Leave No Money on the Table: Venture Capitalists' SPAC Exits

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Abstract

In recent years, VCs have increasingly referred to SPACs to divest portfolio companies which go public quickly, this way. We examine Gomper's (1996) grandstanding theory and the possibility of "strategic exits" proposed in Faure-Grimaud and Gromb (2004) to explain this pattern and find support for the latter theory. VCs' SPAC exits do not involve younger ventures and they do not remain in VC portfolios longer or shorter than their IPO peers. They also do not require more or less aggregate capital contributions or financing rounds, and do not have statistically different numbers of investors. Nevertheless, they are smaller in book value, are less profitable, and have lower market capitalizations, debt capacity, liquidity levels, and Tobin's Qs. There is neither a statistically significant average abnormal stock market reaction on the SPAC merger announcement nor on the deal consummation day. Their mean performance thereafter is poor. However, we detect that underperformance is caused by endogenous selection and conclude that VCs' SPAC exits are motivated by opportunism. They dispose of lower quality ventures compared to IPO exits and leave no money on the table.

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"Over the past two years, the U.S. public securities markets have experienced an unprecedented surge in the number of initial public offerings by SPACs. The rapid increase has heightened investor protection concerns about various aspects of the SPAC structure and the increasing use of shell companies as mechanisms for private operating companies to become public companies. The surge in SPAC initial public offerings also has renewed concerns about the use of projections, particularly with respect to business combination transactions in which projections about private operating companies may lack a reasonable basis. As the SPAC market has grown, concerns also have arisen about whether some SPACs may be investment companies that are subject to the requirements of the Investment Company Act."
SEC, public announcement: https://www.sec.gov/files/33-11048-fact-sheet.pdf.

On March 30, 2022, the SEC proposed changes to the regulation of special purpose acquisition companies (SPACs) that would treat them more like initial public offerings (IPOs). The proposal would ultimately diminish the advantages of blank check companies. Critics of SPACs have long argued that deals involving blank check firms frequently mislead investors and contain inherent conflicts of interest and opaque dilution structures.

As currently drafted, the proposed rules aim to curb the practice of overly optimistic revenue projections, increase disclosure of SPAC sponsors' incentives, and allow investors to bring litigation more easily against entities involved in blank check deals. Companies would be required to provide clear rationales for their projections, and the financial and accounting data disclosure standards would be more strictly regulated. The proposals are a response to past SPAC mergers with companies that, despite having little or even no revenue, issued forecasts of explosive growth in investor presentations (Blankespoor et al., 2022). The rules would also require additional disclosures from SPAC sponsors, including compensation, lock-up agreements, and any conflicts of interest related to the deal. Dealmakers and underwriters would be held accountable for the accuracy of registration documents.

A SPAC is a blank check company created by a sponsor who holds part of its common stock, and typically additional contingent claims. The SPAC goes public as a shell vehicle with a standard

prospectus and issues common stock to raise additional capital. It serves to cover fees and to bring it into the merged entity because its single purpose is to find a non-listed target firm to merge with. Therefore, it usually has two years' time. Until this event, its remaining cash (after fees) is placed into a trust account and invested in treasury notes. At this stage, the SPAC investors also have the right to redeem their shares at face value plus accrued interest while they may keep their contingent claims. Alternatively, they can sell their shares at any time in the public market. If the SPAC doesn't find a target it gets winded up and the proceeds are distributed among the shareholders. SPAC sponsors often solicit additional "private investments in public equity" (PIPEs). Such PIPEs serve to replace redemptions and to inject additional capital into the target. The merger is referred to as the "de-SPAC" event and a reverse merger type. This means that the SPAC shareholders typically retain a minority of the merged entity while the target company shareholders hold the majority. With the merger being completed, the target has gone public without the delay and regulatory burden of a "standard" going public process. Cumming et al. (2014) refer to this as "fast track IPO."

The recent rise in SPACs has also created substantial academic interest. For example, Gahng et al. (2022) provide a comprehensive description of SPACs and the state of the market since 2010. Klausner et al. (2022) compare SPACs to standard IPOs, and examine legal perspectives, conflicts of interest, and the cost of SPAC transactions. Feng et al. (2022) elaborate on information asymmetries among SPAC sponsors, targets, and SPAC investors. Lin et al. (2021) focus on the networks of SPAC sponsors, also called the "SPAC Mafia," in Gahng et al. (2022). Blankespoor et al. (2022) present evidence for overly optimistic projections around SPAC mergers.

SPACs offer great advantages for venture capital (VC) funds planning to exit portfolio companies, because they allow for quick divestiture without the necessity of pursuing IPO listing procedures. Our own data shows that more than one-third of completed de-SPACs involve VC

exits. SPACs combine IPO and secondary transaction (i.e., selling to a financial intermediary) characteristics, and may be of particular interest for VC funds in their liquidation period or for "fire sales." In general, they facilitate VC exits. This should be for the benefit of all involved parties, i.e., investors, investees, and entrepreneurs, because it lowers the illiquidity discount, and thus, the cost of capital.

However, the question arises, why would any VCs opt for an IPO given that the fast-track exit alternative exists? If divesting to a SPAC increases reputation and turns out to be financially successful, then why go the longer way to an IPO?

The degree of success of a VC's SPAC exit depends on exit values, transaction costs, and after-market performance. Exit values and transaction costs determine the net financial return to the investor, and after-market performance affects their reputation. While the existing SPAC literature elaborates on transaction costs and financial success, it does not discuss exit values or VC involvement.

SPAC transaction costs can be complex to determine. Preferential and contingent claims of SPAC sponsors, and the ability to redeem or add capital prior to the de-SPAC event, may dilute common shareholders and affect total raised capital. These characteristics may distribute transaction costs unevenly.

Gahng et al. (2022) calculate transaction costs as the difference between the market value of issued/transferred shares and net proceeds to the SPAC entities, and to IPO firms, respectively. They report 47.6% median transaction costs for SPACs, more than double those for IPOs. However, they note that the transaction costs may be driven by self-selection. It is possible that companies filing for IPOs are not of the same type as those going through a SPAC merger.

Klausner et al. (2022) therefore differentiate between high- and low-quality SPACs via league tables of the SPACs' promoters. They decompose total fees into pre-merger and de-SPAC

transaction costs. Even for high-quality SPACs, the median transaction cost is 30% of pre-merger equity, in addition to 13% of post-merger equity. Such fees seem prohibitive and call into question the transparency for the market participants who bear them. However, the referenced papers focus solely on the transaction costs borne by SPACs. The divesting VCs incur additional sellers' M&A fees, which are not usually disclosed, but also lower the net proceeds. With these costs on top, and summarizing the above papers, VCs' SPAC exits are charged with higher transaction fees than IPO exits.

Contributions about the financial success of SPACs may discourage investments as "normal" common stockholders. Their results also explain why the SEC is taking the initiative, and thus indirectly call into question the future of the SPAC market. Early papers, such as Jenkinson and Sousa (2011) and Kolb and Tykvova (2016), elaborate on the first SPAC wave, and note disappointing returns to common stockholders. Focusing on the recent rising activity of the SPAC market, Gahng et al. (2022) find an equally weighted average one-year buy-and-hold return of merged companies' common shares of −7.3%, while the value-weighted Center of Research in Security Prices (CRSP) return is 13.6% for the matched period. This turns into a 21% underperformance relative to the index. Kiesel et al. (2022) find −14.1% for one-year abnormal returns, and −18% for two-years. Moreover, Klausner et al. (2022) calculate a −38% mean long-term return for forty-seven SPACs relative to the Russell 2000 index.

However, we do not know enough yet about the SPAC targets themselves or the role of VCs in this market. No studies have investigated the differences between VCs' SPAC and IPO exits with respect to the underlying companies, exit values, and especially, the rationale for VCs' divestments into the SPAC market. The major obstacle for research on SPAC targets is that they are privately held companies with the well-known limited data availability. This hinders research, and requires matching several datasets, as we propose here.

Our paper aims to detect differences between ventures that VCs divest via SPACs compared to those brought public in a standard IPO process and how these differences affect SPAC performance. We question whether Gompers' (1996) grandstanding theory also applies to the SPAC market or if "strategic exits," proposed in Faure-Grimaud and Gromb (2004) motivate VCs to channel transactions into the SPAC market.

We gather data on 354 SPAC mergers and 1,248 IPOs in the U.S. between January 2016 and March 2022. Of these, we record 129 SPAC mergers with VC-backed ventures, and 757 IPOs of VC-backed companies. We find that VCs channel companies to SPACs if they are smaller, less profitable, and have lower market capitalizations and Tobin's Qs than their peers that are brought public. Furthermore, VCs' SPAC exits have lower estimated future gross income and EBITDA, a lower debt capacity, and lower liquidity cushion, on average. However, they are not younger, do not generally receive more or less capital contributions, and do not remain in VC portfolios for more or less time. We also find no meaningful difference on their capitalization tables with respect to the overall number of investors. While many additional idiosyncratic characteristics of unlisted SPAC targets are unfortunately unobservable, lower market capitalizations and Tobin's Qs denote lower perceived quality and growth expectations for VC-backed SPAC exits compared to IPOs.

The average SPAC merger announcement abnormal return is positive but not statistically significant. This could indicate underpricing along the lines of Gompers' (1996) grandstanding hypothesis. However, buy-and-hold abnormal returns (BHARs) relative to the CRSP US Total Market Index dissipate quickly. They turn negative prior to the average (or median) duration of the de-SPAC event period. We also do not find a statistically significant average abnormal return on the SPAC merger day itself, but rather that the after-market performance is poor. This rules out reputational gains for the exiting VCs. The fact that SPAC exit candidates do not differ from their IPO peers with respect to important characteristics discussed in Gompers (1996), lacking

underpricing, and the SPACs' poor aftermarket performance contradicts the grandstanding theory for the SPAC market.

Faure-Grimaud and Gromb (2004) argue that selling "lemons" is possible under information asymmetry if buyers cannot infer the true reason for selling. They call this opportunism "strategic exit." Buyers assume that the respective venture is of good quality, but the VC is subject to a liquidity or similar type of shock that causes the divestiture, which the VC would otherwise not pursue. Unfortunately, we cannot address the role of liquidity shocks and constraints along the theory of Faure-Grimaud and Gromb (2004) as drivers of VCs' SPAC exits. The reason is that the respective VC-backed ventures have usually received several financing rounds and a median of eight investors on their capitalization tables. Some invested in earlier stages, while others did just prior to the SPAC/IPO event. It is therefore unclear who is in the lead to exit and who may be under liquidity pressure or exposed to similar constraints. However, the poor average SPAC after-market performance suggests that many VCs obviously exploit the "strategic exit" opportunity while, independent of the motivation, good quality exits are simply lacking. This should, at the same time, diminish "strategic exit" opportunities because SPAC investors are expected to adapt.

We address the conjecture that VCs sell lower quality ventures to SPACs but channel good quality ventures to IPO exits with endogenous selection regressions. We control the performance for endogenous selection and detect that it fully explains the underperformance of VC SPAC exits. This provides evidence for the conclusion that the recent wave of VCs' SPAC exits is driven by opportunism according to Faure-Grimaud and Gromb (2004): VCs dispose of lower quality ventures compared to IPO exits and leave no money on the table. At the same time, SPAC investors are expected to realize and learn and thus, the opportunity for "strategic exits" should diminish.

The remainder of this paper is structured as follows. Section 1 discusses the two theories that could explain why VCs act as sellers in the SPAC market. Section 2 describes our dataset,

matching procedures, and descriptive statistics. It also discusses SPAC merger announcements and merger day closing returns, as well as the aftermath. We present analyses of the characteristics of SPAC mergers compared to IPOs of VC-backed companies and control SPAC performance for the endogenous selection process in Section 3. Section 4 concludes.

1 Potential Rationales for VC Exits via SPAC

We propose two theories that potentially explain why VCs consider exits via SPAC mergers. The first is based on their performance pressure for gaining reputation and fund raising. The second elaborates on the asymmetric information in financial markets and the opportunity of "strategic exits."

