SPACs and SPAC target firm characteristics

An empirical study using fundamental data

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Abstract

The number of special purpose acquisition (SPACs) companies has boomed in the last few years and is becoming an impactful factor in the US capital market. Although the concept is from the 1990s, literature on SPACs remains scarce. Our thesis looks at different fundamental characteristics of firms going public. We aim to see if firms going public through a SPAC merger differ from firms going public through the traditional IPO route. This thesis contributes to the existing literature in two ways. Firstly, we provide a more sound analysis as we control for the effect of acquired intangible assets that can occur in a SPAC merger. Secondly, we establish the "earlier stage narrative" as a result of our findings. This narrative explains that companies choosing to go public through a SPAC are earlier in a conventional firm's life cycle than companies choosing the traditional IPO route when going public.

We use fundamental data from the same year as the companies go public. Our findings indicate that firms going public through a SPAC are more than 50% smaller than companies going public through a traditional IPO. Firms that choose to merge with SPACs are generally portrayed as more technology-oriented. As a proxy to innovation, we also look into firms' share of intangible assets and R&D to total assets. However, we find no significant difference between the two samples. Furthermore, we look at the firms' profitability, level of debt, and cash. However, these regressions also result in no significant difference. Except for size, the two samples seem to have similar fundamental characteristics.

Combining our findings with the existing literature, it becomes apparent that the structure of SPACs and the sponsor expertise results in firms being able to go public earlier in their life cycle. As a result, we formulate the earlier stage narrative, which is not discussed in the existing literature. We view our narrative as a valuable addition to understanding what differentiates firms based on their going public method.

Keywords – SPACs, target firm characteristics, earlier stage narrative.

Acknowledgements

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1 Introduction

1.1 The recent SPAC boom

In recent years there has been a boom in the number of special purpose acquisition companies (SPACs) as well as capital raised. The number of US SPAC IPOs has risen from 13 in 2016 to 248 in 2020. This substantial increase in only a few years is even overshadowed by the count nearing the end of 2021, as 528 SPACs have completed an IPO and another 286 have filed for an IPO. The IPO proceeds from SPAC offerings have also greatly increased, especially in 2020 and 2021. In fact, SPACs as a percentage of capital raised in IPOs has risen from around 12 percent in 2016 to around 50 percent in 2020 and 2021. Although the concept is from the 1990s, it has remained relatively unused and unknown until the last couple of years. However, it is now becoming an impactful factor in the US capital market.

A SPAC is a blank check company that goes public with the purpose of acquiring and merging with a privately held company. Through a reverse merger, the target company gets listed. However, the target company is not identified at the time of the SPAC IPO, as that would result in a process of requirements similar to a traditional IPO.

Figure 1.1 shows that the number of SPACs has remained relatively low up until recent years where there has been a boom in the number of SPAC IPOs. We also see that SPAC IPOs as a share of total IPOs saw an increase leading up to the 2008 financial crisis. After the 2008 financial crisis, we observed a significant drop in the number of SPAC IPOs as a share of total IPOs, which until 2015 remained relatively stable at 5%. From 2015, however, we start to see a significant growth in the SPAC IPO percentage. The result is more SPACs than operating companies getting listed in 2020 and 2021. From figure 1.2, we see the same trend as in figure 1.1. However, the percentage of SPAC IPO proceeds contributing to the total IPO proceeds is smaller than the SPAC IPO count to the total number of IPOs.

Figure 1.1: SPAC IPOs vs. traditional IPOs: Count
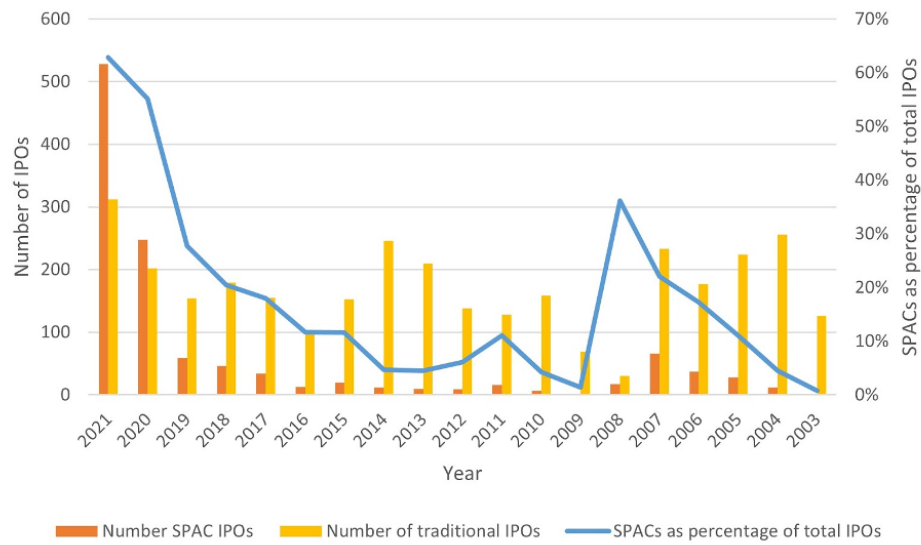
Figure 1.1 depicts the number of US SPAC IPOs and traditional IPOs between 2003 and 2021 as well as SPAC IPOs as a percentage of the total US public offerings. Note that 2021 is subject to changes as data were gathered on the 9th of November 2021.

Figure 1.2: SPAC IPOs vs. traditional IPOs: Proceeds
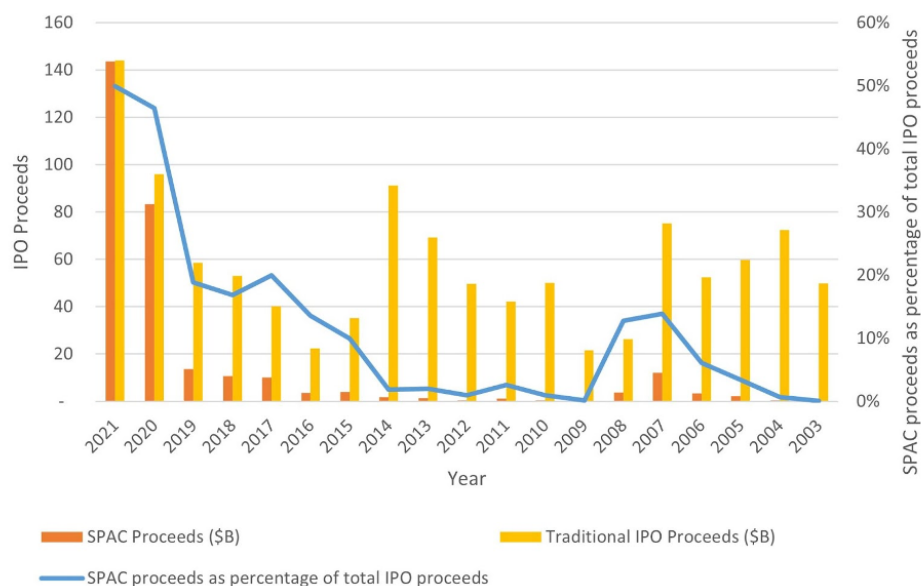
Figure 1.2 depicts the proceeds of US SPAC IPOs and traditional IPOs between 2003 and 2021. The figure also shows the proceeds from US SPAC IPOs as a percentage of the total IPO proceeds. 2021 is subject to changes as data were gathered on the 9th of November 2021.

