a SPAC’s merger minus the value of warrants as of the day before the announcement of the merger, divided by shares issued in the SPAC’s IPO plus shares

²⁰ Klausner et al., *supra* note 10 at 233.

²¹ *See id.* at 232-33.

²² *Id.* & n.11.

²³ *Id.*

²⁴ *See, e.g.,* Klausner et al., *supra* note 10, at 268.

issued to PIPE investors.”²⁵ The number of shares issued in the SPAC IPO includes any shares issued to the sponsor as promote but is adjusted down for any shares that investors choose to redeem.²⁶

Below we present the median figures provided by Klausner (2022) or derived from his data for the following SPAC characteristics:

- The number of shares that the SPAC sponsor receives (“sponsor promote”) is equal to 20% of the SPAC equity after the SPAC IPO;²⁷
- The percentage of SPAC shares that shareholders choose to redeem before the de-SPAC (“pre-merger redemption rate”) is 70%;²⁸
- Median additional cash invested in the SPAC after the IPO but before the de-SPAC by third parties (“PIPE investments”) equals roughly 1/3 of the cash that the SPAC delivers to the target;²⁹
- PIPE investors purchase shares at a discount of 5.5% of the \$10 purchase price paid by SPAC IPO investors;³⁰
- Fees paid to the underwriter in connection with the SPAC IPO (“underwriting fees”) equal 5.5% of SPAC IPO proceeds – 2% are paid by the sponsor upfront and 3.5% are deferred until the merger;³¹
- Other fees, including financial advisory fees and other merger-related expenses, equal 4% of pre-merger, post-redemption equity (including equity from PIPE investments).³²

Klausner (2022) states that, taking into account all SPAC characteristics, median net cash per share is \$5.70 as compared with the initial purchase price of \$10 per share.³³ We now provide an illustrative example with dollar figures to demonstrate this calculation based on the median SPAC characteristics above, which, in our own calculation, yields \$5.56 in net cash per share.

In our example we disregard warrants. Our analysis focuses on dilution at the time when the merged company goes public. Warrants become exercisable on the later of (a) 30 days post-merger and (b) one-year post-IPO, at a uniform “strike” price of \$11.50.³⁴ However, even though we exclude warrants, our median net cash per share is very similar to Klausner’s net cash per share (\$5.56/share as compared to \$5.70/share, respectively).

²⁵ *Id.*, at 233 n.11.

²⁶ *See id.* at 232-33 & n. 9.

²⁷ *Id.* at 232.

²⁸ *Id.* at 243. Klausner states the median redemption rate is 73% in his sample. We chose 70% to simplify the calculation.

²⁹ *Id.* at 245. Klausner states the median PIPE investment is 36% of cash delivered to targets. We chose one-third to simplify the calculation.

³⁰ *Id.* at 239.

³¹ *Id.* at 250-51 & tbl.4.

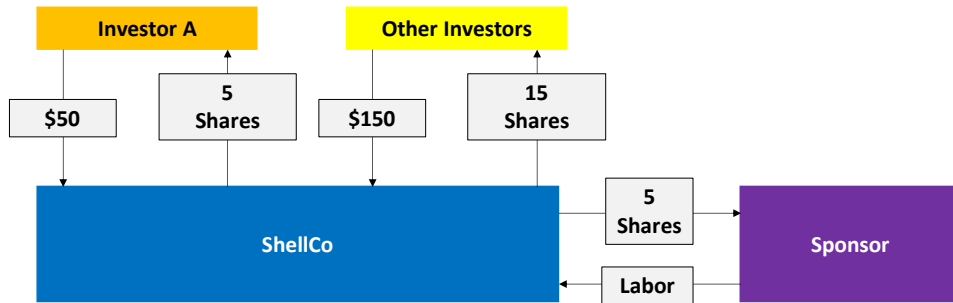
³² *Id.* at 251.

³³ *Id.* at 233.

³⁴ Ramey Layne & Brenda Lenahan, *Special Purpose Acquisition Companies: An Introduction*, HARVARD L. SCH. F. ON CORP. GOVERNANCE (July 6, 2018), <https://corpgov.law.harvard.edu/2018/07/06/special-purpose-acquisition-companies-an-introduction/>; Klausner et al., *supra* note 10, at 248.

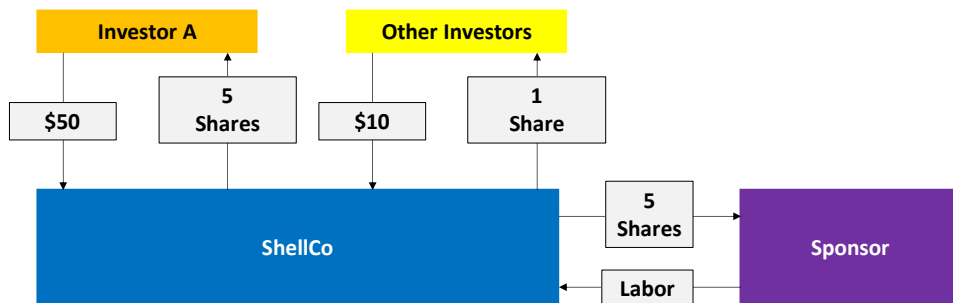
Each of the below steps relies on the median for each SPAC characteristic (e.g., sponsor promote and redemptions) in Klausner (2022).

Step 1: Initial Equity Raise + Sponsor Promote



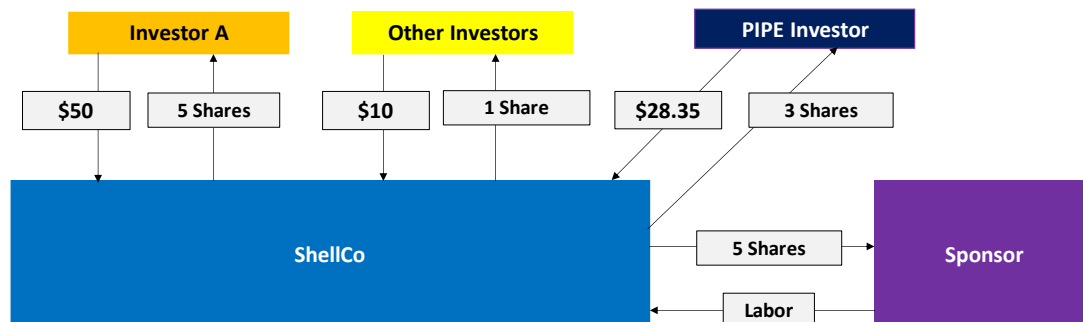
Investors as a whole pay \$10/share for a total of 20 shares. In the above example, Investor A receives 5 of those shares, and Other Investors receive 15 shares. ShellCo (the SPAC) raises \$200 of cash. The sponsor receives a “promote” of 5 shares, equal to 20% of the SPAC’s IPO shares ($5 / 25 = 0.2$).

Step 2: Exercise Redemption Option



70% of shares ($20 * 0.7 = 14$ shares) are redeemed, leaving ShellCo with 6 shares outstanding. The 14 shares were worth \$140 ($\$10 * 14 = \140). As ShellCo initially raised \$200, it now has only \$60 in cash remaining ($\$200 - \$140 = \$60$).