1.1 Grandstanding

Gompers (1996) argues that the most effective way for a VC to signal ability and a portfolio company's value is to bring it public. Investors tend to believe that skilled VCs are more likely to fund companies that eventually go public. This effect increases reputation and fundraising ability, especially for young funds. Such funds may therefore have greater incentives to "grandstand." However, the grandstanding theory also predicts that companies brought to market by young VCs are less mature. The cost incurred by bringing companies to the public market earlier is greater underpricing.

Muscarella and Vetsuypens (1989) show a correlation between older IPO companies and lower underpricing. Rock (1986) argues that older firms usually have longer track records, which would reduce asymmetric information, and, thus, underpricing. Welch (1989), Grinblatt and Hwang (1989), and Allen and Faulhaber (1989) view underpricing as one of the costs to signal an IPO company's quality. Gompers (1996) notes that, when underpricing is examined in regressions,

the age of the IPO company and the length of the VC's board service explain some of the difference in underpricing. Thus, it is not the presence itself of a young VC, but rather the early timing of an IPO that is important.

The grandstanding theory provides a potential rationale for the rise of VC SPAC exits. VCs may have an incentive to grandstand and to exit investments early via SPACs – much earlier than would be possible in the IPO market. The players would incur higher underpricing cost relative to IPOs but benefit from gaining reputation, which enhances long-term benefits for fund raising.

If Gompers' (1996) grandstanding theory also fits to SPACs, we should detect that the ventures divested via SPACs are even younger and divested after shorter holding periods compared to IPO exits. VCs would also need to accept higher cost of underpricing for SPAC exits at the reward of building long-term reputation.

1.2 Liquidity Constraints and Information Asymmetries

Prior to the existence of liquid secondary markets, VCs needed to bring good quality ventures to maturity, and abandon lemons, in a timely fashion. In "secondaries," the VCs' claims are sold to a financial, but not strategic, investor. Given the rise of secondary transactions, VCs have the option to divest their exposure quickly and prematurely, as described in Cumming and MacIntosh (2003a, 2003b), Cumming (2008), and Cumming and Johan (2008a, 2008b). From a VC's perspective, SPACs denote an additional and new type of exit channel combining secondary transaction and IPO characteristics.

It is obvious that the possibility to liquidate assets more quickly appeals to VCs because it reduces the asset class's inherent illiquidity premium. However, Aghion et al. (2004) note that gaining liquidity somewhat contradicts the economic virtue of VCs. Such virtue stems from tight and long-term financing relationships with innovative ventures. The nature of these relationships

is highly illiquid. Black and Gilson (1998) point out that VC exposure only generates appropriate returns if a venture reaches “maturity," and can be divested via an IPO or by selling to a strategic investor. Cumming and MacIntosh (2003a) and Cumming et al. (2006) show this empirically.

Nevertheless, because VC funds aim to generate high returns and to build reputation via IPOs, they would probably not engage in a SPAC transaction if the investee were successful unless there was a compelling reason. Shafi et al. (2020) discuss potential reasons why a VC would prematurely dispose of a successful venture, e.g., via a SPAC, instead of bringing it to an IPO. The reasons include 1) financial constraints caused by crisis situations, 2) shifts in industry or geographic investment focus, or 3) a fund’s focus on seed-stage transactions, thus avoiding style drifts. The key feature of the three alternatives is that they are based on private information. Hence, outsiders cannot infer, even after due diligence, the true reason for a premature disposal. VC funds are not required to disclose any information on potential liquidity constraints to the public, and, for competitive reasons, would be unlikely to do so. This reporting behavior of VC funds is discussed in Johan and Zhang (2016). Their paper emphasizes that VC fund managers tend to be opaque, even toward their own investors.

In sum, there are two main reasons why a VC would opt to exit a portfolio company via a SPAC. The first is that the VC needs to sell off a promising venture because it is facing a liquidity, or a similar constraint from above. The second is that the VC aims to dispose of a lemon by passing it off as a good quality venture. This is possible because SPAC transactions exhibit substantial information asymmetries, with few opportunities to overcome them. In other words, if the venture was promising and the VC were not constrained, the preferred divestment would likely be an IPO exit (see Cumming and MacIntosh (2003b) and Uddin and Chowdhury (2021).

Following Admati and Pfleiderer (1994), a lemon may be sold if the insider is able to hide the true reason for the disposal. Accordingly, acquirers cannot infer the quality of the venture

unless they know whether the originator is facing liquidity, or similar constraints. Faure-Grimaud and Gromb (2004) call this opportunistic behavior "strategic trading", or "strategic exits", correspondingly. Its validity for secondary VC transactions, in general, is discussed in Andrieu and Groh (2021). For the context of SPAC exits, it suggests that VCs can benefit from their insider information about the quality of a portfolio venture when divesting, and acquirers cannot deduce the reason why the VC exits via SPAC rather than bringing the venture public. The merging rationale of a SPAC's shareholders must be that the venture has good prospects, but the VC is facing a financial, or similar type of shock, otherwise, the VC would not exit via SPAC.

If "strategic exits" motivate VCs to divest via SPAC mergers, then we expect to find disposals of lemons but also of good quality ventures where the exit is triggered by a shock to the VC. For the "strategic exit" opportunity to sustain, the performance of the good quality ventures and the lemons needs to balance at a reasonable threshold. If it doesn't, market participants will realize and adapt such that the exit opportunity should not endure.

2 Sample Description

We gather data on de-SPAC transactions, IPOs, and VCs' divestments to address our hypotheses. We first describe our full dataset of SPACs and IPOs. We then examine more granular data on the subsample of VC-backed companies that experienced either a SPAC or an IPO exit.

2.1 Complete Dataset of SPACs and IPOs

We need to match data from several sources for our analyses. We refer to the *SPAC Research* platform (www.spacresearch.com) for a list of completed SPAC mergers. This database is also used in, e.g., Gahng et al. (2022). We use *Refinitiv Eikon* for information on IPOs, the identification of VC exits among the sample of companies, stock prices, analyst forecasts, accounting figures,

and additional information. We further complement the data with accounting information and analyst forecasts from *Factset*, and we run reference checks using *Crunchbase* and *Google* searches.

One caveat about our dataset is that providers of public capital market data usually track SPACs from their own IPO date. However, they do not cover the unlisted target companies, which are privately held entities, about which information is usually scarce. In addition, smaller SPACs, small-cap, and pink sheet IPOs are relatively poorly covered by analysts and commercial data providers. Therefore, their tracking may be poor even they are public.

However, our focus on VC exits also comes with a distinct advantage: Data coverage is better for VC-backed ventures that go public or become SPAC merger targets. In these cases, specialized data providers or search facilities, e.g., *Crunchbase*, or the "VC/PE deals" section in *Eikon Refinitiv*, are additional sources of information. Nevertheless, using the different datasets creates matching challenges. The reason is that the ventures do not have unique identifiers across the respective repositories and matching is only possible by company name, which may differ across data providers.

To merge the data, we apply a fuzzy matching algorithm that complements the SPAC/IPO dataset with SPAC target and pre-IPO company information. Fuzzy matching by company name requires some data cleaning to increase matching success. For example, string manipulations are necessary, including deleting abbreviations and substrings, upper case transformation, and removing special characters, beginning blanks, and ending blanks.[1] Fuzzy matching yields similarity scores of company names from different datasets. We manually verify all matches and

[1] The required manipulations and the matching process are documented in the "do-files" of the online appendix.

run additional queries on *Crunchbase* and *Google* to increase the number of observations if the similarity scores do not provide clear matching recommendations.

In a first step, we identify 354 SPACs that merged with a target corporation between January 1, 2016, and March 7, 2022 (i.e., the day of the final SPAC data update).[2] We exclude SPACs that failed to merge or remained in the searching/negotiating phase until the final data collection date. We note that SPACs emerged prior to 2016, as documented on, e.g., J. Ritter's website http://site.warrington.ufl.edu/ritter, and in Jenkinson and Sousa (2011) and Kolb and Tykvova (2016). However, SPACs gained their strongest momentum only in recent years. Therefore, we do not extend our observations any further back.

We gather IPO information accordingly for all IPOs on all U.S. stock exchanges and market segments from January 1, 2016, until February 10, 2022 (i.e., the day of the final IPO data update). This yields 2,282 issues, including the blank check SPACs themselves, closed-end funds, real estate investment trusts (REITs), unit offers (typically composed of a share plus a warrant to buy a share), and American Depositary Receipts (ADRs) of foreign companies.[3] We clean the data and discard all investment company-type issues, e.g., blank check SPACs, REITS, and closed-end funds. We are left with a sample of 1,248 non-SPAC IPOs, with issuing dates between January 29, 2016, and January 26, 2022. There is no location restriction for either the IPO companies or the SPAC merger targets, i.e., they are not required to be domiciled in the U.S.

As described above, given the absence of a unique identifier across the various datasets, we subsequently fuzzy match the IPO and the SPAC data by company name with information on VC backing. The matching procedure isolates 886 VC exits among our sample of companies, 129 via SPAC mergers and 757 via IPOs. Table 1 describes the complete sample of IPOs and SPACs.

[2] The list of SPACs is available in the online appendix.
[3] The IPO data are available in the online appendix.

— Insert Table 1 here —

The table reveals important differences between standard IPOs and SPAC mergers and contingent on VC-backing. The distributions of all size characteristics are right skewed. For example, the medians of the total book assets of all categories, i.e., SPACs and standard IPOs, and whether VC-backed or not, are at the same level of magnitude. However, some very large IPO companies shift the means up. This effect is more pronounced in terms of the market capitalizations of the respective companies at issue/merger date, their sales, and numbers of employees. The table further reveals that the VC-backed IPO companies are the largest in these categories.

Furthermore, the median sales of the SPAC merger targets at event date are $0, or $0.12 million for not VC-backed and VC-backed ventures, respectively. Thus, half the companies that entered SPAC mergers generated no or very little sales revenue at that time. The age distributions of the IPO companies, respectively, the SPAC merger targets at the event date do not show meaningful differences among the groups. However, the Tobin's Qs suggest higher valuations of "standard" IPOs than SPAC mergers. It is also noteworthy that the EBITDA medians at the event date of the VC-backed ventures are negative. This characteristic underlines the principle that VCs exit their portfolio companies early, even before they gain profitability.

Note further that it takes on average 150 days from the SPAC merger announcement to closing the deal. There is no meaningful difference between SPAC mergers with and with not VC-backed ventures. Hence, VC backing does not increase merger speed. Figure 1 plots the time between announcement and closing for the two distributions.

2.2 Subsample of VC-Backed Companies

The observations above warrant our focus on the role of VCs when divesting via IPO or SPAC and we gather additional information for VC-backed ventures from *Refinitiv Eikon*, amended with *Factset* and *Crunchbase.*

— Insert Table 2 here —

Table 2 distinguishes between VC exits via SPAC mergers and standard IPOs. However, many characteristics are not discriminative. For example, the means and medians of the number of financing rounds, number of participating investors, overall raised capital, and VC holding period (calculated from first investment received) do not differ substantially between the groups.

Valuation metrics, such as enterprise value to EBITDA, to sales, or to the book value of assets are skewed by outliers. Furthermore, the number of observations is limited, especially for SPAC exits. In addition, sales or EBITDA at the event date are often zero or negative. Hence, these valuation multiples do not provide useful information.

Nevertheless, some indicators reveal differentiating characteristics. For example, asset turnover, the EBITDA margin, return on assets in book values (ROA), and return on equity in book values (ROE) are larger, respectively less negative, for IPOs of VC-backed ventures than for SPAC exits. Furthermore, mean analyst EBITDA expectation for VC-backed companies that merged with SPACs is −$26.32 million, while it is $49.09 million for VC-backed IPO companies.