1.2   Research Question

SPACs have long remained a relatively unknown concept. However, the growth in the average size of SPACs and its increase in both capital raised and count, now rivaling traditional IPOs, has made it widely known. Therefore, it is likely that companies considering an IPO will also weigh the option of going public through a SPAC.

As a result, we formulate the following research question:

Research Question: Are there different characteristics of companies choosing to go public through a SPAC instead of the traditional IPO route?

We believe our research question will get even more relevant in the coming years as more companies know about the option of SPACs, as SPAC structure changes due to increased usage of and competition among SPACs and as regulation adapts. Future studies might therefore find different results or a change over time.

Throughout this paper, we will refer to firms that go public through a SPAC merger as "SPAC firms" and firms using the traditional IPO route as "traditional IPO firms."

1.3   SPACs explained

1.3.1   The sponsor and founder shares

A SPAC is established by a management team or an entity called the sponsor. The sponsor is tasked with finding a suitable company to merge with and thus taking the company public. The sponsor has two years to complete a merger, or else the SPAC will liquidate.

The sponsor generally receives twenty percent of the company's shares after over-allotment is accounted for. The sponsor shares are called the founder shares or the sponsor promote. For the founder shares, the sponsor only pays a nominal amount of $25,000. SPAC sponsors have a longer lock-up period for their shares than insiders in a traditional IPO. The sponsors also cover the underwriting fees and other expenses that occur until the merger is completed. The amount initially needed is first loaned to the SPAC. However, it is later repaid as the Sponsors purchase warrants for millions of dollars in the SPAC IPO. The warrants come in addition to the founder shares.

In addition to taking the private company public, the sponsor normally takes an active role in the newly merged public firm by being a board member. Generally, the sponsor has expertise within the industry in which the target firm operates and is thus able to contribute with industry-specific knowledge to the newly merged firm. This is a fundamental difference from the traditional IPO route.

1.3.2   Public units

In the IPO, investors buy a unit that normally consists of a share and a fraction of a warrant. Most SPAC units are initially priced at $10, and the exercise price for a warrant is $11.5. Both the share and the warrant trade separately after the IPO. As the sponsor, through the purchase of warrants, covers all expenses, the entirety of the funds raised goes into a trust earning interests. The shares are also redeemable meaning that when the sponsor has found a suitable company and the management proposes a merger, investors can redeem some or all of their shares. If the investors choose to redeem, they will get their share of the trust. The sponsors have no right to the trust, and thus their shares may not be redeemed.

1.3.3   PIPE

Private Investment in Public Equity (PIPE) is often associated with SPACs and occurs when an institutional or another type of accredited investor buys stocks directly. PIPE financing primarily happens in three ways. The first way is for the sponsor and third-party investors to enter into a forward purchasing agreement. This means that the investors agree to purchase shares in the merged company. The proceeds from PIPE financing do not go into the trust and can thus cover SPAC expenses and as payment in the pending deal. The second way is that the sponsor may look for private placements after the IPO, but before the merger proposition. However, it is not the most common method. The third way is to get private placements after or during the redemption period.

The specifics of the agreement between the sponsor and the third-party investors are not reported and probably vary. The purchase price per share for the third party investors is reported at $10, the same as for other public investors. However, the third-party investors' shares do not have the redemption right, and there are no warrants connected with the share. As a result, these investors certainly have other agreements, or else why not come in as public investors.

It is well documented that sponsors heavily forfeit shares and warrants to other investors. Who these forfeits go to is, however, mainly unreported. Nevertheless, it is indicated that it generally goes to third-party investors to generate a deal, to other public investors in exchange for not redeeming, and to counter dilution in order to secure a deal with the target company. Sponsors do these forfeitures as their whole payoff depends on a merger. As a result, they are heavily incentivised to ensure a deal.

When the sponsor negotiates a deal with the target company, they agree on a minimum cash infusion. Before the merger vote, the SPAC investors are presented with a draft of their share percentage, as a whole, in the newly merged company given no and maximum redemption rate. If a forward purchase agreement has been made, the sponsors have often ensured enough financing to meet the minimum cash requirements of the targeted deal. If the public investors redeem more of their shares than the minimum cash requirements of the deal allow, the sponsor will need PIPE funding or cover the gap themselves.

In addition to serving the function of replenishing cash in the SPAC to meet the minimum

cash delivered condition, third-party PIPE also contributes to certifying the deal's attractiveness and consequently discourages redemptions (Gahng et al., 2021).

1.3.4   Underwriters

Underwriters generally receive between 5 and 7 percent of the proceeds in a traditional IPO. In a SPAC IPO, the underwriting fees consist of a 2 percent fee paid upfront and a 3.5 percent fee payable upon the merger completion. The sponsor's funds cover the 2 percent upfront fee. However, the remaining 3.5 percent is covered by the trust upon completion and forfeited if the SPAC liquidates.

1.3.5   The SPAC-merger process

Figure 1.3 summarises the steps in the SPAC process. The first step is the IPO, the same as any blank check company, in which public investors buy units. In the second step, the SPAC proposes a merger with the target company. The public shareholders can then redeem their shares. If more funds are needed due to a high redemption rate, the sponsor either buys shares or finds other private investors (PIPE financing). Post-merger, the target shareholders will own more than half of the combined company.