Step 3: Raise PIPE Investment



In this step, Investor A, Other Investors, and the sponsor promote are unchanged, and a PIPE investor is introduced to compensate for the lost investments resulting from the redemptions. The PIPE investor purchases shares at a 5.5% discount, or $\$9.45/\text{share}$ ($\$10 * (1 - 0.055) = \9.45).³⁵ The PIPE investor purchases 3 shares. ShellCo now has \$60 from the original investors' 6 shares and \$28.35 from the PIPE investor's 3 shares ($\$9.45 * 3 = \28.35). The sponsor contributed \$0 for its 5 shares. ShellCo thus has a total of \$88.35 ($\$60 + \$28.35 + \0) and 14 shares ($6 + 3 + 5 = 14$). Net cash per share at this point is \$6.31 ($\$88.35 / 14 = \6.31).

Now, fees must be subtracted. Underwriting fees are 3.5% of IPO proceeds, or \$7 ($\$200 * 0.035 = \7). Other fees will equal 4% of pre-merger, post-redemption equity or \$3.53 ($\$88.35 * 0.04 = \3.53). Thus, fees will total \$10.53 ($\$7 + \$3.53 = \10.53).

Fees reduce the cash in the SPAC, so the SPAC now has \$77.82 in cash ($\$88.35 - \$10.53 = \77.82). There are 14 SPAC shares. Hence, net cash per share is \$5.56.

Below we have provided a summary of this calculation, entirely consistent with the above analysis:

- **NUMERATOR: Cash in the SPAC – Underwriting & Other Fees**
 - Cash in the SPAC = Initial IPO cash raised – cash paid to redeeming shareholders + cash raised via PIPE investors
 - Initial IPO cash raised = \$200
 - Cash paid to redeeming shareholders = $14 * \$10 = \140
 - Cash raised via PIPE = $3 * \$9.45 = \28.35
 - $\$200 - \$140 + \$28.35 = \88.35
 - Underwriting Fees
 - Deferred underwriting fees = $\$200 * 0.035 = \7

³⁵ The discounts offered to PIPE investors can stem from the SPAC sponsor's motivation to secure new cash to offset redemptions. See, e.g., Saul Levmore & Frank Fagan, *SPACs, PIPEs, and Common Investors*, 25 U. PENN. J. BUS. L., 103, 110 (2023).

- Other Fees
 - $\$88.35 * 0.04 = \3.53
- $\$88.35 - \$7 - \$3.53 = \77.82
- DENOMINATOR: SPAC IPO Shares + Sponsor Promote – Redemptions + PIPE Investor Shares
 - SPAC IPO shares = 20 initial shares
 - Sponsor promote = 5 shares
 - Redemptions = 14 shares
 - PIPE investors = 3 shares
 - $20 + 5 - 14 + 3 = 14$
- Net cash per share = $\$77.82 / 14 \text{ shares} = \5.56

2. Post-Merger Ownership Stake of Non-Redeeming Investors

While in the prior section we applied the median SPAC characteristics from Klausner (2022) to assess pre-merger cash dilution, we now present a simplified application of these same characteristics to assess dilution in the equity stake of a non-redeeming SPAC IPO investor in the post-merger company. We find that the SPAC process result in an *increase* in a non-redeeming shareholder’s equity stake in the combined company of approximately 5% immediately after merger.

We begin with a baseline SPAC showing only a merger between a SPAC and a Target and no other SPAC characteristics (*e.g.*, we exclude sponsor promote, redemptions, PIPE investment, and fees). We then analyze the impact of each SPAC characteristic on the equity stake of a non-redeeming investor (“Investor A”) in the combined company. This step-by-step process allows us to determine whether each SPAC characteristic (*e.g.*, sponsor promote) dilutes a non-redeeming investor’s ownership stake.

In the examples below we apply the same characteristics as in the previous section with one addition. Our review of 245 SPAC transactions that closed merger deals between July 2020 and December 2021 (corresponding to the time period used in Klausner (2023)) found that at the median the Target company is approximately 5x the value of the cash raised by the SPAC.³⁶

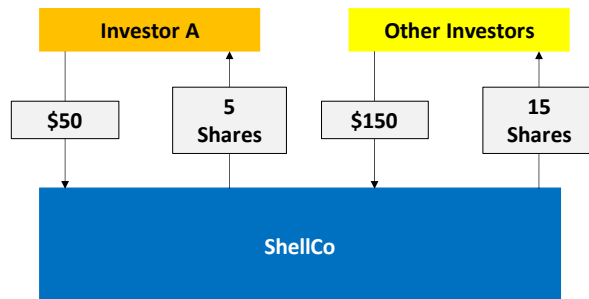
³⁶ See also, *e.g.*, Richard Harroch et al., *10 Key Questions And Answers About SPACs*, FORBES (Dec. 10, 2021, 8:27 AM), <https://www.forbes.com/sites/allbusiness/2020/11/11/10-key-questions-and-answers-about-spacs/> (“To mitigate the dilutive impact of the 20% founder shares and make a De-SPAC transaction more attractive to a target, SPACs often prefer business combination targets that are four to eight times the SPAC size.”); Mike Blankenship, *SPACs: An Overview*, CALVETTI FERGUSON, <https://calvettiferguson.com/spacs-an-overview/> (last visited June 27, 2024) (“The money raised in the IPO is typically about one-fifth to one-quarter of the expected enterprise value of the target to minimize the effect of dilution.”); *The SPACs Boom*, DELOITTE (2021), https://www2.deloitte.com/content/dam/insights/articles/154482-spacs-in-europe/DI_The-SPACs-boom.pdf (“Typically... the value of the target company is around two to five times the gross proceeds of the SPAC IPO.”);

Klausner does not calculate the value of the typical target company, because Klausner’s pre-merger cash dilution analysis is not affected by the size of the target company.³⁷

We again disregard warrants. The examples demonstrate the impact on a non-redeemer’s equity stake in the combined company immediately after merger. Warrants commonly become exercisable on the later of (a) 30 days post-merger and (b) one-year post-IPO, at a uniform “strike” price of \$11.50.³⁸ Thus, warrants do not impact equity stake immediately after the merger. Only once the price of the post-merger company reaches \$11.50/share would the warrants be “in the money.” At that point, each whole warrant could be exercised by paying \$11.50 in exchange for one share of the combined company.³⁹

a. Scenario 1 – Baseline SPAC

Step 1: Initial Equity Raise



In the initial SPAC IPO, investors pay \$10/share for a total of 20 shares. In the above example, Investor A receives 5 of those shares, and Other Investors receive 15 shares. ShellCo thus raises \$200 of cash ($\$10 * 20 = \200).

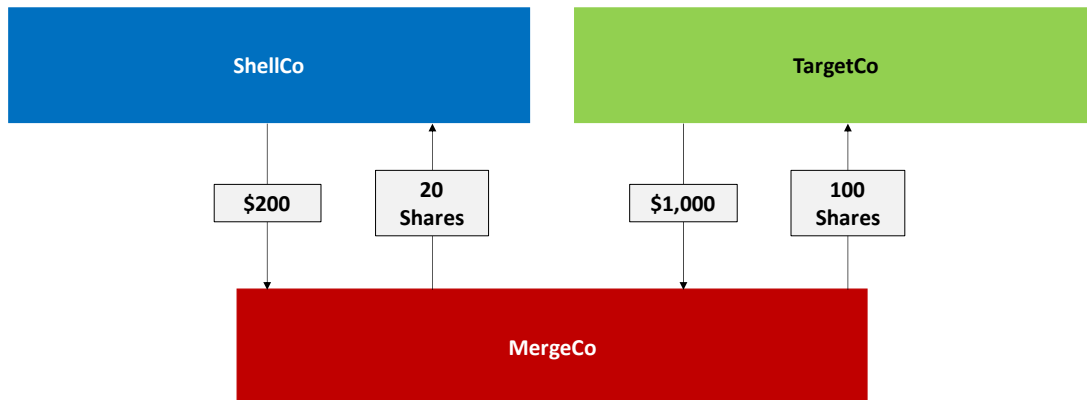
Marcia Ellis et al., *Is 2021 the Year of SPACs in Asia? What You Need to Know*, MORRISON FOERSTER (Mar. 4, 2021), <https://www.mofo.com/resources/insights/210304-year-of-spacs-in-asia> (“In recent deals, the valuation of the target is typically three to five times the value of the assets held in the SPAC trust account (and many times even more).”).