Debt and liquidity ratios also reveal potentially discriminating characteristics. The quick ratio describes the sum of cash, receivables, and marketable securities relative to current liabilities. The median quick ratio for SPAC exits is 0.41, and 1.87 for IPOs. This measure is of particular importance for young ventures because it reflects their liquidity. For example, a ratio below 1 indicates that short-term liabilities are higher than cash reserves. This means that the respective

venture needs to raise additional capital. However, it may be simpler and less risky for a VC to merge it with a SPAC instead of raising capital in a new financing round.

The fixed charges ratio serves as an alternative liquidity measure. This ratio is defined as earnings from operations (EBIT) divided by fixed charges, i.e., interest and lease expenses. Its distribution is skewed because of negative operating earnings at low fixed charges for some ventures. Nevertheless, in line with the finding from the quick ratio, SPAC exits reveal stronger liquidity constraints than the ventures brought public.

At similarly low tangibility of both groups, the median debt-to-assets ratio for the IPO ventures is larger than that for the SPAC targets. However, the ratio's distribution is also skewed by outlying observations. Trester (1998) interprets a venture's debt capacity as a signal of quality, because only those with lower perceived information asymmetries and sufficient expected debt service capabilities will be able to raise debt.

The corporate governance structure implemented by VCs may also differ between the ventures brought public and those divested via a SPAC merger. We expect the number of executives and board members to affect firm quality and performance, as discussed in Yermack (1996), Eisenberg et al. (1998), and Denis and Sarin (1999). Similarly, as Bebchuk and Fried (2010) and Biggerstaff et al. (2019) argue, long-term incentives structured by stock option compensation could serve as a proxy for venture quality and expected long-term prosperity. However, Table 2 reveals that none of the corporate governance characteristics is notably different between IPOs of VC-backed ventures and SPAC exits.

Table 3 presents the descriptive statistics of all observed characteristics of the subsample of VC-backed companies. Several characteristics have skewed distributions and outliers on both sides. These distributions need to be truncated or logarithmically transformed to gain statistically

meaningful results. Truncation levels are indicated in squared brackets. A complete list and short description of all individual data series and their sources is provided in the appendix.

— Insert Table 3 here —

3 Analyses

3.1 SPAC Performance

We obtain historical stock prices for our sample companies from *Refinitiv Eikon*, and calculate BHARs for up to 250 trading days post-event, as per Ritter (1991), and Barber and Lyon (1997). We focus on each individual event, and assume an investor buys one share on either the IPO day, or one day prior to the merger announcement or actual de-SPAC date, respectively. For SPACs, we also retrieve stock prices prior to the announcement date. This allows us to calculate their performance pre-event, as illustrated in Figures 2 to 4. However, since Gahng et al. (2022) provide a comprehensive analysis of investor returns for that period, we do not elaborate on it any further. Abnormal returns are calculated per share relative to the CRSP US Total Market Index without adjustment. Averages are equally weighted.

We are unable to obtain stock prices for 352 IPOs and SPACS for three main reasons. First, some of our sample SPACs and IPOs are pink sheet listings and are therefore not well covered by commercial data providers. Second, some tickers are wrong, missing, or lead to different companies. Third, some companies have ceased listing in the meantime.

3.1.1 Average Merger Announcement Effect and Aftermarket

In the first step, we focus on SPAC merger announcement effects. The M&A literature discusses such effects mostly for targets. Market reactions of target company shares are more obvious because acquirers need to pay an acquisition premium. Moreover, there may be competing

offers and proxy fights, which can further boost target company share prices. Schwert (1996) and Mitchell and Pulvino (2001), for example, find large positive abnormal stock price appreciations for target companies around merger announcements. The authors argue that these stock price moves are driven by the expectation of receiving the acquisition premium. However, they are confounded by the deal consummation risk.

Nevertheless, SPACs are acquiring vehicles, and results about acquirer abnormal returns are mixed. Often, abnormal stock market reactions cannot be statistically detected, on average. This calls into question the buyers' transaction rationale because announcement returns indicate the market-based assessment of value creation in an M&A transaction. Ben-David et al. (2022) discusses this assessment critically. Yet, in an efficient market, the buyer's and target's combined change in market capitalization should equal the overall net present value (NPV) generated by the transaction. However, M&A transactions are exposed to transaction cost which must also be considered for the NPV assessment. Depending on the negotiation outcome in competitive situations, it is also possible that any remaining value generated in the transaction is captured by the sellers as an acquisition premium. Finally, differences in size between acquirers and targets may lead to small acquirer announcement effects.

Among several contributions, Fan and Goyal (2006) detect only a 2.5% abnormal return for vertically integrating mergers in the three-day window surrounding the announcement. Fuller et al. (2002) show that acquirer returns are contingent on industries, payment methods, and whether the target is public or privately held. SPACs acquire unlisted companies, and for comparable M&A transactions with privately held targets, Faccio et al. (2006) find 1.48% cumulative average return five days around the announcement while Masulis et al. (2007) find only 0.76%. Moeller et al. (2004) determine a mean return of 1.1%, but larger returns for smaller acquirers and a loss of value in absolute terms caused by size effects.

The average merger announcement return in our sample is 6.2% for de-SPACs completed with not VC-backed companies, and 7.9% for those with VC-backed ventures. Given the dispersion of the announcement returns, these means are statistically not different from zero. The medians are only 0.6% and 1.2%, respectively. This signals that for half of the transactions the market participants do not expect any value creation from the proposed merger, net of transaction costs and potential dilution effects. As Figure 2 illustrates, the average positive abnormal return dissipates and turns negative rather quickly.

— Insert Figure 2 here —

Figure 2 shows that, by the median time required between announcement date and the de-SPAC event (149 days), BHARs to common shareholders of SPACs have turned strongly negative. It should be emphasized, that this trend is blurred by the varying periods until transaction closing. Focusing on the market reaction at merger date provides a clearer picture.

3.1.2 Average de-SPAC Effect and Aftermarket

Statistically insignificant announcement returns, and average decline may be driven by uncertainty about the merger completion. Indeed, while the merger announcement is a significant milestone in a SPAC's lifecycle, the actual closing of the deal is paramount. At merger closing, the execution risk is removed, the target valuation is contractually fixed, and the merged entity gets publicly valued for the first time. Thus, the market again assesses the NPV of the de-SPAC transaction, but this time without deal consummation risk. The NPV of the de-SPAC transaction should equal the market value of the merged target minus the agreed upon contractual valuation, and net of transaction costs. It should be captured by all SPAC shareholders. Nevertheless, common shareholders can be diluted by the contingent claims held by the SPACs' sponsors, and eventually by PIPE investors. The potential dilution should also be priced-in at first trading.

However, we do not statistically detect any average stock price reaction around a de-SPAC event. Hence, we receive no signal that market participants expect NPVs of SPAC transactions, if fully diluted, on average. Mean first-day returns after transaction closing for SPACs merging with VC-backed (non-VC-backed) ventures is 0.45% (0.49%). In comparison, the underpricing of IPOs of VC-backed ventures is 26.12%, and 34.51% for those of non-VC-backed companies. Both are statistically significant at the 1% level. The medians are –0.87%, 0.08%, 17.84%, and 3.47%, respectively.

The around- and post-merger performance of SPACs varies significantly. Figure 3 presents the BHAR trajectories for IPOs (blue) and SPACs (red if merging with a VC-backed venture, and yellow if merging with a non-VC-backed company). The dot indicates the issuing prices or the last closing prices prior to the de-SPAC event, respectively, indexed to 1. All trajectories are indexed to the event date and calculated back, prior to the event date, for SPACs. Note that some trajectories terminate because the event date was recent to the data collection date.

— Insert Figure 3 here —

Figure 3 shows the individual trajectories and suggests a negative trend of SPAC performance relative to the benchmark index and relative to IPOs. The trend is stronger negative for SPACs merging with VC-backed companies. For a clear illustration, we also present average BHARs for the subgroups in Figure 4.

— Insert Figure 4 here —

Figure 4 reveals the average outperformance of VC-backed IPOs over the benchmark index, IPOs of non-VC-backed companies, and de-SPACs for the 250 trading days post-event. De-SPACs with VC-backed companies underperform all peers.

3.1.3 Formal Assessment

To formally prove the underperformance of SPACs relative to the benchmark index, we run t-tests for the group BHAR means being different from zero. We aim to include as many observations as possible, given the sampling period until March 2022 and the analysis period, so we refer to 180 trading days ($BHARs_{180}$) post-event. We find means of −51.3% for de-SPACs with VC-backed ventures, −33.2% for de-SPACs with non-VC-backed targets, −9.3% for IPOs of non-VC-backed companies, and 9.5% for IPOs of VC-backed ventures. All means are statistically significantly different from zero at the 1% level.

In a subsequent step, we control for confounding factors, and regress the $BHARs_{180}$ on dummy variables that indicate event type, and on fixed effects describing heterogenous event details. The results are in Table 4.

— Insert Table 4 here —

The first specification in Table 4 regresses $BHAR_{180}$ without additional controls on a dummy for SPAC mergers. It uses 1,200 observations for which we obtain historical stock prices until 180 days post-event. The coefficient estimate of the dummy is the average performance of all SPACs relative to the control group, which is all IPOs. The constant 1.025 denotes the outperformance, on average, of all IPOs relative to the CRSP index by 2.5%. The coefficient estimate for the SPAC dummy indicates that SPACs underperform IPOs by 42.8%. The estimate is statistically significant at a 1% level. Robust standard errors are reported in squared brackets.

OLS 2 of Table 4 controls for whether the event is a VC exit. IPOs of non-VC-backed companies and SPACs merging with non-VC-backed companies become the omitted group. The constant 0.828 signals an underperformance of 17.2% of the control group relative to the CRSP benchmark index. The 0.176 coefficient estimate of the dummy is significant at the 1% level and suggests that VC exits outperform the omitted group. However, VC exits also include divestments

to SPACs. Thus, OLS 3 disentangles the four subgroups. It uses both dummies and their interaction term. As a result, IPOs of non-VC-backed companies become the omitted group. The constant 0.907 indicates underperformance of 9.3% relative to the CRSP index. If the IPO company is VC-backed, the performance is –9.3% + 18.8% = 9.5% relative to the CRSP index, both as already introduced above. However, if the VC opts for a SPAC merger as the exit channel, the $BHAR_{180}$ becomes –9.3% + 18.8% – 24.1% – 36.7% = –51.3%, again, as above. The statistical significance of all point estimates is at the 1% level.

OLS 4 adds underwriter, IPO company/SPAC target industry, Nasdaq, and event quarter fixed effects, and thus controls for important heterogeneous characteristics. The number of observations decreases to 1,104 due to a lack of availability of the fixed effects in some cases. All coefficient estimates shrink in absolute terms compared to OLS 3, caused by the controls. The level of statistical significance reduces to the 10% level for the dummy indicating VC exits, but it remains at the 1% level for the SPAC dummy and the interaction term. Nevertheless, the underperformance of de-SPACs with VC-backed ventures relative to the CRSP index remains at 1 – (0.901 + 0.107 – 0.239 – 0.283)) = 51.4% at the same level of magnitude.

However, selection into one of the four subgroups is not random. Therefore, the performance analyses need to control for the selection process. Since the paper's focus is on the role of VCs in the SPAC market, we discard all events which are not VC exits and exclusively elaborate on the VCs' choice of the SPAC compared to the IPO exit channel.

3.2 VCs' SPAC vs. IPO Exit Selection Process

In a first step, we run difference in means tests for the data presented in Table 3 to detect discriminating characteristics for VCs' SPAC and IPO exits. The results are presented in Table 5.

— Insert Table 5 here —

The table reveals that only a few features distinguish VCs' IPO and SPAC exits. VCs tend to exit via IPO if the venture is large in terms of sales, book value of assets, or market capitalization at the event date. The differences with respect to market capitalizations are illustrated in Figure 5.

— Insert Figure 5 here —

Furthermore, IPO ventures seem to be more operationally efficient, as measured by their asset turnover. However, many ventures do not have sales revenues at the event date or may be in a growth phase, resulting in relatively small ratios. Hence, the efficiency indicator must be interpreted with caution.