Figure 1.3: Life cycle of a SPAC
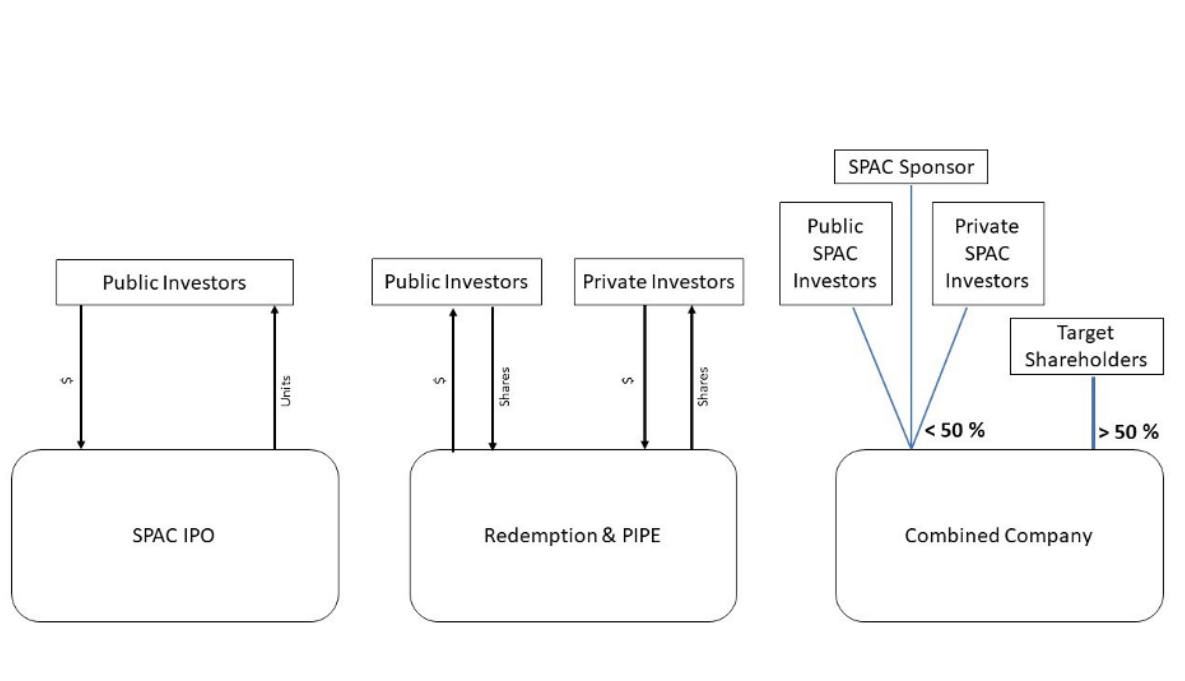
Figure 1.3 illustrates the life cycle of a SPAC chronologically from first being listed as a blank check company to the final stage of business consummation with a target firm. This lifecycle assumes that the SPAC finds a target company it merges with. The illustration is strongly inspired by a similar illustration presented in Klausner et al. (2021).

1.3.6   Regulatory treatment

Going public through a SPAC is technically the same as doing a merger. It is therefore regulated under merger and not public offering laws. Consequently, forward-looking statements of revenues and earnings in connection to the merger announcement between a SPAC and target company are commonly added, as these projections are protected from lawsuits under U.S. merger laws. This protection is described as safe harbor protection. It is the plaintiffs that have the burden of proof to show that managers knowingly made false statements about company projections (Klausner et al., 2021). IPO regulations do not protect these forward-looking statements, and as a result, companies doing an IPO rarely include them in their prospects.

1.3.7   SPAC development

SPACs have had some changes made to them over the years. The current way SPACs are organised is called "SPAC 3.0", which has existed since 2010. Pre-2010, almost half

the SPACs were traded in the OTC markets, and Gahng et al. (2021) found that SPAC firms were significantly smaller before 2010. The underwriter fees were higher and almost always paid upfront. The trust pre-2010 had less than 100 percent of the IPO proceeds, partly due to higher underwriting fees, whereas post-2010, 100 percent of the proceeds are in the trust. Before 2010 there were more warrants, and they were priced at a discount rather than a premium. A last, important difference is that pre-2010 shareholders could not both redeem their shares and vote in favor of a merger. After 2010 investors can both redeem their shares and vote in favor of a merger. A redeeming shareholder is thus incentivised to do so as his warrants are worthless if no deal is made and he has not sold his warrants. However, there has been a significant drop in the liquidation of SPACs since this change. This development has likely affected how investors vote regarding the proposed merger.

From figure 1.4, we see that most SPACs in 2021 are searching for a target and that almost 300 SPACs have filed for an IPO. Most of the SPACs that went public in 2020 have announced or completed a merger. However, quite a few SPACs are still searching for a company to take public. We also see that almost all SPACs going public between 2009 and 2019 completed a merger, whereas around 11% of SPACs liquidated. Figure 1.5 shows that the average proceeds in an IPO (not counting 2008) has remained relatively unchanged. Furthermore, the average proceeds for SPACs have increased in almost a linear fashion and are close to the 2003-2021 historical average of traditional IPOs.

Figure 1.4: SPACs by status
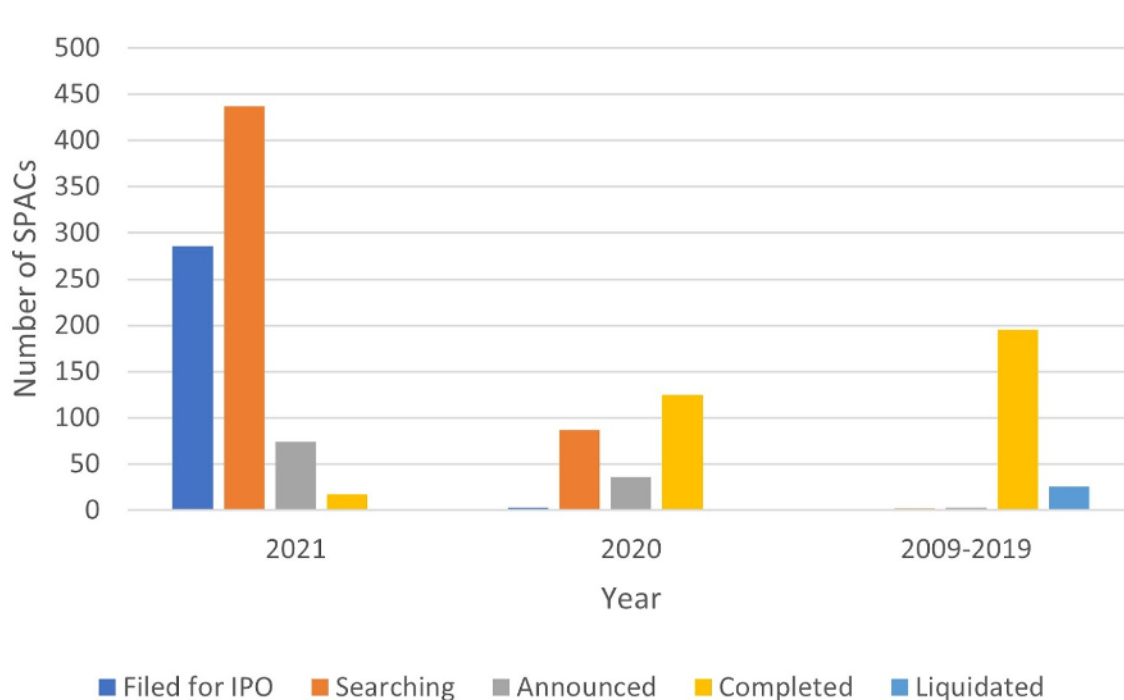
Figure 1.4 shows the status of US SPACs on the 9th of November 2021.