³⁷ See Klausner et al., *supra* note 10 at 253

³⁸ Layne & Lenahan, *supra* note 34; Klausner et al., *supra* note 10, at 248.

³⁹ Layne & Lenahan, *supra* note 34.

Step 2: Merge with TargetCo



Step 2 of this scenario shows what happens when TargetCo – which has a negotiated merger price (equity value) of \$1,000 – merges with ShellCo to form the new, combined MergeCo entity. Shares are valued at \$10/share, and TargetCo and ShellCo each own a pro rata share of MergeCo’s 120 shares.

Our analysis uses the negotiated merger price of TargetCo equity, which we fix at \$1,000, to represent the equity value of TargetCo. One might argue that we therefore assume away the possibility that the negotiated value of TargetCo is inflated, so that non-redeeming SPAC shareholders bear the SPAC’s costs.

But this is not the case: We do not make any assumptions nor draw any conclusions as to whether the negotiated value of TargetCo is the appropriate valuation. It is of course possible that the negotiated merger price in any de-SPAC deal (e.g., \$1,000) exceeds the equity/market value of TargetCo and that TargetCo will as a result underperform after going public. In fact, there is evidence that de-SPACs tend to result in an overvaluation of TargetCo as de-SPACs tend to underperform the market and IPOs.⁴⁰

However, as we show in Part II, such overvaluation and underperformance are not necessarily caused by NPCPS, which is our sole focus. Klausner et al. claim that non-redeeming SPAC investors suffer dilution as a result of the sponsor promote shares and transaction costs, and that this dilution (i.e., NCPS) leads to overvaluation of TargetCo.⁴¹

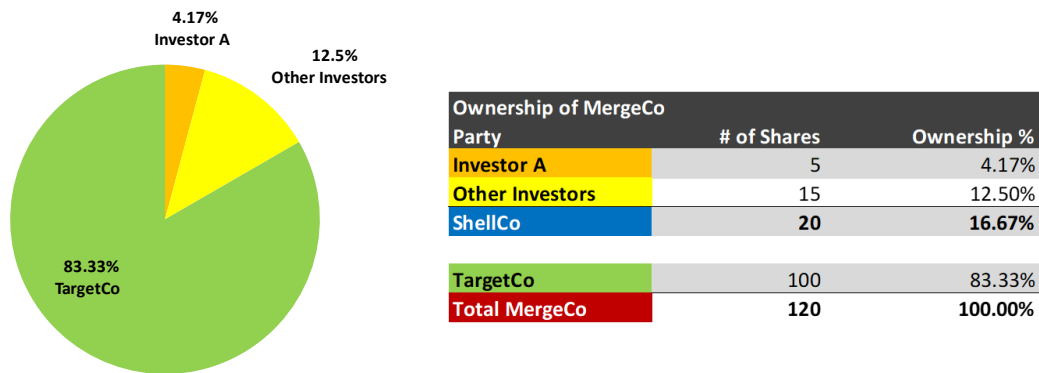
But if this conclusion were correct, Klausner et al. should have found a statistically significant relationship between lower NCPS and worse post-merger share performance, since the negotiated

⁴⁰ CCMR, Comment Letter to Securities & Exchange Commission Re: File No. S7-13-22: Special Purpose Acquisition Companies, Shell Companies, and Projections (June 13, 2024), <https://capmktreg.org/wp-content/uploads/2022/06/CCMR-Comment-Letter-SEC-SPAC-Proposal-06.13.2022.pdf>.

⁴¹ Klausner et al. *supra* note 10 at 232-233.

value of TargetCo will have been inflated according to Klausner et al.’s theory. However, as Part II shows, Klausner et al.’s most complete model, which removes PIPEs and redemptions and uses all of the available data, found no statistically significant relationship between NCPS and TargetCo valuation.⁴²

Ownership of MergeCo



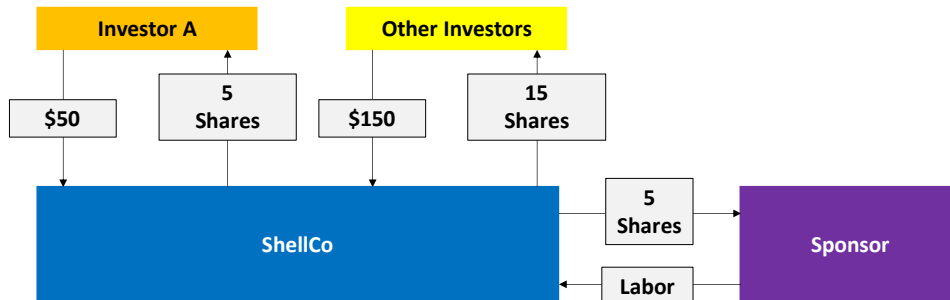
Upon completion of the merger, Investor A’s investment for 5 shares of ShellCo translates to an ownership stake of 4.17% of MergeCo.

b. Scenario 2 – SPAC + Sponsor Promote

Scenario 2 introduces the sponsor “promote.” We note that *all* SPACs include a promote. By adding the promote to the baseline we can determine whether the promote dilutes Investor A’s equity stake. We find that the sponsor promote dilutes Investor A’s equity stake in the merged company by approximately 4%.

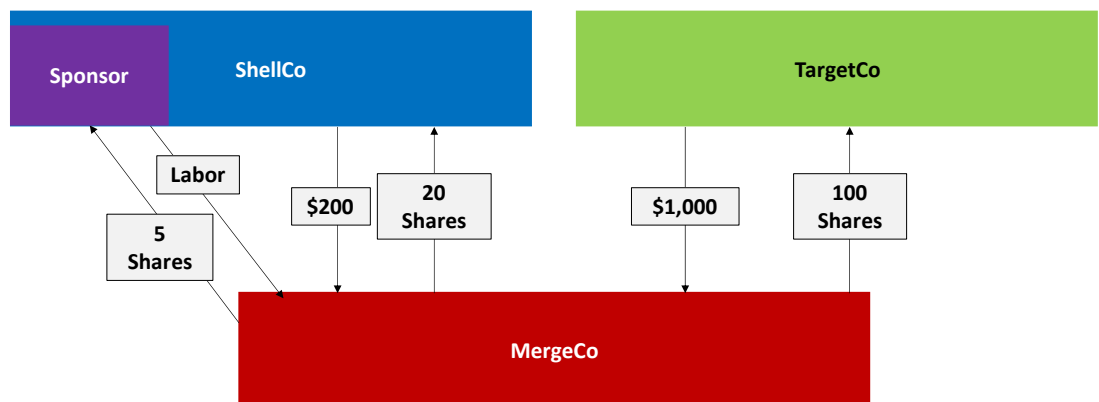
⁴² Klausner & Ohlrogge, *supra* note 10 at 116 n.48.