In addition, IPO exits have higher gross income and positive EBITDA forecasts on average at event date, compared SPAC exits. Nevertheless, given the large dispersion of the distributions, the discriminant quality of the forecast variables is limited, with t-statistics of 2.2 and 1.95, respectively.

The enterprise value-to-EBITDA ratio at event date, and other valuation metrics, such as enterprise value-to-assets or to sales, do not exhibit discriminative power. In addition, as already discussed above, the denominators for these multiples tend to be small or even negative. For example, the EBITDA level at the 75th percentile remains zero. This is similar for sales and the book value of assets. With zero, small, or even negative denominators, the multiples turn meaningless.

Negative valuation multiples can be avoided by referring to Tobin's Q, i.e., the market capitalization of equity divided by its book value. The average multiple is 1.78 for SPAC exits at and 3.6 for IPO exits, both at event day, but prior to raising additional capital, or to the merger, respectively. This finding is important, because Tobin's Q aggregates several unobservable characteristics of venture quality and expected profitability into a single measure.

Further, while there is no difference with respect to tangibility and charges coverage, the table reveals that debt to assets and the quick ratio are discriminants. This signals that VC-backed IPOs have a larger debt capacity and better solvency than their peers merging with SPACs.

Profitability ratios based on book values, such as return on equity or return on assets, do not have discriminative power. Again, with mostly negative net income figures, and at usually small book values, these ratios become obsolete for a comparison.

Surprisingly, neither company age, nor other characteristics, such as the amount of contributed capital, number of financing rounds, or number of investors involved, exhibit discriminating power. Figures 6 and 7 illustrate the non-discriminative distributions of age and total funding for the two groups.

— Insert Figures 6 and 7 here —

The number of employees or corporate governance characteristics, such as the number of executives and expenses for the stock option program, also do not reveal any differences between VCs' IPO and SPAC exits.

Table 6 presents the pairwise correlations of the detected discriminants.

— Insert Table 6 here —

The table shows there are meaningful levels of correlation between some characteristics. Correlations above an absolute level of 0.3 are in boldface. The variables that capture size, i.e., sales, total assets, and market capitalization at the event date, are strongly correlated with each other. The asset turnover ratio is correlated with sales because sales is its nominator. For the same reason, Tobin's Q correlates with market capitalization. It is also feasible that analyst EBITDA forecast correlates with sales because sales determine operational profitability. As an analogy, expected gross income correlates with sales, and thus with total assets, market capitalization, and EBITDA. The debt ratio correlates with assets, sales, and the EBITDA margin. This seems obvious

because assets as collateral and profitability determine a venture's debt service capacity. The quick ratio correlates with sales, asset turnover, and the EBITDA margin. This is also intuitive because a venture's liquidity improves with sales and profitability.

In sum, we find multicollinearity among the discriminants, which thus limits the availability of numerous covariates in multivariate regressions. In addition, given that some information is not available for all events, as illustrated in Table 5, combinations of covariates reduce the number of observations in multivariate analyses. Therefore, we verify the discriminative power of each characteristic individually. We refer to probit regressions, where the binary dependent variable indicates whether the event is a VC exit via a SPAC [= 1] or an IPO [= 0].

We refer to all detected discriminating characteristics separately as explanatory variables, and control for industry and event quarter fixed effects. We do not include VC experience or reputation as, e.g., expressed in league tables, among the controls, for a rather simple reason: There are too many different VCs (sometimes under varying names), other intermediaries, private individuals, and, most importantly, unidentifiable investors involved in the transactions. Further, given the ventures' numerous financing rounds, it is not clear who is in the lead for the exit decision. It does also not seem appropriate to simply average experience or reputation scores (if available) in the complex setting.

Furthermore, because of their large number and since some of them exclusively act in the SPAC or IPO market, we cannot include VC fixed effects. Large numbers of fixed effects lower the degrees of freedom for the estimation, and VCs being active in only one exit market yield perfect collinearities with the outcome variable. Such observations need to be discarded. Anyway, since the nature of binary dependent variable regressions is sensitive to fixed effects, the sample size varies among the regression specifications presented in Table 7, Panels A and B.

— Insert Table 7 Panels A and B here —

Table 7, Panels A and B, present probit models in which a dummy variable for a VC exit by SPAC merger is regressed on an independent variable, venture industry, and event quarter fixed effects. The control group includes all VC IPO exits. Standard errors of the coefficient estimates are robust and denoted below the coefficient estimates in squared brackets. Marginal effects are reported in the third line, in italics. They are calculated at means of the independent variables. The respective means are reported with the summary statistics at the bottom of the tables.

Panel A of Table 7 verifies the impact of total assets, sales, asset turnover, market capitalization, and the debt-to-assets ratio. The specifications of Panel B regresses on EBITDA forecast, quick ratio, Tobin's Q, gross income forecast, and EBITDA margin. It is important to note that all characteristics are observed at the event date, including the forecasts which are the average analyst estimations at the time of the issue/merger. The regressions reveal that, controlling for industry and time fixed effects, the coefficient estimates of all detected discriminants are statistically significant at the 1% level. The predictive power of the regressions, as measured by pseudo R^2, ranges from 0.142 for the EBITDA margin (Probit 10) to 0.428 for market capitalization (Probit 4).

The economic magnitude of the gross income and EBITDA forecasts is negligible because their marginal effects are 0 for three digits. However, the economic impact of the size characteristics, leverage, liquidity, and valuation, is meaningful. For example, at the mean of sales in logs (i.e., 2.9), a one-unit increase in sales reduces the likelihood of exiting via a SPAC by 3%. This corresponds to an increase in sales in levels from USD 18.2 to 49.4 million.

3.3 Endogenous Selection and SPAC Performance

It is intuitive that the observable characteristics in Table 7 may affect VCs' exit channel selection. They are known or at least anticipated by the VCs when deciding about the exit channel.

We can exclude these characteristics from affecting the stock market performance after the issue, respectively the SPAC merger, because they are observable to the market participants on the event day and thus, accounted for in the IPO offering price, or the merger consideration, respectively. However, omitted characteristics, e.g., entrepreneurial and venture quality, market/product features, or unique selling propositions could drive both the VCs' selection process and the aftermarket. Such unobservable characteristics turn the exit channel selection process endogenous.

Econometric analyses for endogenous relations require an appropriate instrumental variable model. Tables 5 and 7 present the relevance of several potential instruments. All of them also fulfill the exclusion restriction as discussed above. However, it is debatable which characteristic is best suited as instrument. Simply including several or all covariates is not possible due to multicollinearity, losing too many observations, or overidentification. The largest number of observations remains for any of the size-related characteristics. However, size does not seem suitable, because size is not a good proxy for an omitted variable like entrepreneurial or venture quality. Furthermore, it is obvious that larger exits should be placed among a larger group of investors in "standard" IPOs instead of SPACs.

Hence, leverage, the quick ratio, or Tobin's Q better qualify as instruments than size related characteristics. Tobin's Q, as a valuation measure, aggregates otherwise unobserved quality characteristics and expected long-term growth and profitability in a single number. The quick ratio denotes a venture's liquidity cushion and leverage the faith of banks and other lenders. Thus, all three variables describe venture quality from different angles.

The quick ratio has an additional feature because it captures the "necessity to react." If a venture's liquidity level approaches a lower threshold, a VC must respond. The VC can either engage in a new financing round or exit quickly. This rationale qualifies the quick ratio as instrument also capturing the latent driver "divestment pressure."

As Table 7 shows, the quick ratio and Tobin's Q yield individually higher predictive power, measured by Pseudo R^2, than the debt-to-asset ratio. They also provide a larger number of observations if used jointly than in combination with debt-to-assets and allow more interesting inference. We thus refer to the two variables to determine the average treatment effect of a SPAC exit compared to an IPO exit under endogenous selection.

The calculation follows the Heckman (1979) correction for sample selection procedure. However, there is no censoring in our sample because we observe the aftermarket as outcome for both groups, SPAC and IPO exits. Therefore, we use an endogenous binary variable treatment model. Such a model allows for a specific correlation structure between unobservable characteristics which affect the selection, and unobservable characteristics which affect the outcome.

Formally, the model is composed of one equation for outcome y_i and one for endogenous selection t_i. The variables $\boldsymbol{x_i}$ are used to model the outcome and we have

$$y_i = \boldsymbol{x_i}\boldsymbol{\beta} + \delta t_i + \epsilon_i,$$

$$t_i = \begin{cases} 1, & if\ \boldsymbol{w_i}\boldsymbol{\gamma} + u_i > 0 \\ 0, & otherwise \end{cases},$$

where $\boldsymbol{w_i}$ are the covariates used to model the selection assignment. The error terms ε_i and u_i are bivariate normal with zero mean and covariance matrix

$$\begin{bmatrix} \sigma^2 & \rho\sigma \\ \rho\sigma & 1 \end{bmatrix}.$$

Newey (1984) describes a one-step generalized method of moments estimation of this model that can be decomposed into two separate regressions for the treated and untreated groups. This is referred to as switching regressions. However, we are only interested in the average treatment effect and not in separate regressions for both subgroups.

— Insert Table 8 here —

Table 8 presents the analyses. OLS 5 repeats OLS 4 from Table 6 to verify that the result for SPAC underperformance prevails in the reduced sample. The reduced sample is composed of VC-exits for which the two instruments quick ratio and Tobin's Q are jointly available, i.e., for 474 transactions. The dependent variable is $BHAR_{180}$ and the results are equivalent to those of OLS 4.

The second specification is the VC exit channel selection model using the quick ratio and Tobin's Q as instruments. The dependent variable of the probit regression is a dummy indicating SPAC [= 1] and IPO [= 0] exits. The number of observations reduces to 474, and the regression yields a pseudo R^2 of 0.22. The treatment model test reveals significance at the 1% level. Both covariates have coefficient estimates at the 1% significance level, and thus signal their relevance as instruments.

The following specification is the outcome model which is jointly estimated with the treatment model via the general method of moments. It regresses $BHAR_{180}$ on the dummy for SPAC exits Nasdaq, industry, underwriter, and event quarter fixed effects. The coefficient estimates for the SPAC exit dummy is statistically not significant. Thus, we cannot reject the null hypothesis that there is no treatment effect. Therefore, we conclude that there is only a selection effect that explains SPAC underperformance: The VCs' choice to exit lower quality ventures via SPAC mergers explains their underperformance.

This finding is supported by the correlation ($\rho = -0.35$) between the error terms of the selection and outcome regressions. The correlation is significant, as indicated by the Wald test. The χ^2 value of 4.09 rejects the null hypothesis that the treatment and outcome regressions are independent. This means that any omitted driver of the exit channel selection correlates negatively with the outcome variable. We can assume that latent drivers, e.g., entrepreneurial or venture quality, affect aftermarket performance positively but the propensity for a SPAC exit negatively.

Contrarily, “divestment pressure” increases the likelihood of a SPAC exit but lowers aftermarket performance at the same time.

4 Conclusion

We gather data on 354 de-SPAC events and 1,248 IPOs between January 2016 and March 2022. The data reveal that a substantial fraction of these events is related to VCs divesting portfolio companies. We record 129 SPAC mergers with VC-backed ventures, and 757 IPOs of VC-backed companies. We run univariate and multivariate tests to address the selection process for SPAC and IPO exits and control their financial performance analyses for the choice of the exit channel.

We analyze if VCs’ SPAC divestments are motivated by grandstanding incentives or “strategic exit” behavior. To accept Gompers’ (1996) grandstanding hypothesis, we would need to find underpricing in VC SPAC exits, satisfying after-market performance, and younger companies to become SPAC targets. We do not find any of these effects.

The possibility to “exit strategically” according to Faure-Grimaud and Gromb (2004) is based on information asymmetry. This asymmetry allows sellers to divest lemons while buyers believe that the reason for the divestment is a liquidity constraint or similar alternative shock which is opaque to financial market participants. We are not able to address shocks as motivators of exits because of data availability and the complexity to determine lead investors, especially for SPAC exits. However, the average poor after-market performance overwhelmingly suggests the occurrence of “strategic exits”.