Figure 1.5: SPAC IPOs vs. traditional IPOs: Average proceeds
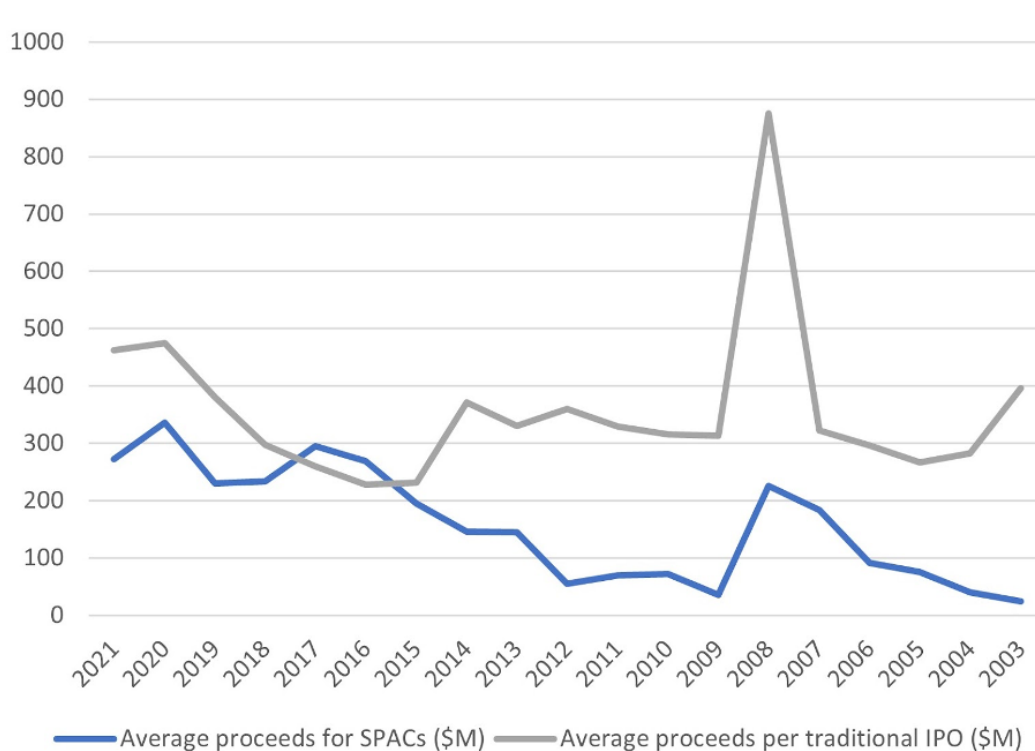
Figure 1.5 shows the average proceeds of SPACs and traditional IPOs between 2003 and the 9th of November 2021.

1.3.8   Going forward

With the great rise in the number of and proceeds from SPAC IPOs, it can be expected that competition among SPACs for favorable deals will increase. This competition and increase in average size might impact how future SPAC deals are structured. The increase in the average SPACs can also make it possible to merge with larger companies than before.

2 Literature Review

There are few publications on SPACs, and as such, the major publications have a broad focus and touch on several aspects related to SPACs. Few articles focus on firm characteristics. However, a firm's decision on which way to go public will naturally relate to more than the business itself. In the following section, we will therefore examine the existing literature on SPACs. In particular, we will focus on the components the target company finds most important. We believe these to be the cost of going public and the effort and speed at which they go public. We also want to look at what investors' returns are currently like and what the academic literature has found on firm characteristics of the companies that have gone public through a SPAC.

2.1 Costs of going public through a SPAC versus a traditional IPO

It is a common perception, also reinforced by sponsors that merging with a SPAC is a cheaper way to go public. This view is, however, heavily opposed by academic literature. Gahng et al. (2021) look at the cost of SPAC mergers and IPOs as a percentage of net proceeds and post-issuance market capitalization. Cost is defined as the difference between the market value of the new securities and the net cash received by the target company. They find that the cost as a percentage of proceeds and market capitalization is significantly higher for SPACs in the 10th, 25th, median and 75th percentile. Ghang et al. conclude that from a private operating company's point of view, merging with a SPAC is a much more expensive way of going public than a traditional IPO. The authors also comment on the possibility of a selection bias, meaning that firms merging with a SPAC are fundamentally different from firms choosing an IPO. However, they do not believe selection bias could explain the large differences in cost.

Klausner et al. (2021) also find that the SPAC structure proves more expensive than an IPO. They find that from the $10 raised per share from investors, only a median of $6.67 remains for each outstanding share. Furthermore, they compare this dilution to the post-merger stock performance and find that the level of dilution reflects the share price six months after the merger. They argue that the SPAC covers redemption-related costs

and that the SPAC investor's share in the merged company is affected by the change in funding. As a result, the public investors, who hold shares from pre to post-merger, bear the cost of the SPAC. In contrast to Ghang et al., they conclude that going public through a SPAC has been cheap for the target company. The authors question whether that situation is sustainable, as it is difficult to believe that SPAC shareholders will continue to take those losses.

The two papers use different assumptions and measures for their conclusion. However, it is interesting to note that the conclusions are the exact opposite. More research is needed to gain increased understanding of who actually bears the cost built into the SPAC structure.

2.2   Speed of going public through a SPAC versus a traditional IPO

In the financial press, the speediness of a SPAC merger compared to the traditional IPO route is frequently highlighted. However, this idea is not necessarily supported in academic literature. Ghang et al. find that it on average takes 143 days from the announcement date to the business consummation, based on a sample of SPAC mergers from 2017 to 2020. For traditional IPOs, Chaplinsky et al. (2017) found that the median time frame from Draft Registration Statement (DRS) to IPO date is 104 days, and according to Ghang et al., it takes a minimum of a month or two to prepare the DRS. This suggests that the median time required for a traditional IPO is at least five months.

Consequently, as the authors point out, the time-saving advantage may not be as valid as perceived for going public through a SPAC merger. Nevertheless, the authors also underscore the difficulty of pinpointing how much time it takes to do an IPO. Most companies wanting to do an IPO take actions accordingly, e.g., hiring a CFO with public reporting experience and hiring an auditor. Moreover, the preparation needed for a DRS also varies across different firms. For example, biotechnology firms without revenues have an uncomplicated structure making it more of a "copy and paste" procedure. Other companies are more complex in terms of related party transactions, corporate governance, and compensation issues.

2.3   Investors' return on SPACs

Ghang et al. look into SPAC returns in the two life cycles of a SPAC, namely pre- and post-merger. For the pre-merger period investor return estimation, they implement an optimal trading strategy as a basis. Utilising their optimal trading strategy, they find that SPACs going public between January 2010 and December 2018 earn investors an annualised return of 12.0%. Furthermore, they find that larger SPACs provide a slightly higher return than smaller SPACs. The authors also comment on the downside-protected nature for investors in the SPAC IPO. The funds are placed in a trust earning interest and therefore equivalent to a default-free convertible bond, but with added warrants. In the post-merger period, Ghang et al. look at the return from buying the stock on the first day of trading and selling after one year. They find that the equally weighted and value-weighted one year return is -7.3% and 13.6%, respectively.

In contrast, they find that the equally weighted one year return on warrants is 64.4%. Ghang et al. argue that not all of the returns for warrants compared to SPACs can be associated with risk as the yield is both substantially higher and persistent throughout the nine years they analyse. They instead speculate that warrants may have been undervalued during the merger process.