Step 1: Initial Equity Raise + Sponsor Promote



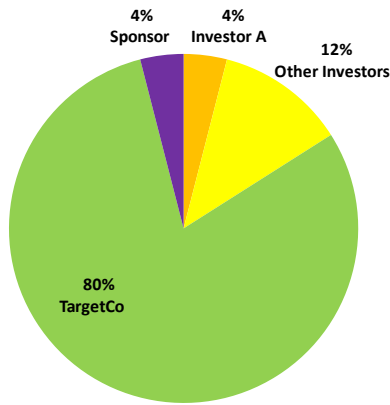
Just as in Scenario 1, ShellCo raises \$200 of cash from Investor A and Other Investors in exchange for 20 shares of ShellCo. However, to compensate the sponsor for arranging the SPAC, the sponsor will receive a “promote” of 5 shares, equal to 20% of post-SPAC IPO equity ($5 / 25 = 0.2$).

Step 2: Merge with TargetCo



Step 2 of this scenario shows what happens when ShellCo merges with TargetCo. The sponsor receives 5 MergeCo shares, the investors in ShellCo receive 20 shares. And TargetCo receives 100 shares, just as in Scenario 1.

Ownership of MergeCo



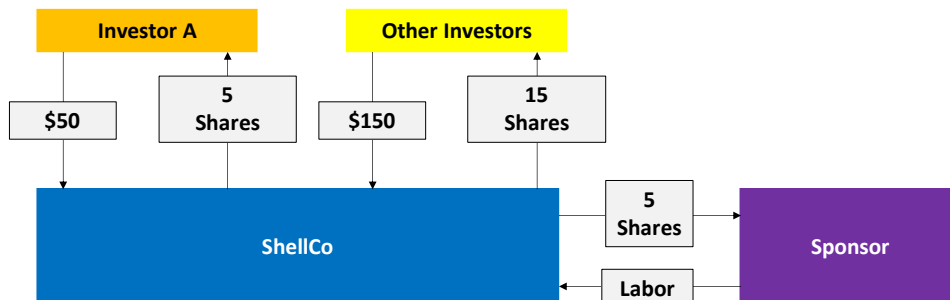
Ownership of MergeCo		
Party	# of Shares	Ownership %
Investor A	5	4.00%
Other Investors	15	12.00%
Sponsor	5	4.00%
ShellCo	25	20.00%
TargetCo	100	80.00%
Total MergeCo	125	100.00%

Investor A’s investment for 5 shares of ShellCo now translates to an ownership stake of 4% of MergeCo, down from 4.17% in the scenario without a sponsor promote. The result is that the sponsor’s promote has diluted Investor A by approximately 4% $((4 - 4.17) / 4.17 = -0.041)$. We further note that Target Co’s ownership stake has also been diluted from 83.3% to 80%, also approximately 4% $((80 - 83.33) / 83.33 = -0.04)$.

c. Scenario 3 – SPAC + Sponsor Promote + Redemptions & PIPE + Fees

Scenario 3 retains the sponsor promote and introduces redemptions, PIPE investment, and fees. We find that the cumulative impact of these features is an increase in Investor A’s equity stake of approximately 5%.

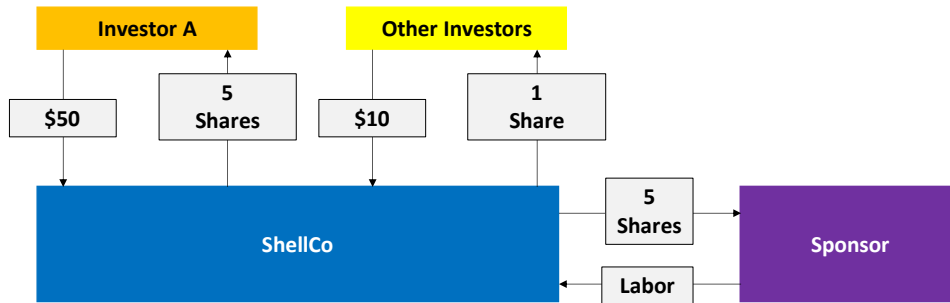
Step 1: Initial Equity Raise + Sponsor Promote



Just as in the previous two scenarios, ShellCo raises \$200 of cash from Investor A and Other

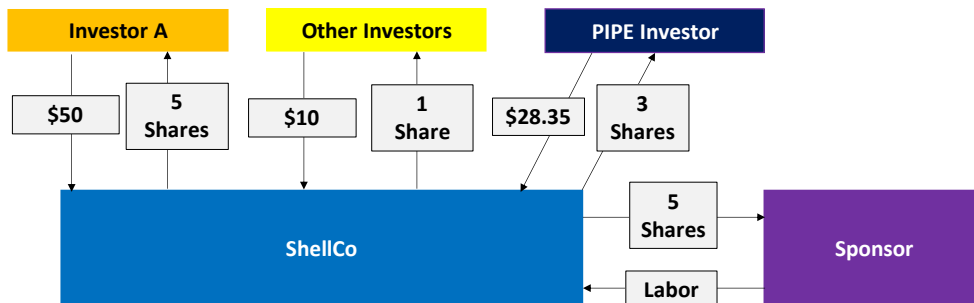
Investors in exchange for 20 shares of ShellCo, and the sponsor receives 5 shares of ShellCo as a “promote.”

Step 2: Exercise Redemption Option



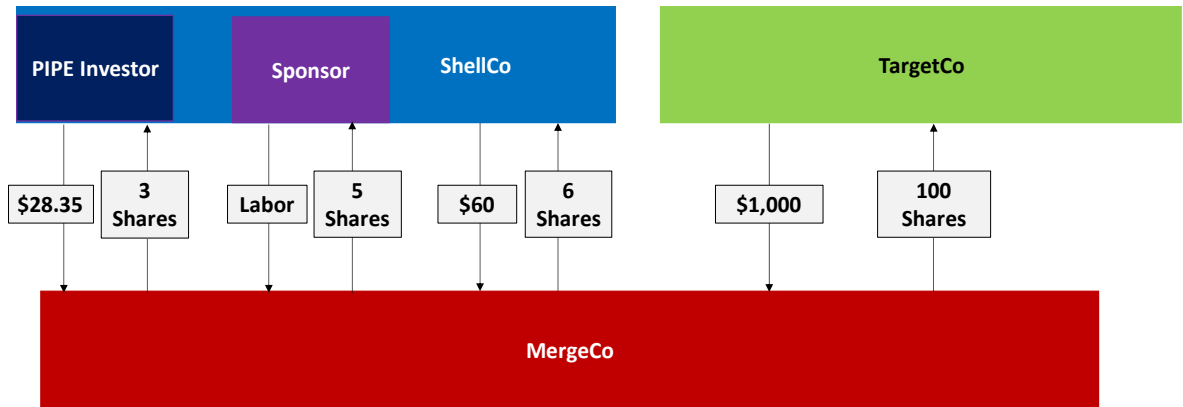
Step 2 of this scenario introduces redemptions. 70% of shares ($20 * 0.7 = 14$ shares) are redeemed for \$10 each, leaving ShellCo with just 6 shares outstanding.