All detected evidence supports that exiting via SPAC is an opportunistic play. First, our analyses reveal no underpricing in SPAC merger considerations. There is a statistically not significant positive average abnormal return around the merger announcement. The median is

0.6% only. First-day returns after the de-SPAC event are also zero. Therefore, VCs do not incur any costs of underpricing.

Second, the performance aftermath of SPAC mergers is generally poor. SPACs substantially underperform the CRSP Total Market Index and their IPO peers. Expressed in numbers, the average performance for SPACs merging with VC-backed companies is −51.3%, and it is −33.2% for SPACs merging with non-VC-backed targets, relative to the index. This signals that the VCs who divest via SPAC mergers do not leave money on the table. However, it also demonstrates that those VCs cannot expect reputational gains from their exits.

Third, IPOs of VC-backed companies can be considered most successful in terms of the after-market. Thus, VCs can build their reputations with IPOs supporting Gomper's (1996) grandstanding theory. However, shareholders selling at IPO leave 26.1% money on the table.

Fourth, the portfolio companies that VCs divest via SPACs do not differ from the ventures brought public with respect to the characteristics predicted by Gomper's (1996) grandstanding theory. The ventures are not younger or held in the VCs' portfolios for shorter periods. They are also not exposed to a larger set of investors with conflicting interests that could warrant faster exits. Unfortunately, the variety of investors on the ventures' capitalization tables makes it virtually impossible to single out liquidity constraints or quality characteristics of individual VCs. The transaction lead is not clear, and differences with respect to quality and liquidity constraints average out over the individual capitalization tables.

Fifth, compared to IPO exits, the ventures divested via SPAC mergers are smaller in terms of sales, total assets, and, most importantly, market capitalization. They exhibit lower analyst EBITDA forecasts, leverage, quick ratios, and Tobin's Qs. This suggests that VCs tend to use the SPAC market as an exit channel to dispose of less attractive ventures at lower valuations and lower

expected growth opportunities. The ventures also have lower debt capacity and liquidity cushions. They therefore require either a new financing round, or, more simply, disposal.

Sixth, correcting for the endogenous selection process, we find that SPAC underperformance is caused by selection. VCs channel lemons into the SPAC, and higher quality ventures into the IPO market. Some of our sample VCs exclusively divest lemons, and exclusively to SPACs.

Summarizing, we can characterize the recent wave of VCs' SPAC exits as resulting from opportunistic behavior. VCs sell ventures at lower multiples than their peers, with lower expected profitability and stronger financial constraints. They do not incur the cost of underpricing but cannot build their reputation either. We find evidence that taking the quick way out and not leaving money on the table, rather than building a long-term reputation, is the rationale for VCs' SPAC exits. However, it is expectable that market participants realize this opportunism and thus, the opportunity for "strategic exits" should diminish.

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Tables

Table 1: Description of the full sample of SPACs and IPOs.

		Event Type			
		SPAC merger		IPO	
		VC-Backed	Non-VC-Backed	VC-Backed	Non-VC-Backed
Observations	N	129	225	757	491
Event Date	Min	13.05.2019	29.07.2016	02.02.2016	29.01.2016
	Max	07.03.2022	11.02.2022	26.01.2022	26.01.2022
Size					
Assets	N	116	197	721	417
	P25	24.82	45.04	50.14	13.44
	Mean	641.87	458.69	887.60	1640.06
	Median	132.71	152.73	133.75	119.21
	P75	286.45	335.17	533.40	806.83
Market Cap	N	110	185	705	395
	P25	136.56	82.89	370.01	90.00
	Mean	374.57	322.19	2798.30	1789.02
	Median	304.50	250.00	824.74	286.93
	P75	406.25	386.25	2414.56	1042.51
Employees	N	105	195	689	375
	P25	3	3	60	42
	Mean	685	788	2778	1986
	Median	195	30	279	231
	P75	641	398	1159	1242
Valuation					
Tobin's Q	N	60	112	680	364
	P25	1.08	1.13	1.81	1.02
	Mean	1.73	12.59	4.05	4.56
	Median	1.20	1.24	2.77	2.20
	P75	1.32	1.30	4.68	4.38
Profitability					
Sales	N	116	198	722	419
	P25	0.00	0.00	0.00	5.22
	Mean	166.24	142.25	499.13	423.14
	Median	0.12	0.00	67.28	50.99
	P75	76.03	95.97	301.77	295.52
EBITDA	Count	77	134	720	419
	P25	0.00	0.00	-35.90	0.00
	Mean	-4.14	1.49	-8.32	74.85
	Median	0.00	0.00	0.00	0.00
	P75	0.00	0.00	0.00	37.10
ROA	N	114	190	719	410
	P25	-0.35	-0.16	-0.47	-0.29
	Mean	-0.23	-0.41	-0.55	-1.33
	Median	-0.04	0.00	-0.18	0.03
	P75	0.00	0.00	0.04	0.14

		Event Type			
		SPAC merger		IPO	
		VC-Backed	Non-VC-Backed	VC-Backed	Non-VC-Backed
Other					
Company Age	N	115	82	631	252
	P25	2261	2746	1849	538
	Mean	4064	5819	4689	4974
	Median	3515	3844	3376	2331
	P75	5349	6797	5278	6008
Time to Merger	Count	129	223		
	P25	132	109		
	Mean	158	150		
	Median	156	144		
	P75	176	177		

Table 2: Additional information on VC-backed companies.

		VC IPO Exit	VC SPAC Exit
Number of Observations	N	757	129
VC Specific			
Capital Raised	N	603	108
	P25	92.50	77.20
	Mean	353.30	498.93
	Median	159.21	179.00
	P75	293.58	425.89
Financing Rounds	N	689	127
	P25	2	2
	Mean	5	6
	Median	4	4
	P75	7	8
Holding Period	N	688	126
	P25	985.00	1196.00
	Mean	2381.77	2340.18
	Median	1951.00	1878.50
	P75	3234.50	2988.00
Number of Investors	N	689	127
	P25	4.00	3.00
	Mean	8.81	9.15
	Median	8.00	8.00
	P75	12.00	13.00
Profitability			
Asset Turnover	N	722	115
	P25	0.00	0.00
	Mean	0.61	0.32
	Median	0.31	0.00
	P75	0.83	0.33
EBITDA Margin	N	519	22
	P25	-0.74	-2.51
	Mean	-15.47	-15.20
	Median	-0.10	-1.42
	P75	0.12	-0.13
ROE	N	721	116
	P25	-0.53	-0.46
	Mean	-0.25	2.92
	Median	-0.08	-0.06
	P75	0.30	0.01

		VC IPO Exit	VC SPAC Exit
Valuation			
EV to Assets	N	638	55
	P25	0.99	0.96
	Mean	258.38	559.65
	Median	1.80	1.76
	P75	3.16	7.87
EV to Sales	N	466	31
	P25	1.27	1.03
	Mean	96.80	32.14
	Median	2.96	3.11
	P75	6.96	11.03
EV to EBITDA	N	627	20
	P25	-10.38	-8.18
	Mean	-9.17	-5.46
	Median	-4.53	-4.46
	P75	5.93	-1.67
Expected Profitability			
Gross Income Forecast	N	516	104
	P25	22.33	20.27
	Mean	403.22	150.96
	Median	143.79	68.83
	P75	364.22	195.60
EBITDA Forecast	N	629	116
	P25	-74.42	-84.83
	Mean	49.39	-26.32
	Median	-21.17	-38.30
	P75	91.00	19.35
Management			
Executives	N	725	128
	P25	13.00	14.00
	Mean	16.70	16.83
	Median	17.00	16.00
	P75	20.00	18.50
Directors	N	719	128
	P25	7.00	7.00
	Mean	7.90	8.08
	Median	8.00	8.00
	P75	9.00	9.00
Option Compensation	N	645	63
	P25	0.56	0.73
	Mean	7.52	6.62
	Median	1.69	1.54
	P75	5.83	5.22

		VC IPO Exit	VC SPAC Exit
Financing and Liquidity			
Debt to Assets	N	711	116
	P25	0.55	0.00
	Mean	1.90	152.15
	Median	1.23	0.52
	P75	2.00	1.89
Tangibility	N	722	116
	P25	0.01	0.00
	Mean	0.11	0.09
	Median	0.05	0.02
	P75	0.14	0.11
Charges coverage	N	510	67
	P25	-26.06	-57.45
	Mean	-152.90	-295.16
	Median	-3.07	-4.99
	P75	0.53	-0.85
Quick ratio	N	700	125
	P25	1.04	0.12
	Mean	5.02	2.30
	Median	2.04	0.25
	P75	6.07	0.96

Table 3: This table presents descriptive statistics for all characteristics that potentially determine VCs' exit channel selection. Some characteristics are logarithmically transformed; [] indicates characteristics are truncated at the respective levels.

	N	Min	p25	Mean	P50	p75	Max	SD
Size								
Log(Assets)	838	-5.3	3.87	4.91	4.9	6.15	11.22	2.09
Log(Market Capitalization)	815	0.22	5.77	6.64	6.49	7.64	11.23	1.54
Employees	794	1	56	2502	251	1035	343000	16625
Valuation								
Tobin's Q [05 95]	693	0.37	1.66	3.44	2.62	4.25	15.21	2.73
EV to Assets [05 95]	654	0.3	1	3.05	1.77	3.01	28.61	4.18
EV to Sales [00 80]	391	0.12	1.02	2.66	2.09	3.74	9.38	2.08
EV to EBITDA [05 95]	589	-37.54	-9.16	-3.41	-4.49	4.14	30.67	11.61
Profitability								
Log(Sales)	839	-4.02	0	3.25	3.86	5.57	11.04	2.83
EBITDA [05 95]	707	-94.3	-25.8	-4.86	0	0	189	41.97
ROA [05 95]	782	-1.69	-0.43	-0.25	-0.16	0.02	0.24	0.37
Asset Turnover	800	0	0	0.43	0.23	0.69	2.18	0.52
EBITDA Margin [10 90]	453	-3.73	-0.45	-0.36	-0.07	0.11	0.44	0.81
ROE [05 95]	745	-2.16	-0.43	-0.09	-0.07	0.19	2.88	0.71
Other								
Log(Company Age)	746	3.64	7.55	8.09	8.13	8.57	10.67	0.82
VC Specific								
Log(Capital Raised)	711	12.77	18.31	18.88	18.9	19.54	23.21	1.27
Financing Rounds	816	1	2	5.41	4	7	35	4.16
Holding Period	814	58	1020	2375	1944	3214	12794	1872.94
Number of Investors	816	1	4	8.86	8	13	35	6
Expected Profitability								
Gross Income Forecast	620	-469.8	21.93	360.91	131.6	344.3	18386.2	1070.96
EBITDA Forecast	745	-3709	-76.5	37.6	-24.0	66.84	4849.6	384.15
Management								
Executives	853	2	13	16.72	17	20	49	5.49
Directors	847	1	7	7.93	8	9	17	2.04
Option Compensation [05 95]	649	0.06	0.64	3.84	1.55	4.67	28.63	5.31
Financing and Liquidity								
Debt to Assets [05 95]	791	0	0.44	1.34	1.13	1.85	6.31	1.22
Tangibility	838	0	0.01	0.1	0.05	0.13	0.92	0.15
Charges Coverage [05 95]	536	-365.4	-20.2	-25.17	-2.92	0.31	19.28	59.14
Quick Ratio [05 95]	748	0.04	0.83	3.07	1.64	3.91	14.5	3.4

Table 4: OLS regressions, dependent variable is $BHAR_{180}$, standard errors are robust.