Ghang et al. find that the stock price, post-merger, performs worse when more warrants and rights are outstanding. They leave the causality open as it is unclear if the investors overlook the cost of dilution or if low-quality SPACs have more warrants and rights. Additionally, they comment on how the dilutive nature of warrants is a drag on investors' upside potential.

It is well documented that sponsors often forfeit shares and warrants. This can help gain better negotiating terms for the SPAC as it limits dilution for all investors. The sponsor can also forfeit shares and warrants to PIPE investors to give better terms for financing or other investors in exchange for not redeeming. However, Ghang et al. also comment on more recent and increasing changes in Sponsor profits as earnout provisions are added. They find that in 30% of the deals, the sponsor shares have vesting provisions meaning that a certain number of founding shares will be forfeited if the post-merger company performs under a certain level.

2.4   Characteristics of target firms

Bai et al. (2021) examine the differences in fundamental characteristics between SPAC and traditional IPO firms based on a sample of companies that went public between 2003 and 2020. They specify a cross-sectional regression model in which the SPAC indicator was the main explanatory variable. GICS (Global Industry Classification Standard) sectors, public year, and country are used as control variables. The dependent variable was various fundamental characteristics from the first annual report after going public. One of their main findings was that SPAC firms, on average, had 36.9% and 52% less total assets and total revenues, respectively. Bai et al. assert that this implies that SPAC firms tend to be smaller.

Moreover, they find that SPAC firms, on average, are 27% younger. However, this effect is only significant at the 10% level. Furthermore, they find that SPAC firms are 8 percentage points less profitable as a share of total assets. They also find that cash flow volatility is significantly higher for SPAC firms at the 5% significance level. Cash flow volatility is used as a more direct proxy for the firm's riskiness, and thus their finding indicates that SPAC firms tend to be riskier. In addition, it is found that SPAC firms have significantly lower cash as a share of total assets, which indicates that SPAC firms tend to be more limited on cash. Additionally, they find that SPAC firms enjoy significantly higher revenue growth over the first, second, and third year after going public than traditional IPO firms. The authors argue that it contradicts the prevailing view that SPACs are a market for "lemons".

Based on these findings, Bai et al. conclude that SPAC firms represent more speculative investment than traditional IPO firms. Bai et al. also argue that the smaller size and riskiness of SPAC firms make them less attractive for investment banks. However, they believe that sponsors can assess these firms' real value and potential. The safe harbor protection allows the sponsor and target company to use forward-looking projections without the risk of a lawsuit should the results not reach the estimated projection.

We find the findings of Bai et al. intriguing. However, we argue that some aspects of their approach represent weaknesses to their analysis. Firstly, their dataset includes observations from before 2010, at which point in time, some fundamental changes were

made to the SPAC structure, as mentioned in the SPAC development paragraph. Secondly, they use net income to total assets instead of EBIT to total assets as a profitability measure. Thirdly, when they use the first annual report after going public, they do not control for the recognition of additional acquired intangible assets triggered by the SPAC merger itself. The latter two shortcomings will be elaborated on and addressed in later sections of our thesis.

Ghang et al., using a sample of firms that went public from 2013 to 2020, found that on average and for all quartiles, the age of SPAC firms was higher. This may seem to contradict Bai et al.'s finding. However, their findings are based on descriptive data and not regression analysis.

2.5   Regulatory treatment between SPACs and IPOs

Gahng et al. (2021) argue that safe harbor protection offered to SPACs can result in a regulatory arbitrage where companies that want to maximise their pre-money value choose to go public through a SPAC. Furthermore, Bai et al. note that for companies experiencing challenges in closing the information asymmetry gap, which is reportedly the case for several SPAC target firms, this opportunity to provide and explain forecasts may play an important function. Nevertheless, Klausner et al. argue that the reason why the safe harbor does not apply to IPOs is to ensure the integrity of the information provided to potential investors when a company initially enters the public markets. They note that the discrepancy in the regulation of the two routes to going public may, as a result, undermine the protection otherwise set in place.

Klausner et al. (2021), therefore, argue that differential treatment is not justifiable as both the SPAC-merger and traditional IPO essentially serve the same function, to raise equity in the public markets. They propose imposing underwriter liabilities equal to what the investment banks face. However, Bai et al. (2021) disagree with this proposal as they assert that the increased litigation risk for intermediaries (sponsors and underwriters) may undermine an important economic role of the SPAC market. That is, it bypasses the downside-averse financial intermediaries and facilitates risk-taking but potentially value-creating companies to go public.

2.6 Concluding remarks on the literature review

Academic researchers seem to agree that SPACs entail higher costs as a going public method. However, researchers have concluded differently as to who bears this cost. The existing literature also challenges the speed advantage of SPACs as it might not be as substantial as generally portrayed. However, the SPAC structure and the regulatory arbitrage possibility of including forward-looking statements seem to play a key role in facilitating smaller and more uncertain firms to go public. Thus, the general belief that SPACs are smaller and riskier seems to be supported by academia.

3 Hypotheses

The financial press often asserts that firms going public through a SPAC are generally riskier than firms going public through an IPO. This assertion is, in part, based on SPACs being less regulated than traditional IPOs, oriented towards more uncertain & less profitable firms and volatile stock performance. There is also the odd example of seemingly unqualified sponsors and companies listing through a SPAC after initially failing to do an IPO, which adds to the notion. The assertion is also supported by academic literature as presented in the literature review. Based on general impressions painted by the financial press and academic findings, we expect SPAC firms to be smaller and less profitable.

The safe harbor protection that applies to merger proposals is arguably more important for firms earlier in their lifecycle and thus inherently more uncertain with respect to future earnings potential. Furthermore, we assert that this protection is even more important for firms that are relatively more tech and innovation-oriented as their products and services are less validated. Additionally, the consensus seems to be that SPACs are more oriented towards innovative tech companies. Therefore, we expect to find a relatively large share of tech and innovation-oriented companies in the SPAC sample. Combining the general impression, from financial media and academic literature, with the safe harbor protection, we form the following main hypotheses:

Hypothesis 1. SPAC firms are smaller than traditional IPO firms.

We will use both total assets and total revenues as proxies for the firm's size. Thus, we expect to find that total assets and revenues are significantly smaller for SPAC firms than traditional IPO firms.

Hypothesis 2. SPAC firms are less profitable than traditional IPO firms.

This will be examined by using EBIT and EBITDA as a share of total assets as proxies for profitability.

Hypothesis 3. SPAC firms are more technology-based and innovative than traditional IPO firms.

To examine this hypothesis, we will use the share of intangible assets and research and

development as proxies for the degree of technology-based and innovative business.

4 Data and empirical specification

4.1 Data Samples

4.1.1 Selection period

This thesis looks at US SPACs that completed a merger between January 2016 and December 2020. There are three main reasons for using data from this time frame. The first reason stems from the major changes in the SPAC structure post-2010, as introduced in the SPAC development section. We believe these changes can create a fundamental difference in the types of firms merging with a SPAC before and after 2010. The second is due to data unavailability in SPAC Research between 2010 and 2016. SPAC Research is the main source used for gathering the identifying information on US SPAC mergers. The third reason is that the fundamental data from Compustat is annual data. Therefore, we do not include SPACs that completed a merger in 2021 as they have yet to file their annual report.