Step 3: Raise PIPE Investment



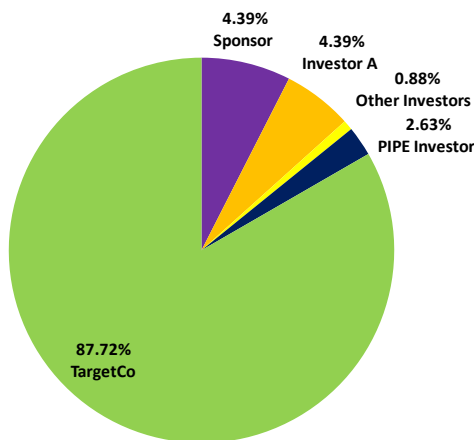
Step 3 of this scenario introduces PIPE investors. In this step, Investor A, Other Investors, and the sponsor promote are unchanged. PIPE investors are introduced, to compensate for the lost investment resulting from the redemptions. PIPE investors purchase 3 shares. Each share is purchased at a 5.5% discount, or \$9.45/share ($\$10 * (1 - 0.055) = \9.45). The PIPE investor’s 3 shares are thus purchased for \$28.35 ($\$9.45 * 3 = \28.35). ShellCo now has 14 shares outstanding ($6 + 3 + 5 = 14$).

Step 4: Merge with TargetCo



Step 4 of this scenario shows what happens when ShellCo merges with TargetCo. The non-redeeming investors in ShellCo receive 6 shares, the sponsor receives 5 shares, and PIPE investor receives 3 shares of MergeCo. TargetCo receives 100 shares.

Ownership of MergeCo



Ownership of MergeCo		
Party	# of Shares	Ownership %
Investor A	5	4.39%
Other Investors	1	0.88%
Sponsor	5	4.39%
PIPE Investor	3	2.63%
ShellCo	14	12.28%
TargetCo	100	87.72%
Total MergeCo	114	100.00%

Investor A's investment for 5 shares of ShellCo now translates to an ownership stake of 4.39% of MergeCo. Investor A's equity has increased by approximately 5% ($(4.39 - 4.17) / 4.17 = 0.053$). Similarly, Target Co's equity stake in the merged company is 87.72%. Target Co's equity stake has increased by approximately 5% ($(87.72 - 83.33) / 83.33 = 0.053$). Redemptions (which increase the remaining shareholders' ownership share of the combined company) and new PIPE investment have counteracted the small dilutive impact of the sponsor promote.

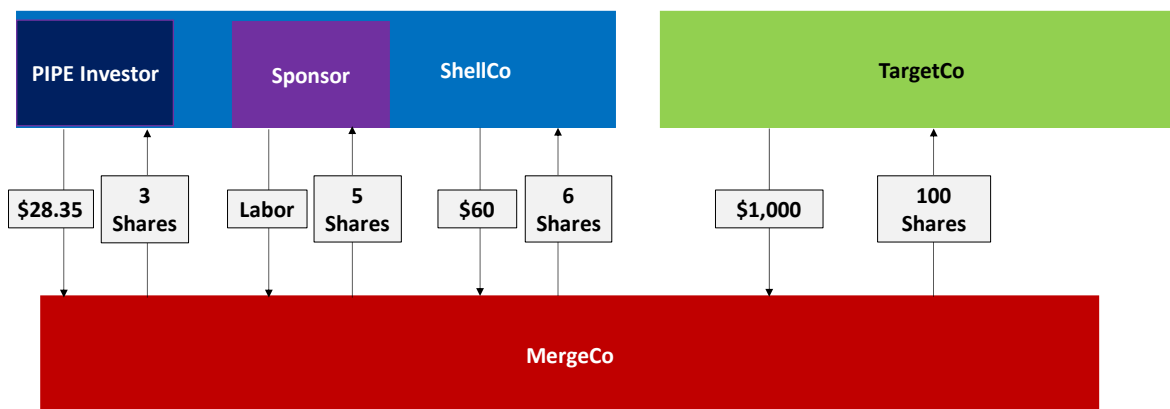
Based on discussion with legal experts, we understand that the underwriting and other fees associated with the de-SPAC merger are paid from the combined cash available to the SPAC and the Target without adjusting the amount of shares received by either. Therefore, fees do not impact Investor A’s equity stake, which remains at 4.39% after fees.

3. Value of a Non-Redeeming Investor’s Ownership Stake in the Post-Merger Company

In this section we calculate the value of each share of the combined company and assess how much that value has been diluted by the costs associated with the de-SPAC process.

Using the figure from Scenario 3, Step 4, we can see the value each de-SPAC participant brings to the merger, and how many shares each such participant receives in return.

Step 4: Merge with TargetCo



The figure from Scenario 3, Step 4 incorporates all the unique structural features of a SPAC based on the median SPAC characteristics from Klausner (2022). As demonstrated by this figure, the PIPE investor brings \$28.35 of cash to MergeCo, non-redeeming investors bring \$60 of cash to MergeCo and TargetCo brings equity worth \$1,000 to MergeCo.⁴³ The total value contributed to MergeCo is thus \$1,088.35.

The figure also demonstrates that PIPE investors have 3 shares in MergeCo, the Sponsor has 5 shares, non-redeeming SPAC investors have 6 shares and TargetCo has 100 shares. Therefore MergeCo has 114 shares.

⁴³ It is important to note that the \$1,000 equity valuation of TargetCo (and the resulting 100 shares issued to TargetCo shareholders) is the agreed upon merger value of TargetCo and therefore the appropriate valuation measure in the scenario. The subsequent reduction of post-merger share value from \$10 to \$9.45 per share does not indicate that the market value of TargetCo was less than \$1,000 but rather merely represents the costs of going public.

Unpaid expenses reduce the cash of the combined company without adjusting the number of shares received by the parties. Deferred underwriting fees equal 3.5% of IPO proceeds, or \$7 ($\$200 * 0.03 = \7). Other fees equal 4% of pre-merger, post-redemption SPAC equity, or \$3.53 ($\$88.35 * 0.04 = \3.53). Thus, MergeCo's equity value is \$1,077.82 ($\$1,088.35 - \$7 - \$3.53 = \$1,077.82$).

The value of each share in the post-merger company is simply the equity value divided by the number of shares. Using the numbers above, this comes to \$9.45/share ($\$1,077.82 / 114 = \9.454).

Non-redeeming shareholders buy into the SPAC at \$10/share. The SPAC and de-SPAC process thus results in a dilution of the value of such shareholder's shares of 5.5% ($(\$9.45 - \$10) / \$10 = -0.055$). One might argue this \$9.45 value is implausible, because TargetCo shareholders would not agree to exchange TargetCo shares valued at \$10 for post-merger shares worth \$9.45. But the reason SPAC shareholders would accept such a drop in value is simple: It is the cost of going public, and both non-redeeming shareholders in the SPAC and TargetCo are willing to pay that cost to own publicly listed shares in a new operating company. A 5.5% reduction in share value thus represents what the non-redeeming shareholders are willing to pay to invest in the combined public company.

While a 5.5% loss in value may seem large, it is comparable to underpricing of IPOs.⁴⁴

Separately, one might argue that because we value both SPAC and TargetCo shares at \$10/share, we implicitly assume that SPAC and TargetCo shareholders bear SPAC costs pro rata, and ignore how cash dilution, as measured by Klausner et al.'s NCPS metric, has reduced the value of the SPAC shares before the merger.