	OLS 1 β [S.E.]	OLS 2 β [S.E.]	OLS 3 β [S.E.]	OLS 4 β [S.E.]
SPAC	-0.428*** [0.037]		-0.241*** [0.055]	-0.239*** [0.078]
VC-backed		0.176*** [0.043]	0.188*** [0.054]	0.107* [0.060]
SPAC X VC-backed			-0.367*** [0.072]	-0.283*** [0.101]
Constant	1.025*** [0.027]	0.828*** [0.031]	0.907*** [0.042]	0.901*** [0.298]
Number of Obs.	1200	1200	1200	1104
R^2	0.055	0.013	0.069	0.210
Adj. R^2	0.054	0.012	0.067	0.158
Underwriter Fixed Effects	no	no	no	yes
Nasdaq Fixed Effect	no	no	no	yes
Industry Fixed Effects	no	no	no	yes
Event Quarter Fixed Effects	no	no	no	yes

p-values: *p < 0.10, **p < 0.05, ***p < 0.01.

Table 5: Difference in means tests for all characteristics that potentially discriminate between VCs' SPAC and IPO exits.

	Information available for N							
	IPO Exits	**SPAC Exits**	**Mean IPOs**	**Mean SPACs**	**Diff.**	**SE**	**t stat**	**p-value**
Size								
Log(Assets)	**722**	**116**	**5.06**	**4.01**	**1.05**	**0.21**	**5.05**	**0.00**
Log(Market Capitalization)	**705**	**110**	**6.87**	**5.20**	**1.67**	**0.15**	**11.30**	**0.00**
Employees	689	105	2778.5	685.42	2093	1741	1.20	0.23
Valuation								
Tobin's Q [05 95]	**634**	**59**	**3.60**	**1.78**	**1.82**	**0.36**	**4.95**	**0.00**
EV to Assets [05 95]	614	40	3.04	3.34	-0.31	0.68	-0.45	0.65
EV to Sales [00 80]	368	23	2.63	3.01	-0.38	0.45	-0.85	0.40
EV to EBITDA [05 95]	569	20	-3.34	-5.46	2.12	2.64	0.80	0.42
Profitability								
Log(Sales)	**723**	**116**	**3.45**	**1.98**	**1.48**	**0.28**	**5.30**	**0.00**
EBITDA [05 95]	720	77	-8.32	-4.14	-4.18	47.86	-0.10	0.93
ROA [05 95]	673	109	-0.26	-0.22	-0.04	0.04	-1.05	0.30
Asset Turnover	**688**	**112**	**0.46**	**0.24**	**0.22**	**0.05**	**4.15**	**0.00**
EBITDA Margin [10 90]	**434**	**19**	**-0.33**	**-1.08**	**0.75**	**0.19**	**4.05**	**0.00**
ROE [05 95]	639	106	-0.09	-0.07	-0.02	0.07	-0.35	0.74
Other								
Log(Company Age)	631	115	8.09	8.11	-0.02	0.08	-0.25	0.79
VC Specific								
Log(Capital Raised)	603	108	18.86	18.96	-0.10	0.13	-0.75	0.44
Financing Rounds	689	127	5.38	5.58	-0.21	0.40	-0.50	0.61
Holding Period	688	126	2381.8	2340.2	41.59	181.60	0.25	0.82
Number of Investors	689	127	8.81	9.15	-0.34	0.56	-0.60	0.54
Expected Profitability								
Gross Income Forecast	**516**	**104**	**403.22**	**150.96**	**252.26**	**114.76**	**2.20**	**0.03**
EBITDA Forecast	**629**	**116**	**49.39**	**-26.32**	**75.71**	**38.74**	**1.95**	**0.05**
Management								
Executives	725	128	16.70	16.83	-0.13	0.53	-0.25	0.81
Directors	719	128	7.90	8.08	-0.18	0.20	-0.90	0.37
Options Compensation [05 95]	591	58	3.90	3.26	0.64	0.73	0.85	0.38
Financing and Liquidity								
Debt to Assets [05 95]	**683**	**108**	**1.40**	**0.91**	**0.49**	**0.13**	**3.90**	**0.00**
Tangibility	722	116	0.11	0.09	0.01	0.01	0.85	0.41
Charges Coverage [05 95]	474	62	-24.3	-31.85	7.55	7.99	0.95	0.35
Quick Ratio [05 95]	**640**	**108**	**3.39**	**1.17**	**2.21**	**0.35**	**6.4**	**0.00**

Bold indicates p-values at $p < 0.10$.

Table 6: Pairwise correlations of all characteristics discriminating between VCs' SPAC and IPO exits.

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
(1) Log(Assets)	1.00								
(2) Log(Market Capitalization)	**0.47**	1.00							
(3) Tobin's Q [05 95]	0.03	**0.43**	1.00						
(4) Log(Sales)	**0.68**	**0.46**	0.09	1.00					
(5) Asset Turnover	0.21	0.14	0.15	**0.65**	1.00				
(6) EBITDA Margin [10 90]	**0.37**	0.20	0.07	**0.60**	**0.34**	1.00			
(7) Gross Income Forecast	**0.41**	**0.39**	0.00	**0.41**	0.10	0.13	1.00		
(8) EBITDA Forecast	**0.32**	0.13	-0.05	**0.39**	0.12	**0.32**	**0.55**	1.00	
(9) Debt to Assets [05 95]	-0.30	-0.08	0.13	-0.22	0.05	-0.29	-0.15	-0.14	1.00
(10) Quick ratio [05 95]	-0.18	-0.06	-0.06	**-0.49**	**-0.38**	**-0.34**	-0.14	-0.19	0.12

Bold indicates correlations above |0.3|.

Table 7, Panel A: Probit regressions, where the dependent variable is a dummy indicating that a VC divested a portfolio company via a SPAC merger [= 1] compared to bringing it public [= 0]. Standard errors of the coefficient estimates are robust, and below the coefficient estimates in squared brackets. Marginal effects are illustrated in the third line, formatted in italics, and calculated at means. The regressors' means are reported in the bottom line of the table.

	Probit 1 β [S.E.] *dy/dx*	Probit 2 β [S.E.] *dy/dx*	Probit 3 β [S.E.] *dy/dx*	Probit 4 β [S.E.] *dy/dx*	Probit 5 β [S.E.] *dy/dx*
Log(Assets)	-0.118*** [0.036] *-0.036****				
Log(Market Capitalization)		-0.640*** [0.078] *-0.157****			
Log(Sales)			-0.101*** [0.028] *-0.030****		
Asset Turnover [05 95]				-0.424** [0.215] *-0.130***	
Debt to Assets [05 95]					-0.300*** [0.083] *-0.085****
Constant	-0.157 [0.621]	4.259*** [0.659]	-0.319 [0.606]	-0.591 [0.619]	-0.949* [0.561]
Number of Obs.	420	396	420	400	394
Pseudo R^2	0.225	0.428	0.224	0.201	0.273
Industry Fixed Effects	yes	yes	yes	yes	yes
Event Quarter Fixed Effects	yes	yes	yes	yes	yes
Mean of Covariate	4.77	6.62	2.90	0.35	1.30

p-values: *p < 0.10, **p < 0.05, ***p < 0.01.

Table 7, Panel B: Probit regressions, where the dependent variable is a dummy indicating that a VC divested a portfolio company via a SPAC merger [= 1] compared to bringing it public [= 0]. Standard errors of the coefficient estimates are robust, and below the coefficient estimates in squared brackets. Marginal effects are illustrated in the third line, formatted in italics, and calculated at means. The regressors' means are reported in the bottom line of the table.

	Probit 6 β [S.E.] *dy/dx*	Probit 7 β [S.E.] *dy/dx*	Probit 8 β [S.E.] *dy/dx*	Probit 9 β [S.E.] *dy/dx*	Probit 10 β [S.E.] *dy/dx*
Tobin's Q [05 95]	-0.365*** [0.105] *-0.055****				
Quick Ratio [05 95]		-0.195*** [0.057] *-0.058****			
EBITDA Margin [10 90]			-0.375*** [0.136] *-0.075****		
EBITDA Forecast [$ M]				-0.001*** [0.000] *-0.000****	
Gross Income Forecast [$ M]					-0.001*** [0.000] *-0.000****
Constant	1.124* [0.678]	0.136 [0.692]	-1.127*** [0.320]	-0.353 [0.623]	-0.158 [0.574]
Number of Obs.	309	363	116	378	299
Pseudo R^2	0.345	0.278	0.142	0.189	0.223
Industry Fixed Effects	yes	yes	yes	yes	yes
Event Quarter Fixed Effects	yes	yes	yes	yes	yes
Mean of Covariate	3.38	2.91	-0.54	25.27	402.10

p-values: *p < 0.10, **p < 0.05, ***p < 0.01.

Table 8: OLS and endogenous treatment effect models. The first specification (OLS 5) regresses $BHAR_{180}$ on the dummy for VCs' exits by SPAC [= 1], otherwise by IPO [= 0], and controls. The second specification is a probit regression as a selection model for the endogenous treatment effect "SPAC exit" vs "IPO exit" [1/0]. The third specification is the jointly estimated outcome model with the dependent variable $BHAR_{180}$. Summary statistics include model test statistics and Rho, the correlation between the error terms of the selection and the outcome model.

	OLS 5 β [S.E.]	Selection β [S.E.]	Outcome β [S.E.]
SPAC Exit	-0.568*** [0.116]		-0.168 [0.214]
Quick Ratio [05 95]		-0.141*** [0.050]	
Tobin's Q [05 95]		-0.356*** [0.119]	
Constant	0.603** [0.281]	-0.044 [0.255]	0.628** [0.285]
Number of Obs.	474	474	474
R^2	0.296		
Adj. R^2	0.180		
Pseudo R^2		0.216	
p-Value		0.000	
χ^2 for Wald Model Test			4.090
p-Value of Wald Model Test			0.043
ρ			-0.352
Underwriter Fixed Effects	yes	no	yes
Industry Fixed Effects	yes	no	yes
Nasdaq Fixed Effect	yes	no	yes
Event Quarter Fixed Effects	yes	no	yes

p-values as of * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figures

Figure 1:

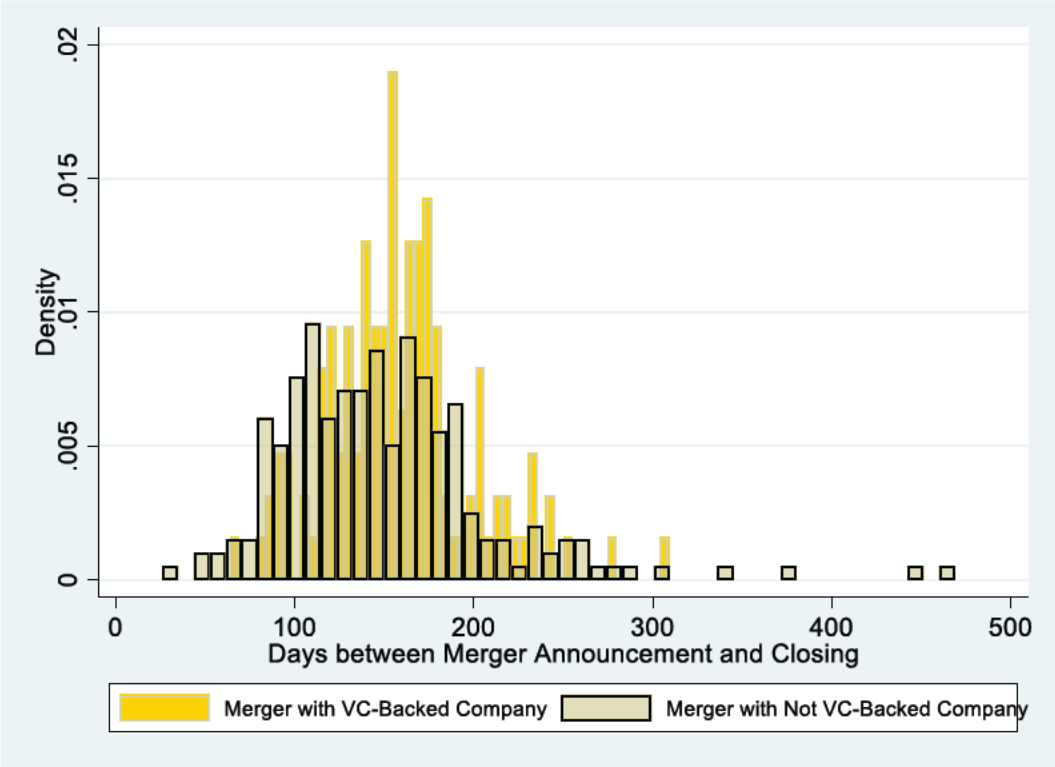


Figure 2:

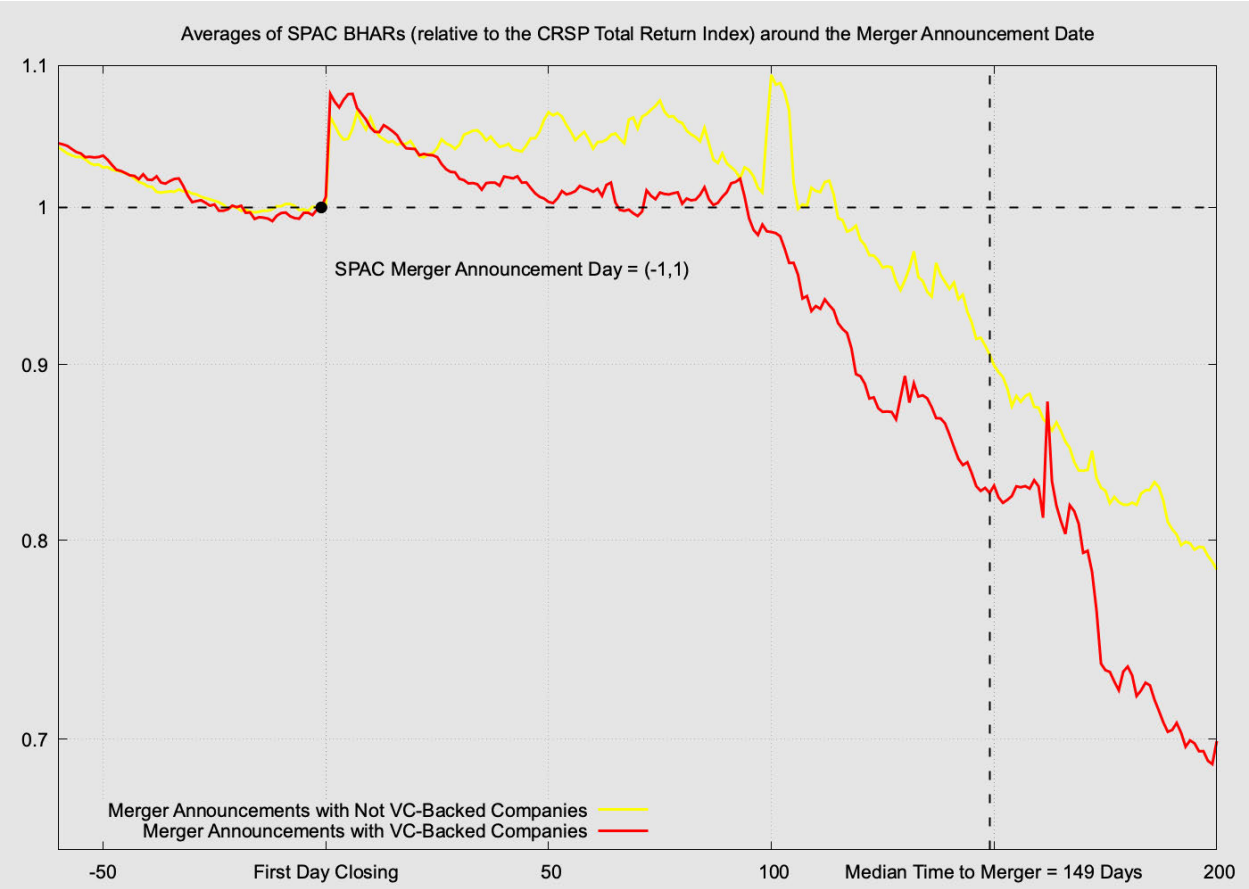

Averages of SPAC BHARs (relative to the CRSP Total Return Index) around the Merger Announcement Date
1.1
1
0.9
0.8
0.7
SPAC Merger Announcement Day = (-1,1)
Merger Announcements with Not VC-Backed Companies
Merger Announcements with VC-Backed Companies
-50
First Day Closing
50
100
Median Time to Merger = 149 Days
200

Figure 3:

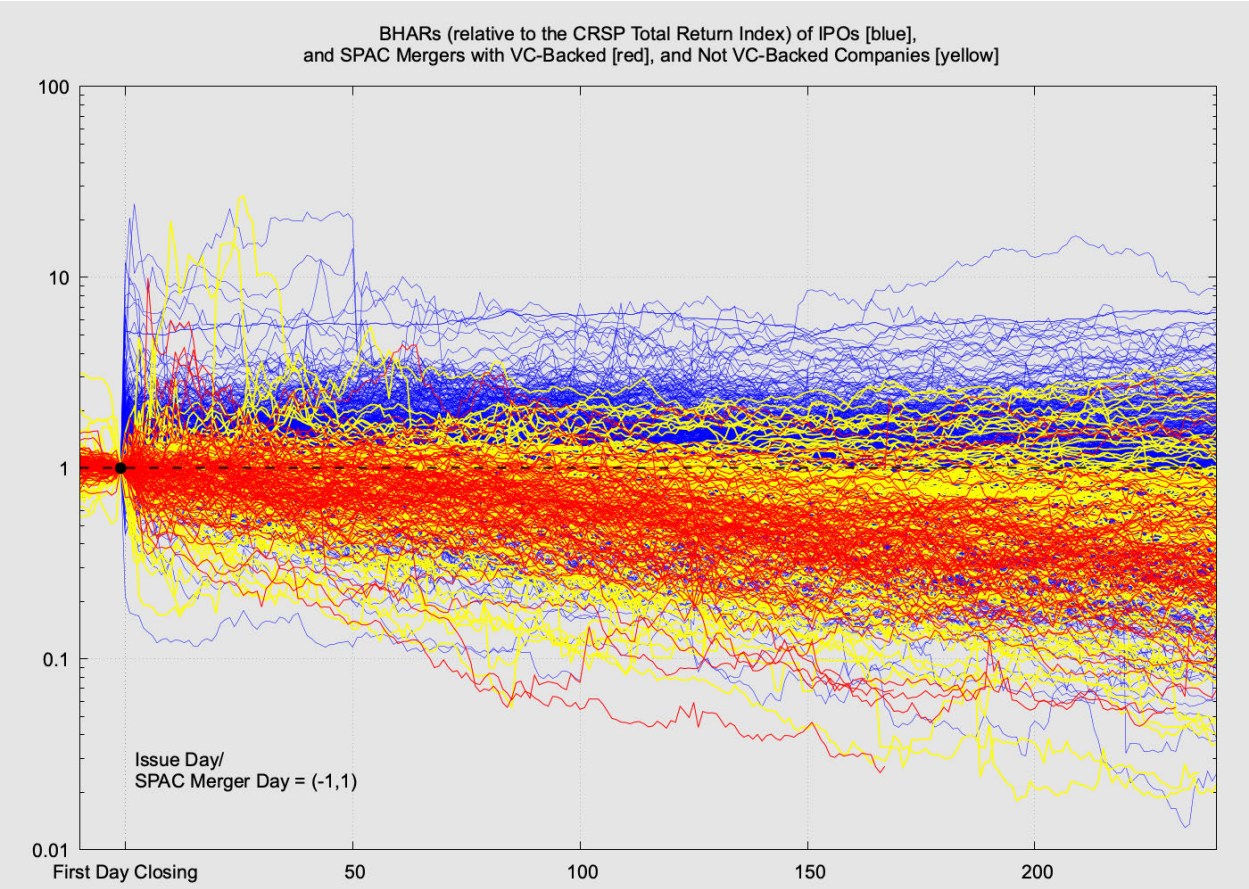

BHARs (relative to the CRSP Total Return Index) of IPOs [blue],
and SPAC Mergers with VC-Backed [red], and Not VC-Backed Companies [yellow]
100
10
1
0.1
0.01
Issue Day/
SPAC Merger Day = (-1,1)
First Day Closing
50
100
150
200

Figure 4:

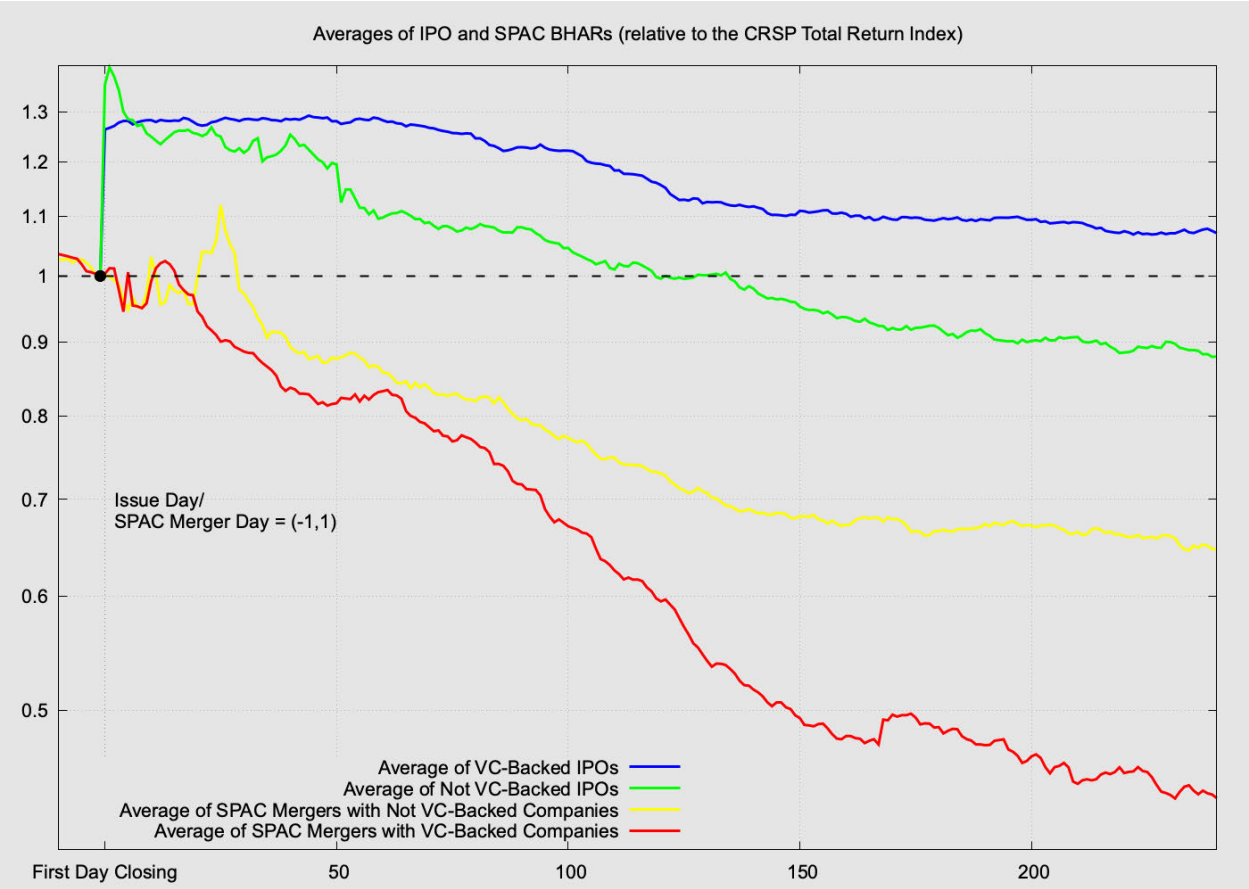

Averages of IPO and SPAC BHARs (relative to the CRSP Total Return Index)
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
Issue Day/
SPAC Merger Day = (-1,1)
Average of VC-Backed IPOs
Average of Not VC-Backed IPOs
Average of SPAC Mergers with Not VC-Backed Companies
Average of SPAC Mergers with VC-Backed Companies
First Day Closing
50
100
150
200