We use the same dataset period for both traditional IPOs and SPACs. This means that we only look at operating companies doing an IPO between January 2016 and December 2020. We assume that a company choosing to go public via a SPAC could, at the same time, instead have chosen to go public via an IPO and be publicly traded at approximately the same time. This is probably not far from the actual situation and a reasonable assumption, as Ghang et al. note in their research paper. This assumption ensures a comparable dataset for these different types of going public methods.

4.1.2 Company identifiers

In order to gain an identifier for companies that went public through a SPAC, we use the tickers of completed SPAC mergers found in SPAC Research. SPAC Research is a site that manually gathers data from SEC filings. SPAC Research proved more reliable and accurate than SPAC merger data gathered from the SDC Platinum database. SPAC Research also provided the date at which a SPAC had consummated its merger with the target company, which is needed to know which annual report to analyse. We gathered the nine digit CUSIP of US IPOs from SDC Platinum for the traditional IPO sample. We

excluded IPOs in which the company was a blank check company.

4.1.3   Data collection

The tickers for SPAC firms and the CUSIPs for traditional IPO firms were used to collect fundamental data from Compustat. The ideal fundamental data selection would be the annual data for the year prior to going public, as this would not include any balance sheet changes that may arise from the merger process. However, we found the fundamental data pre going public to be less reliable, consist of alternative accounting standards, and contain a substantial amount of missing values. Therefore, we concluded that using the first annual report after going public, which is required to satisfy the strict disclosure requirements imposed on public companies by the SEC, was necessary to ensure the data's quality. To address the issue of specific changes in the balance sheet that is triggered by the SPAC merger, we also collected data on acquired intangible assets and goodwill. This particular issue is addressed under the empirical specification section and throughout the analysis discussion. The fundamental data collected from Compustat are reported in millions (USD) for all items. We highlight that net cash flow from investments is negative for cash outflows and positive for cash inflows.

4.1.4   Data limitations

We found that using the ticker information from SPAC Research gave us the most reliable output when gathering fundamentals from Compustat. However, it only provided fundamentals of 96 of the total of 142 firms that had completed a SPAC merger in our selection period. Using company names to generate the GVKEY or CUSIP in the Compustat generator tool did not provide additional SPAC firm fundamentals. As a result, our data sample only makes up a part of the population. Nevertheless, Compustat is our best source of fundamentals, and the sample is sufficiently large and representative. We find it reasonable to assume that the data from Compustat is a random sample of the whole population, meaning that there is no selection bias.

4.2   Descriptive statistics

4.2.1   Industry segmentation

Table 4.1 describes the sector composition of firms going public through SPACs and traditional IPOs. We observe that the consumer discretionary and industrials sector are clearly overrepresented in the sample of SPAC firms compared to traditional IPO firms. Another material difference between the two samples is the substantial difference in the health care industry. This is mainly driven by the high number of biotechnology firms that go public through a traditional IPO.

We do not observe a difference in the technology-oriented industry as we initially expected. However, tech-oriented firms that 'disrupt' more traditional sectors and industries can be hidden under more traditional sectors. Case in point; Opendoor is an information technology-based platform that streamlines the process of selling, buying, and financing homes. However, it is classified as a firm within the real estate sector, which is indeed true. Therefore, it could still be true that technology-based firms are overrepresented in the SPAC sample compared to the traditional IPO sample. On the other hand, the point of tech firms possibly being hidden could be valid for traditional IPO firms as well and thus signify SPACs are less tech-oriented. Therefore, we would need to catalog each firm's business model in order to make broader assertions about firms' tech orientation.

Table 4.1: Descriptive: Industry segmentation

	Share of SPAC-frims	Share of Traditional IPO-firms
Consumer Discretionary	21.1%	7.4%
Consumer Staples	7.4%	2.7%
Energy	9.5%	3.1%
Financials	4.2%	11.1%
Health Care	11.6%	48.1%
Information Technology	15.8%	15.2%
Industrials	21.1%	4.9%
Materials	5.3%	1.1%
Real Estate	1.1%	2.9%
Telecommunication Services	2.1%	3.3%
Utilities	1.1%	0.2%

Table 4.1 presents the industry segmentation of firms that went public through SPACs and traditional IPOs. The SPAC and traditional IPO sample consist of 95 and 550 firms, respectively. Only firms that went public between 2016 and 2020 are included.

4.2.2   Size

Table 4.2 displays the total assets and revenue distributions. We observe that total assets and revenues are higher for the SPAC sample through the first quartile, median and third quartile. However, the mean is higher in the traditional IPO sample, implying that this sample has a materially longer 'right-tail', especially in terms of total revenues. However, it is necessary to consider the industry segmentation in each sample before drawing any conclusions.

Table 4.2: Descriptive: Size

	Mean	Median	Min	q1	q3	Max	N
Total Assets (MUSD)							
SPAC	1187	434	0.938	158	1809	29929	95
Traditional IPO	1218	299	2.48	120	991	37535	550
Total Revenues (MUSD)							
SPAC	376	154	0	33.3	466	4371	95
Traditional IPO	622	64.2	0	0.258	287	69690	550

Table 4.2 reports the descriptive statistics of total assets and total revenues for SPAC and traditional IPO firms. No adjustments, other than removing missing values, are made to this data.

4.2.3   Profitability, intangible assets and R&D

We disagree with the choice of Bai et al. (2021) to use net income to assets as a profitability measure. There are two reasons as to why we believe that EBIT to assets (EBIT/TA) provides a more robust measure of a firm's profitability. Firstly, EBIT/TA is not disturbed by differences in capital structure and tax items that can occur through, e.g., different interest costs and periodizing effects. Secondly, net income should be measured against committed equity as it is the return on equity. Ideally, we would use a normalised EBIT over net operational assets, which are necessary for generating cash flows from the core business activity. This would provide the correct picture of the profitability of the underlying core business. However, this is not practically possible to apply on our large samples, given how these accounting standards specify the reporting requirements. Nevertheless, the aim is to analyse the relative profitability of two large samples of

firms. This implies that the absolute profitability is not of interest and that firm-specific differences in respect to a non-normalized EBIT and the degree of net operating assets relative to total assets would get evened out. Therefore we argue that our approach to measure the relative profitability of the two samples is sufficient on a qualitative basis.

In table 4.3, distributions of different fundamental measures are presented as a share of total assets. We note that both median and average EBIT/TA (total assets) are negative and that SPACs generally have better distribution values than traditional IPOs. The high number of unprofitable companies is not uncommon as going public is a highly used method of funding continued growth, even if the company is yet to be profitable.