In our example NCPS is \$5.56. Klausner et al.'s analysis suggests that the SPAC shares are therefore only worth \$5.56 per share, i.e., \$10 minus the SPAC costs, and that the value of TargetCo is inflated to ensure that that 100% of those SPAC costs are borne by non-redeeming SPAC shareholders.⁴⁵ In other words, the agreed value of TargetCo is supposedly increased above its actual value such that TargetCo shareholders receive additional shares in the MergeCo to fully compensate them for the fact that non-redeeming shareholders deliver SPAC shares that are valued in the deal at \$10 but are in fact only worth \$5.56. Klausner et al.'s analysis further indicates that the stock value of MergeCo decreases following the merger to reflect the inflated value of TargetCo. Initially, Klausner et al. claimed that there was a dollar-for-dollar correspondence between NCPS, and thus the inflation of TargetCo's value, and post-merger stock performance.⁴⁶ However in their subsequent analysis, they only claimed to find a 0.5 correspondence.⁴⁷

But to the contrary, assuming that non-redeeming SPAC shareholders disproportionately bear the costs of the SPAC, as Klausner et al.'s NCPS measure does, is inconsistent with how sophisticated institutional investors behave. First, and most obviously, at no point in time are the value of SPAC shares actually reduced by SPAC costs. At all times pre-merger, non-redeeming shareholders can

⁴⁴ See, e.g., Klausner et al., *supra* note 10, at 268.

⁴⁵ See *id.*, Klausner & Ohlrogge, *supra* note 10, at 108.

⁴⁶ Klausner et al. *supra* note 10, at 261.

⁴⁷ Klausner & Ohlrogge, *supra* note 10, at 114.

redeem their shares at \$10/share. Thus, non-redeeming SPAC shareholders would have to be irrational because they could have redeemed for \$10/share pre-merger but instead only receive the supposedly reduced post-merger share value due to the inflated value of the TargetCo.⁴⁸

This is particularly implausible as past CCMR research shows that SPAC shareholders are predominantly sophisticated institutional investors and hence not likely to be irrational.⁴⁹ Additionally, PIPE investors, who invest in the SPAC as part of the merger, are also sophisticated institutional investors and would not pay \$9.45/share (\$10/share with a 5.5% discount) if SPAC shares were subsequently worth less than that, as claimed by Klausner et al. Furthermore, many SPACs voluntarily obtain independent fairness opinions indicating that the de-SPAC merger price is based on a fair valuation of the target: SPACs obtained these opinions in 15% of de-SPAC transactions in 2021 and in 32% of de-SPAC transactions in 2022.⁵⁰ These opinions serve as an additional check on any effort to inflate the value of the TargetCo.

Our view is that the TargetCo contributes shares worth \$10, the non-redeeming SPAC shareholders contribute shares worth \$10, and then the merged entity absorbs the costs associated with the SPAC/de-SPAC process. These costs associated with the merger lead to a post-merger share valuation of \$9.45, as we explain above. This characterization is more plausible than Klausner et al.'s because the SPAC costs only occur if the merger actually goes through. So there is never an interim step when non-redeeming SPAC shareholders have shares that are actually worth the \$5.56 Klausner et al.'s NCPS metric indicates.

According to our characterization of costs, institutional investors that hold non-redeeming SPAC shares are not making an irrational choice by failing to redeem shares for \$10/share and then only receiving \$5.56/share in value in the MergeCo. Instead, they receive \$9.45/share in value in MergeCo. If Klausner's hypothesis were correct, then that would be reflected in a relationship between NCPS and post-merger stock performance. Again, Klausner et al.'s own research fails to establish this relationship, thus negating the claim that the \$5.56/share NCPS is a meaningful measure with respect to valuation, as demonstrated in Part II.

a. Portion of Merged Company Representing Cash

In this sub-section we calculate the portion of the combined company that represents cash. Based on our conversations with market experts, we understand that the Target company typically brings

⁴⁸ *See id.*

⁴⁹ CCMR, Nothing But the Facts: Retail Investors and Special Purpose Acquisition Companies (2021), <https://capmktreg.org/wp-content/uploads/2021/10/CCMR-NBTF-SPACs-Retail-Investors.pdf>.

⁵⁰ Skadden, De-SPAC Transaction Trends in 2023 (2023), <https://www.skadden.com/insights/publications/2023/06/de-spac-transaction-trends-in-2023>.

very little (if any) cash to the merger,⁵¹ so for the purposes of this analysis, we assume the Target has contributed no cash in the merger.

In our example above, cash represents only 7.2% of the equity value of the combined company (\$77.82 in cash of the total \$1,077.82 equity value, or $\$77.82 / \$1,077.82 = 0.072$). Furthermore, as we show above, each share is worth \$9.45. Cash therefore represents only \$0.68 ($\$9.45 * 0.072 = \0.68) of the value of one share.

The portion of a shareholder's equity represented by cash is therefore very small. However, it is possible that the amount of cash raised through the de-SPAC process is relevant to the future growth and performance of the merged company. We address this possibility in Part II.

4. Conclusion – So What is Dilution?

So, what is dilution? Above, we have presented three alternative takes on the dilution caused by the SPAC and de-SPAC process. In Section 1, we show Klausner's net cash per share calculation using median SPAC figures, yielding \$5.56 in net cash per share. In Section 2, we assess dilution in the equity stake of a non-redeeming shareholder, finding such shareholder's stake in the combined company actually *increases* by 5%. Finally, in Section 3, we calculate the dilution of the value of a non-redeeming shareholder's post-merger shares, finding a 5.5% reduction in share value, which is attributable to the sponsor promote and underwriting fees. However, this is substantially lower than the typical IPO underpricing of 20%, which results in a loss of value to owners in the IPO process. This suggests that the dilutive effect of underwriting fees and other costs on investors in a traditional IPO may be greater than the dilution of SPAC investors.

As we have demonstrated, Klausner's take on dilution is far too bleak. As we show in Section 3.a. above, cash represents only 7% of the value of the shares held by non-redeeming investors. Thus, Klausner wrongly focuses solely on cash dilution that constitutes a small part of the value of an investor's ownership stake in the merged company. In contrast, the better measure of dilution is the reduction in post-merger share value. As demonstrated in Section 3, this dilution is minor and there is an inevitable cost of going public. We therefore conclude that the SPAC process is not highly dilutive of non-redeeming SPAC shareholders.

⁵¹ See also *id.* at 272 (“One recent study of SPACs found that SPAC targets are more likely to be ‘pre-revenue’ or low-revenue companies.”) (citation omitted); Joanna Glasner, *SPAC To The Future: How Blank-Check Acquirers Could Reshape Emerging Companies’ Roles In Public Markets*, CRUNCHBASE (Oct. 19, 2020), <https://news.crunchbase.com/startups/spac-to-the-future/>.

Part II: Analyses of Net Cash per Share and Post-Merger Stock Price Performance

In Part I, we explained that non-redeeming SPAC investors are not substantially diluted by the de-SPAC process. However, it is still possible that the reduction in cash associated with the de-SPAC process could negatively affect the future performance of the merged company. Indeed, Klausner’s 2022 and 2023 articles purport to establish a negative correlation between a SPAC’s net cash per share and post-merger stock price performance. Negative future performance of course negatively impacts non-redeeming SPAC investors. Thus, if lower net cash per share (“NCPS”) means worse performance of the merged company, then Klausner and co-authors may be correct to draw attention to the dilution of cash through the de-SPAC process.