Figure 5:

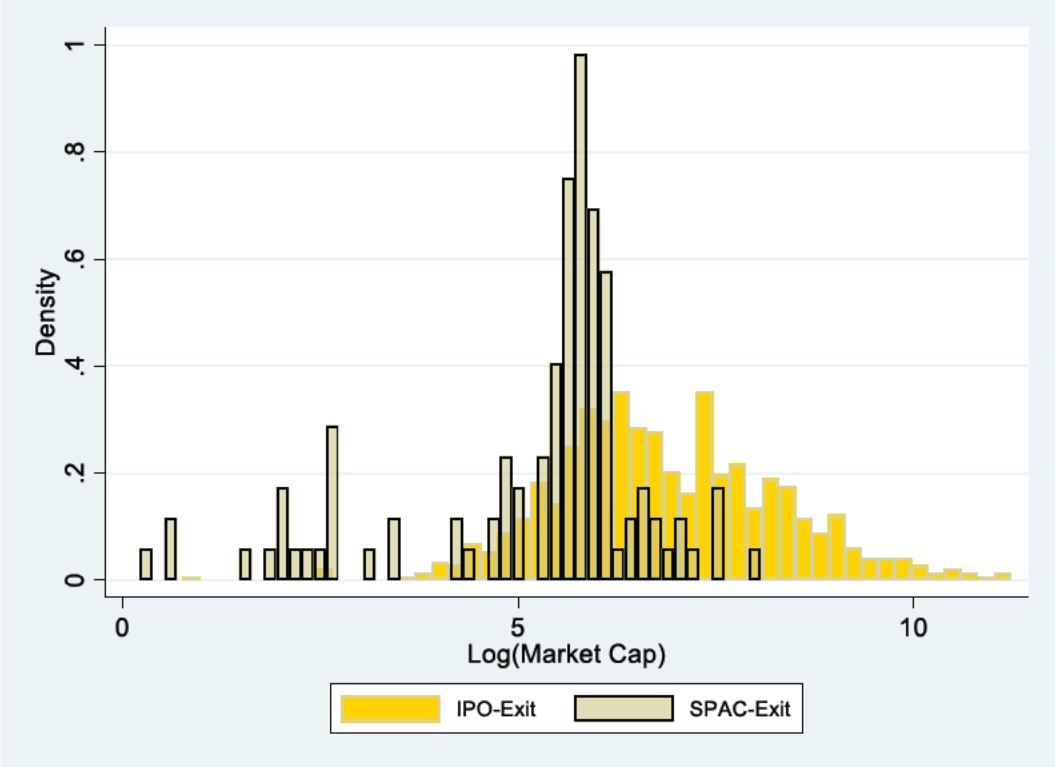


Figure 6:

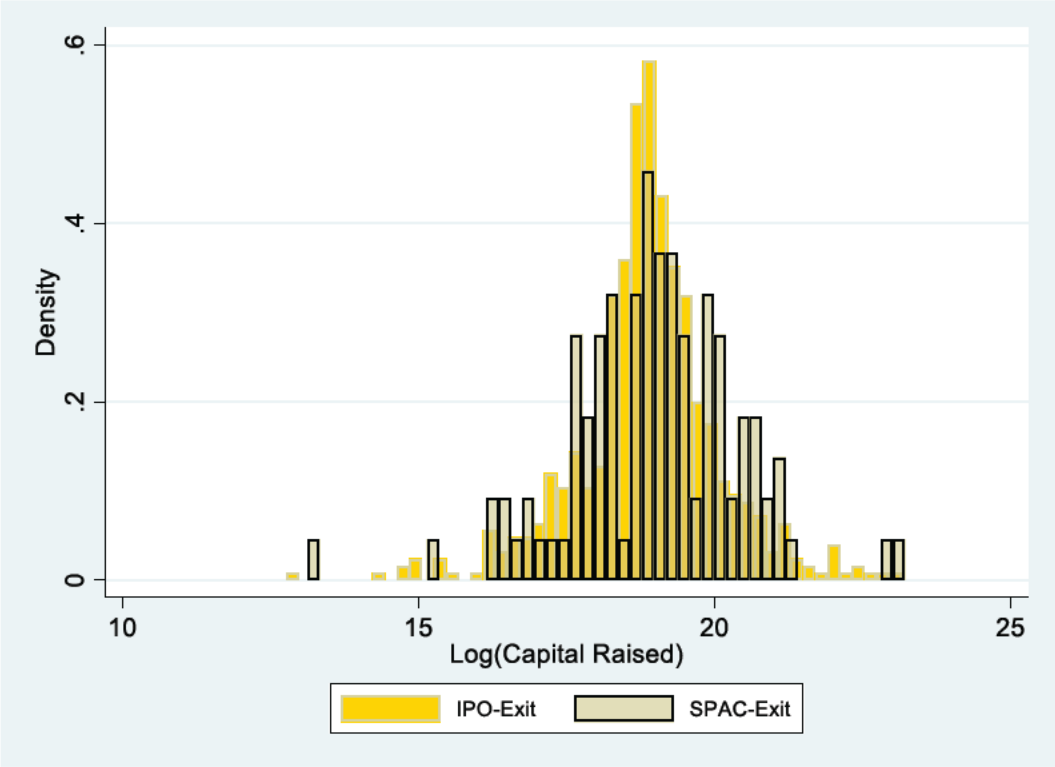
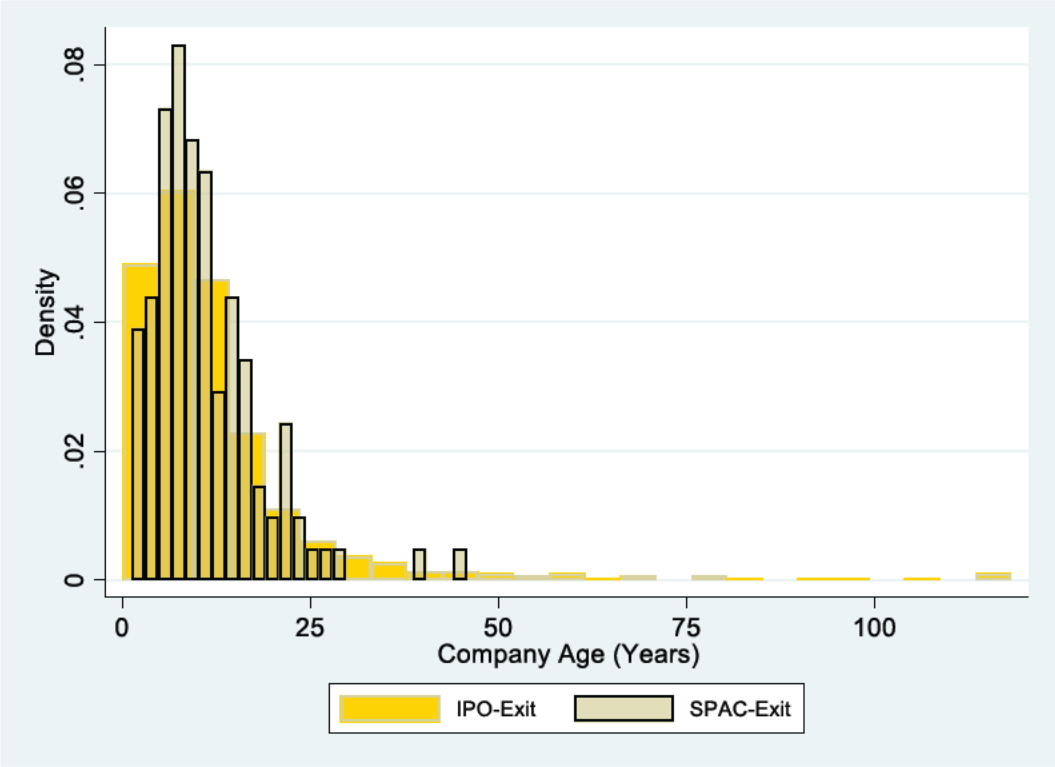

Density
0
.2
.4
.6
10
15
20
25
Log(Capital Raised)
IPO-Exit
SPAC-Exit

Figure 7:


Density
0
.02
.04
.06
.08
0
25
50
75
100
Company Age (Years)
IPO-Exit
SPAC-Exit

Online Appendix

This online appendix contains all raw data, the algorithm to calculate BHARs, the data matching procedure, the final dataset, and the code for the econometric analyses, to generate tables and figures.

Please refer to this link http://gofile.me/55FbB/bgecIwGJJ to download all data and code required to produce this paper. The appendix includes:

- The raw data file for SPACs,
- The raw data file for IPOs,
- The raw data file for VC exits via IPO or reverse mergers with blank check companies,
- Additional raw data files complement further details and accounting data,

  Note: All raw data files need to be manually cleaned and verified according to instructions in the STATA do files.
- The code to calculate the abnormal returns and their trajectories using PHP on a shared server,
- The Stata do files to match the data and prepare the final dataset,
- The final Stata dataset, which is manually cleaned and verified by the authors,
- The Stata do files to label the variables, run the analyses, and create the output presented in the paper,
- The script to create the graphs on SPAC performance using Gnuplot.

Appendix: Variable Descriptions.

Variable Name	Variable Description	Data Source
Explanatory Variables		
Event Date	Date of the de-SPAC or IPO event [#]	SPAC Research and Refinitiv
Size		
Assets	Total assets [$ M] as reported at event date	FactSet
Market Capitalization	Market value of equity [$ M] at event date	Refinitiv
Employees	Number of employees as reported at event date, if unavailable based on web search [#]	FactSet, Company Website
Valuation		
Tobin's Q	Market capitalization divided by total assets minus long-term debt at event date, but prior to the event, i.e., at issue price, respectively, de-SPAC consideration [#]	Refinitiv
Profitability		
Sales	Sales [$ M] as reported at event date	FactSet
EBITDA	EBITDA [$ M] as reported at event date	Refinitiv
ROA	Return on assets, calculated as EBITDA divided by total assets, both as reported at event date [#]	FactSet
Other		
Company Age	Event date minus company founding date [days]	Refinitiv and SPAC Research
Time to Merger	Event date minus de-SPAC announcement date [days]	Refinitiv and SPAC Research
Additional Variables on VC-Backed Companies		
VC Specific		
Capital Raised	Accumulated capital raised [$ M]	Refinitiv
Financing Rounds	Number of external financing rounds [#]	Refinitiv
Holding Period	Period from first round until exit [days]	Refinitiv
Number of Investors	Number of all investors on the ventures' capitalization tables [#]	Refinitiv
Profitability		
Asset Turnover	Sales divided by total assets, both as reported at event date [#]	FactSet
EBITDA Margin	EBITDA divided by sales, both as reported at event date [#]	FactSet
ROE	Net income divided by the book value of common equity, both as reported at event date [#]	FactSet
Valuation		
EV to Assets	Enterprise value divided by total assets at event date [#]	Refinitiv and FactSet
EV to Sales	Enterprise value divided by sales at event date if sales is greater than zero [#]	Refinitiv and FactSet

EV to EBITDA	Enterprise value divided by EBITDA at event date [#]	Refinitiv and FactSet
Expected Profitability		
Gross Income Forecast	Average analyst pre-tax income two years' forecast [$ M] at event date	FactSet
EBITDA Forecast	Average analyst EBITDA two years' forecast [$ M] at event date	FactSet
Management		
Executives	Number of executives as reported at event date [#]	FactSet
Directors	Number of board directors as reported at event date [#]	FactSet
Option Compensation	Stock option compensation expenses as reported at event date [$ M]	FactSet
Financing and Liquidity		
Tangibility	Property, plant, and equipment divided by total assets as reported at event date [#]	FactSet
Charges coverage	EBIT divided by fixed charges, including interest expenses and lease payments as reported at event date [#]	FactSet
Quick ratio	Current assets net of inventory, divided by current liabilities as reported at event date [#]	FactSet