Table 4.3: Descriptive: Profitability, Intangible Assets and R&D

	Mean	Median	Min	q1	q3	Max	N
EBIT / TA							
SPAC	-9.6%	-1.0%	-139.0%	-17.0%	5.4%	23.1%	95
Traditional IPO	-16.9%	-11.3%	-139.0%	-29.3%	2.3%	27.7%	550
EBITDA / TA							
SPAC	-5.9%	1.9%	-130%	-15.7%	9.5%	27.5%	94
Traditional IPO	-15.4%	-10.9%	-130%	-27.9%	4.0%	29.2%	540
Intangible Assets / TA							
SPAC	26.4%	11.0%	0.0%	0.1%	47.6%	94.7%	95
Traditional IPO	10.8%	0.3%	0.0%	0.0%	8.3%	87.9%	550
R&D / TA							
SPAC	6.5%	3.0%	0.0%	0.5%	8.6%	43.8%	48
Traditional IPO	17.4%	14.3%	0.0%	6.1%	24.4%	97.2%	404

Table 4.3 reports the descriptive statistics of EBIT, EBITDA, Intangible Assets and R&D as share of total assets for SPAC and traditional IPO firms. No adjustments, other than removing missing values, are made to this data.

Earlier in this section, we expressed our expectation that SPAC firms may be more technology-oriented. However, the industry segmentation did not support our notion. Nevertheless, based on arguments in the hypothesis section, we assert that there is still some reason to expect that SPAC firms are relatively more technology-based and innovative. We test this hypothesis by using intangible assets and R&D as proxies for a company's technology-based business and innovation level.

We observe that intangible assets as a share of total assets are higher in the SPAC sample on the mean, median, and all quartiles. It may therefore seem like a clear tendency. However, we need to keep in mind that the SPAC process itself drives some of the differences. This will be elaborated in the empirical specification section.

The share of R&D seems to be substantially lower for the SPAC sample and would, if true, contradict our expectation. However, one substantial explanatory factor for this material difference might be the large share of biotechnology firms in the traditional IPO sample, which by nature have very high levels of R&D.

4.3   Adjustments in dataset

To ensure the maximum number of observations, especially the number of SPAC firms, removing outliers has been the preferred method for removing observations that would, by itself, substantially influence the regression estimate. In cases where it proved challenging to pinpoint whether some data points were outliers or not, we winsorized the data at 1st and 99th percentiles. However, this did not affect the results notably.

As we log-transform both total assets and total revenues, we needed to remove all zero values in these variables. That is why we lose some of the observations when estimating the regression for total revenues. Moreover, we remove a clear outlier that reports 69.7 billion USD in total revenues. Another major adjustment we make in the dataset is replacing missing values with zero in acquired intangible assets and acquired goodwill. The majority of observations in these variables contained missing values. We argue that acquired intangible assets and acquired goodwill might often be left unreported when a company has made no acquisitions. Thus, it will be noted as a missing value when it should have been reported as zero. However, we also show the regression estimates for some models where the missing values are removed to show additional robustness.

4.4   Empirical specification

In the empirical analysis we use cross-sectional data and estimate various versions of these regression equations:

$$Y_i = \beta_0 + \beta_1 SPAC_i + \beta_2 AcqIntan_i + \alpha_k + \mu_t + \gamma_a + \epsilon_i \tag{4.1}$$

$$Y_i = \beta_0 + \beta_1 SPAC_i + \alpha_k + \mu_t + \gamma_a + \epsilon_i \tag{4.2}$$

Y_i denotes the various firm characteristics that we examine, as presented in the descriptive statistics section. For the regressions on size, we log-transform the dependent variables total assets and revenues. The main independent variable of interest is the binary variable $SPAC_i$, which equals one if the firm went public through a SPAC merger and zero otherwise.

The independent variable $AcqIntan_i$ denotes acquired intangible assets (incl. goodwill) as a share of total assets from the going public year. As the SPAC process allows the opportunity to identify additional intangible assets in contrast to the traditional IPO process, it is necessary to control for this possibility when using the annual report after going public. By including acquired intangible assets as a control variable, we account for the discrepancy in fundamental data, driven by the different ways of going public. We mainly want to examine the inherent cross-sectional differences between firms that go public through SPAC instead of a traditional IPO. However, for some of the characteristics, we also estimate equation 4.2 to establish and reflect around financial statement analysis issues caused by the SPAC process.

α_k mainly denotes a control for GICS sub-industries, i.e., it controls for the variation between sub-industries. However, in some of the regression models, we control for GICS industry level. μ_t denotes the fixed effect of the going public year and γ_a controls for accounting standards.

5   Empirical Analysis

Our main findings of SPAC firm characteristics will be presented in this section. Please refer to the data section and appendix A for more details on datasets used in each of the following regression estimates.

5.1   Size

Table 5.1 presents the results of our regressions on size, in which we use both total assets and total revenues as measures for the size of the firm. Column (1) reports the results in which the annual report of the year before going public is used. It shows that firms going public through a SPAC are, on average, 52.9% smaller[1] than firms going public through a traditional IPO, at a 5% significance level.

Column (2) reports the same regression on data from the first annual report after going public. The estimated magnitude of the SPAC coefficient is reduced. However, the significance level increases. The main reason for this decrease in differences is probably due to the SPAC merger process where assets, including intangible assets, may be revalued and thus result in an 'inflated' balance sheet. In contrast, the IPO process does not allow asset revaluation, and thus, asset differences may be underestimated. This is most likely what we observe in column (2).

The regression in column (3) includes acquired intangible assets as an explanatory variable. By doing this, we control for the discrepancy in the balance sheets of firms going public through the two different methods. As expected, the magnitude of the coefficient increases while still being significant at the 1% significance level. The results indicate that SPAC firms, on average, have 53.1% lower total assets than traditional IPO firms. This implies that SPAC firms are significantly smaller than traditional IPO firms.

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[1]To interpret the coefficient in a model where the dependent variable is logged, and the explanatory variable is not logged (log-level model), one has to exponentiate the coefficient, subtract it by one and finally multiply by 100. By doing this operation, one is left with the percentage change in the dependent variable as a result of one unit change in the explanatory variable. For example, we compute the effect of being a SPAC firm on firm size using the results in column (1) in this way: $(\exp(0.753) - 1) * 100 = 52.9\%$.

Table 5.1: Regression estimates: Size

	Dependent variable:			
	ln(Total Assets)			ln(Total Revenues)
	(1)	(2)	(3)	(4)
SPAC	−0.753**	−0.648***	−0.758***	−0.892***
	(0.332)	(0.251)	(0.232)	(0.336)
Acquired Intangible Assets			0.909	
			(0.655)	
Constant	6.955***	7.321***	7.404***	8.104***
	(1.093)	(0.905)	(0.890)	(0.767)
Observations	780	643	643	500
R^2	0.432	0.445	0.448	0.483
Adjusted R^2	0.334	0.335	0.336	0.344
GICS sub-industry FE	Yes	Yes	Yes	Yes
IPO year FE	Yes	Yes	Yes	Yes
Accounting std FE	Yes	Yes	Yes	Yes
Annual report before IPO year	Yes	No	No	No

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5.1 investigates differences in size (total assets and total revenues) between firms going public through SPAC and firms going public through the traditional IPO route. GICS sub-industry dummies, IPO year dummies and accounting standard dummies are included. Robust standard errors (clustered on the sub-industry level) in parenthesis. Fundamentals from first annual report after going public if not stated otherwise. FE: Fixed effects. Acquired intangible assets is from the first annual report after going public and is measured as a share of total assets.