1. The Two Klausner Studies

Klausner empirically tests the hypothesis that the NCPS measure discussed in Part I has predictive power for future post-merger stock performance. Specifically, Klausner attempts to show that reduced NCPS leads to poor stock performance of the merged entity.⁵²

a. Study 1: A Sober Look at SPACs (2022)

Klausner’s initial empirical test of the significance of NCPS was conducted for 47 SPACs that closed merger deals between January 2019 and June 2020.⁵³ The median calculated NCPS for these SPACs was \$5.70, down from \$10.00/share.⁵⁴ Klausner regresses post-merger stock price on NCPS for prices both (i) 1-week post-merger and (ii) as of November 1, 2021.⁵⁵

For both timeframes, Klausner finds that NCPS is strongly negatively correlated with post-merger stock performance at a statistically significant level.⁵⁶ The regression coefficient on NCPS for the 1-week timeframe is -1.16 and for the November 1, 2021 timeframe is -1.04.⁵⁷ Klausner notes that each coefficient is not statistically distinguishable from -1.00, so effectively a one-to-one relationship between NCPS and post-merger price is established.⁵⁸ That is, for every \$1.00 decrease in NCPS, there is a \$1.00 decrease in stock price.⁵⁹

Klausner further reasons that this one-to-one relationship shows that non-redeeming shareholders bear all of the SPAC’s costs.⁶⁰ For example, if the NCPS drops from \$10.00 to \$6.00, Klausner claims that the post-merger stock price will also drop from \$10.00 to \$6.00. And since non-redeeming shareholders could have redeemed for \$10, the stock price drop to \$6.00 means that non-redeeming shareholders have lost \$4.00 per share. Klausner notes that this \$4.00 stock price

⁵² Klausner et al., *supra* note 10, at 255-63; Klausner & Ohlrogge, *supra* note 10, at 110-117.

⁵³ Klausner et al., *supra* note 10, at 235.

⁵⁴ *Id.* at 228.

⁵⁵ *Id.* at 260.

⁵⁶ *Id.* at 261.

⁵⁷ *Id.* at n.55.

⁵⁸ *Id.* at 261 & n.55.

⁵⁹ *Id.*

⁶⁰ *Id.* at 261-62.

drop occurs in part because the SPAC management simply overvalues the target company.⁶¹ However, this is just an observation, and he does not provide any evidence or supporting proof for this claim. The SPAC management's valuation rationale for the target company or the future performance of SPACs generally is not our focus. Instead, we demonstrate that net cash per share is not relevant to the future performance of SPACs, which is Klausner's primary assertion.

b. Study 2: Was the SPAC Crash Predictable? (2023)

Klausner followed-up the initial empirical study with an expanded study of 243 SPACs that closed merger deals between July 2020 and December 2021.⁶² The median calculated NCPS for these SPACs was \$7.10.⁶³ Klausner regresses post-merger stock price on NCPS for both (i) 1-day post-merger and (ii) 1-week post-merger, but he does not report the regression results.⁶⁴ Instead, Klausner states that “[t]he correlations between pre-merger net cash per share and share prices one day and one week after a merger are positive and statistically significant.”⁶⁵

However, Klausner does report regression results for post-merger prices as of December 1, 2022, representing stock performance one-year or longer post-merger.⁶⁶ Importantly, stock performance is influenced not only by company-specific information, but also by the overall performance of the stock market generally. The goal of Klausner's empirical analysis is to study company-specific price changes, not price changes due to overall stock market performance. Therefore, to isolate stock performance that is reflective of company-specific information, Klausner adjusts post-merger stock prices to account for overall market performance more generally. Klausner employs three different equity indices to make such an adjustment - the Renaissance Capital IPO-index to capture overall performance of IPOs, the Nasdaq index to capture overall performance of tech-related stocks, and the Russell 2000 index to capture overall performance of small cap stocks – with Klausner conducting three separate regression analyses based on the different index-adjustments.⁶⁷

For each of the equity indices used to adjust prices, Klausner finds a statistically significant relationship between NCPS and post-merger stock performance.⁶⁸ However, the correlation between NCPS and stock performance in this larger study is substantially less than found in the previous smaller study for two of the three index adjustments. Regressions using the Nasdaq and Russell 2000 adjusted prices yield coefficients approximately half the size of the coefficient found in Klausner (2022) at -0.551 and -0.501, respectively,⁶⁹ versus -1.04 found in the smaller study.⁷⁰

⁶¹ See *id.* at 254-55; Klausner & Ohlrogge, *supra* note 10, at 107-108.

⁶² Klausner & Ohlrogge, *supra* note 10, at 111.

⁶³ *Id.* at 112 tbl.1.

⁶⁴ *Id.* at 114.

⁶⁵ *Id.*

⁶⁶ *Id.* at 113-15.

⁶⁷ *Id.*

⁶⁸ *Id.* at 114.

⁶⁹ *Id.* at tbl.3.

⁷⁰ Klausner et al., *supra* note 10, at 261 n.55.

A coefficient of -0.5 suggests that every \$1.00 decrease in NCPS is associated with a \$0.50 decrease in price, far less than the one-to-one relationship previously argued by Klausner.

Using the IPO index to adjust prices, Klausner does find a coefficient of -1.022 that is more aligned with the previous one-to-one relationship identified in the smaller study.⁷¹ However, as noted by previous research by the Committee on Capital Markets Research (“CCMR”), the characteristics of firms going public through a de-SPAC versus a traditional IPO are very different.⁷² De-SPAC firms are typically smaller – with an average market capitalization of \$950 million versus \$1.5 billion for traditional IPOs – and serve different industries – for example, de-SPAC firms are more heavily weighted toward consumer cyclicals (18% vs. 7.5% for IPOs) and less heavily toward financials (7% vs. 13% for IPOs).⁷³ As a result, the IPO index reflects companies that are different than companies that went public through a de-SPAC and may not represent an appropriate price adjustment, as opposed to the small-cap focused Russell 2000 index, which is a more broad representation of all small cap companies. And, as stated above, the regression using Russell 2000 adjusted prices yields a coefficient of just -0.501.⁷⁴

c. Redemptions

One counterargument to Klausner is that the level of redemptions and *not* net cash per share are predictive of future performance. The idea would be that redeemers correctly identify a bad merger. Klausner tries to control for this possibility in two ways. First, for each SPAC he adds back to net cash per share the cash dilution caused by redemptions.⁷⁵ For example, assume that Klausner finds that a SPAC has \$6.00 in net cash per share and that redemptions accounted for \$2.00/share of the reduction in net cash. Klausner adds back the \$2.00/share reduction in net cash per share from redemptions, so the SPAC now has \$8.00 in net cash per share.

Second, Klausner notes that PIPE financing could also be predictive of future performance. Therefore, Klausner further adjusts NCPS to remove the impact of the PIPE investment on NCPS by subtracting the positive effect of PIPE investment from NCPS.⁷⁶ Thus, building on the prior example, assuming PIPE investors add \$1.00/share in net cash to the SPAC, Klausner subtracts \$1.00/share from the NCPS of \$8.00, so the SPAC investor is left with \$7.00/share in NCPS.

By excluding redemptions and PIPE investment from NCPS, any observed correlation between NCPS and post-merger performance should be unrelated to the level of redemptions and PIPE investment.

⁷¹ Klausner & Ohlrogge, *supra* note 10, at 114 & tbl.3.

⁷² See Letter from Comm. on Capital Mkts. Regulation, to Vanessa A. Countryman, Sec’y, Sec. Exch. Comm’n (June 13, 2022), <https://capmktreg.org/wp-content/uploads/2022/06/CCMR-Comment-Letter-SEC-SPAC-Proposal-06.13.2022.pdf>.

⁷³ See *id.*

⁷⁴ Klausner & Ohlrogge, *supra* note 10, at 114 tbl.3.

⁷⁵ *Id.* at 115 n.47.

⁷⁶ *Id.* at 116 n.48.

However, when Klausner incorporates these adjustments – *the statistical significance of the NCPS measure disappears – just the opposite of the point he was seeking to prove.*⁷⁷ Thus, in the most complete Klausner models NCPS is irrelevant as there is no statistically significant relationship between NCPS and post-merger performance when one controls for redemptions and PIPE financing.⁷⁸ However, this conclusion is buried at the end of a lengthy footnote and otherwise ignored in the main discussion: “By the time we finalized this Essay for publication, the data, as of December 1, 2022, had shifted the results of these analyses and the cash per share figures were no longer statistically significant.”⁷⁹

2. Replication of Klausner and the Relevance of Redemptions

a. Baseline Replication of Klausner

To further evaluate the practical implications of Klausner’s results, we constructed the NCPS measure ourselves and replicated the regressions, while also including additional analysis of the significance of redemptions.

The replication of Klausner’s dataset and regressions was challenging given the lack of data disclosure in the Klausner articles. While Klausner generally outlines the methodology for constructing NCPS, the articles include very few summary statistics about the variables used in the regressions, thus making both critical evaluations and replications of the Klausner results more challenging. Despite the challenge, we attempted to replicate as closely as possible the Klausner regressions following the same methodologies reported in the articles. Ultimately, the data available permitted us to calculate NCPS and run the regressions for (i) 41 de-SPAC mergers from January 2019 through June 2020 (as compared to 47 in Klausner (2022)) and (ii) 221 de-SPAC mergers from July 2020 through December 2021 (as compared to the 243 in Klausner (2023)).

The summary statistics for the CCMR staff replication are similar to those reported by Klausner, as illustrated in **Table 1**. For the smaller sample size, Klausner finds median NCPS of \$5.70,⁸⁰ while we find \$5.14. For the larger sample size, Klausner finds median NCPS \$7.10,⁸¹ while we find \$7.65.

Table 1: Net cash per share for Klausner (2022) and Klausner (2023) sample sizes

		Median
Klausner (2022)		
Klausner (47 obs)		\$5.70
CCMR staff (41 obs)		\$5.14

⁷⁷ *Id.*

⁷⁸ *Id.* Klausner tests the significance of NCPS here first by adjusting for redemptions and PIPE financing, and then by adding in a control for the quality of the sponsor on top of the two adjustments. In both tests, Klausner finds NCPS is no longer significant using data from December 1, 2022.

⁷⁹ *Id.*

⁸⁰ Klausner et al., *supra* note 10, at 228.

⁸¹ Klausner & Ohlrogge, *supra* note 10, at 112 tbl.1.

Klausner (2023)		
Klausner (243 obs)		\$7.10
CCMR staff (221 obs)		\$7.65

We then replicated the regressions reported in Klausner (2022) and Klausner (2023), using our calculated NCPS measure, regressing post-merger price on NCPS over the same timeframes as Klausner. Our regressions yielded similar results as Klausner’s, thus establishing that both our replicated NCPS dataset and our methodology sufficiently approximated those of Klausner. As a result, our further tests of the relationship between redemptions and post-merger performance are relevant in analyzing Klausner’s claims, since our baseline replication established a comparable dataset and methodology.

b. Evaluating the Role of Redemptions

A significant empirical relationship between SPAC redemptions and future stock performance has been well-documented in academic research. Analyzing longer horizon returns, Gahng, Ritter & Zhang (2023) show that higher SPAC redemption rates predict lower stock returns over the following year.⁸² A similar relationship has also been established empirically at shorter return horizons with Feng et al. (2023) observing a negative relationship between redemption rates and 3-month returns⁸³ and Rodrigues & Stegemoller (2021) finding the same 10-days after the merger.⁸⁴ Redeeming shareholders clearly signal the quality of the merger through the redemption rate.

While Klausner acknowledges the relevance of redemptions to an extent by creating the “zero redemption” NCPS measure described above, neither Klausner (2022) nor Klausner (2023) evaluate whether redemption rates for the SPACs in each study are predictive of future performance.

Klausner defends this omission by arguing that regressing post-merger performance on redemptions would represent an “overcontrolling” problem.⁸⁵ He states that “deals that have low cash per share ... are likely to be worse deals for investors post-merger, and an effect of bad deals is high redemptions.”⁸⁶ Of course, this reasoning is circular and self-serving as Klausner implicitly assumes that net cash is the determinative factor in whether a deal is bad or not. But determining the significance of net cash is exactly what the regressions should be testing, not assuming.

Therefore, in addition to replicating the baseline Klausner regressions, we answer the redemption question ignored by Klausner and evaluate the relationship between redemption rates and post-merger returns. Overall, we find redemptions to be a strong statistically significant predictor of

⁸² Minmo Gahng, Jay Ritter, & Donghang Zhang, *SPACs* (Working Paper, Feb. 23, 2023).

⁸³ Feng et al., *The Incentives of SPAC Sponsors* (PBCSF-NIFR Research Paper Forthcoming, Jan. 2023).

⁸⁴ Usha Rodrigues & Michael Stegemoller, *Disclosure’s Limits*, 40 *Yale J. on Regul.* 37 (2022) (referencing data from Usha Rodrigues & Michael Stegemoller, *Redeeming SPACs* 9-10 (Univ. Ga. Sch. L., Rsch. Paper No. 2021-09, 2021)).

⁸⁵ Klausner & Ohlogge, *supra* note 10, at 115 n.47.

⁸⁶ *Id.*

post-merger returns for both the smaller and larger sample sizes. **Table 2** illustrates the coefficient estimates for redemption rate in the return regressions. Redemption rate is a statistically significant predictor in each of the models, including a coefficient of -2.777 for the Russell-2000 adjusted prices in the larger sample size, which indicates that a 10% increase in redemption rate is associated with a \$0.28 drop in future stock price.

Table 2: Redemption rate significance for CCMR staff replication of Klausner (2022) and Klausner (2023)

CCMR staff replication of Klausner (2022)			
	1-week post-merger	As of Nov. 1, 2021	
Redemption rate	-10.954***	-6.806***	
CCMR staff replication of Klausner (2023)			
	IPO-adjusted	Nasdaq-adjusted	Russell 2000-adjusted
Redemption rate	-5.869***	-2.790***	-2.777***

The results of the regressions on redemption rate also suggest that redemptions are not just statistically significant but also economically significant. For example, the mean redemption rate in our replicated sample of 221 SPACs is 42.6% with a standard deviation of 36.0%. As a result, under the Russell-2000 adjusted model a one-standard deviation increase in redemption rate is associated with a substantial \$1.00 decline in post-merger price.

3. Conclusion

The end result of Klausner’s own analysis is that there is no statistically significant relationship between net cash and post-merger performance. While Klausner’s first paper did report a statistically significant one-to-one correlation between net cash and post-merger performance, the subsequent refinements of the model along with more data chipped away at the strength of the results until the story collapsed entirely. Despite the bold claims to the contrary, Klausner has effectively done nothing more than to prove our point in Part I that the concerns about net cash are both misleading and overblown. Moreover, our own replication and expansion of Klausner’s analysis finds that it is in fact redemptions that are highly predictive of future post-merger performance. As noted in our introduction, the overall extent of redemption requests is not currently disclosed to investors before a de-SPAC, such that each investor must make its own determination of whether to redeem without reference to the decisions of other investors. Given the valuable predictive power of investor redemption decisions as to the valuation of the target, policymakers should consider the potential benefits of the mandatory disclosure of redemption requests as a means of increasing the information available to SPAC investors and allowing them to make better informed decisions about the choice of whether to redeem or participate in the de-SPAC.