Our result is in line with the previous findings of Bai et al. (2021), however, they estimate a smaller difference in size, at -36.9%. We control for the more disaggregated sub-industry level in obtaining our regression estimate. However, when running a regression with the more aggregate sector level, we receive smaller coefficient estimates than what Bai et al. report. Nevertheless, we argue that we have enough variation in our observations at the more disaggregated levels and, as a result, can use a more disaggregated industry segmentation control variable.

From column (4) in table 5.1 we see that SPAC firms have 59% lower revenues than traditional IPO firms at the 1% significance level. This is a sizable difference and is in line with the findings of Bai et al., which estimated a difference of 52%.

In this section, we find that SPAC firms tend to be substantially smaller than traditional IPO firms when comparing total assets and revenues.

5.2   Profitability

Table 5.2 presents the estimates of SPAC firms' profitability relative to the profitability of traditional IPO firms. Column (1) reports that SPAC firms, on average, are 6.9 percentage points less profitable than traditional IPO firms when looking at EBIT as a fraction of the firm's total assets. However, this is only significant at the 10% level, and the regression estimate does not control for acquired intangible assets. The low significance level might be due to the relatively low number of observations and thus smaller variation in data, as Bai et al. find a similar effect at 5% significance level. However, they do not control for acquired intangible assets, which might overestimate the effect. They also used net income instead of EBIT, making the results less comparable.

When we control for acquired intangible assets in column (2), we observe that the magnitude of the effect decreases and that the significance disappears, as could be expected from the discussion in the previous section. Based on our data and regression estimates, we cannot infer that SPAC firms are less profitable on average.

Table 5.2: Regression estimates: Profitability

	Dependent variable:		
	EBIT/Total Assets		EBITDA/Total Assets
	(1)	(2)	(3)
SPAC	−0.069*	−0.056	−0.058
	(0.042)	(0.047)	(0.048)
Acquired Intangible Assets		−0.102	−0.059
		(0.186)	(0.139)
Constant	0.170**	0.160*	0.377***
	(0.085)	(0.084)	(0.084)
Observations	643	643	632
R^2	0.372	0.376	0.400
Adjusted R^2	0.245	0.248	0.281
GICS sub-industry FE	Yes	Yes	Yes
IPO year FE	Yes	Yes	Yes
Accounting std FE	Yes	Yes	Yes
NAs replaced with 0	No	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5.2 investigates differences in EBIT and EBITDA, as share of total assets, between SPAC and traditional IPO firms. Robust standard errors (clustered on the sub-industry level) in parenthesis. Dependent variable is winzorized at 1th and 99th percentile in all columns. Fundamentals from first annual report after going public if not stated otherwise. Acquired intangible assets is from the first annual report after going public and is measured as a share of total assets.

5.3   Intangible Assets

Table 5.3 presents the regression estimates for intangible assets as a share of total assets. Column (1) shows the results using the annual report post going public without controlling for the share of acquired intangible assets. We observe that SPAC firms, on average, have a 9.4 percentage points higher share of intangible assets, significant at the 10% level. Column (2) reports a similar regression as column (1) with the difference being that the annual report is from the first year before going public. We observe a negative coefficient, and the significance is lost. Compared to the first regression, we lose a disproportionately high number of observations on SPAC firms. Thus, the representativeness of the data can be questioned.

Table 5.3: Regression estimates: Intangible Assets

	Dependent variable:			
	Intangible Assets/Total Assets			
	(1)	(2)	(3)	(4)
SPAC	0.094*	−0.058	0.067	0.009
	(0.055)	(0.051)	(0.164)	(0.041)
Acquired Intangible Assets same year			0.622***	0.696***
			(0.176)	(0.099)
Constant	0.051	0.236*	0.153*	0.115
	(0.117)	(0.138)	(0.084)	(0.101)
Observations	643	775	107	643
R^2	0.467	0.354	0.731	0.559
Adjusted R^2	0.359	0.243	0.429	0.468
GICS sub-industry FE	Yes	Yes	Yes	Yes
IPO year FE	Yes	Yes	Yes	Yes
Accounting std FE	Yes	Yes	Yes	Yes
NAs replaced with 0	Yes	No	No	Yes
Annual report before IPO year	No	Yes	No	No

Note:	*p<0.1; **p<0.05; ***p<0.01

Table 5.3 investigates differences in intangible assets as share of total assets between SPAC and traditional IPO firms. Robust standard errors (clustered on the sub-industry level) in parenthesis. Fundamentals from first annual report after going public if not stated otherwise. Acquired intangible assets is from the first annual report after going public and is measured as a share of total assets.

As previously discussed, we find it reasonable to replace missing values in acquired intangible assets with zero. This is done in column (4), and it serves as our main regression estimate as it addresses both the lack of observations and controls for the share of acquired intangible assets. However, the regression returns a result where the magnitude of the effect is close to zero and is non-significant. The finding contradicts our hypothesis that SPAC firms have a larger share of intangible assets due to being more technology and innovation-oriented.

By looking at the combined results presented in table 5.3, we establish that the SPAC merger in itself drives the difference in the share of intangible assets between SPAC firms and traditional IPO firms. Consequently, from a financial statement analysis point of

view, the SPAC merger makes the balance sheet of SPAC firms riskier as it gets 'inflated' with additional intangible assets compared to traditional IPO firms. A greater share of intangible assets would imply greater risk in book values as goodwill and other intangible assets usually are first in line to disappear when the business incurs losses, and the outlook turns for the worse (Plenborg and Kinserdal, 2021). However, we underscore that the SPAC-process itself does not make the underlying business riskier; it only affects the riskiness of the book values. As a result, we infer that both investors and creditors should consider this consequence of the SPAC process when analysing SPAC firms' financial statements.

Intangible assets are more prone to be identified as a result of mergers and acquisitions than if they were internally generated, and in fact, goodwill may only be identified through such transactions. This implies that two identical tech-oriented firms may differ substantially in their share of intangible assets because one grows organically while the other grow through mergers and acquisitions. Consequently, more intangible assets may be identified in the latter of the two firms. As a result, we note an apparent weakness in using the share of intangible assets as a proxy to the level of technology and innovation in a firm.

This section establishes that SPAC firms do not have a significantly higher share of intangible assets when controlling for acquired intangible assets in the given year. However, post going public, we find that SPAC firms have a larger share of intangible assets than traditional IPO firms, at the 10% level. As a result, we infer that the SPAC merger process drives the difference in the share of intangible assets post-merger.

5.4   Research & Development

According to U.S. GAAP, research & development expenditure includes software expenses, amortisation of software costs, and company-sponsored research and development (Compustat Capital IQ, 2021). We note that unlike the IFRS (IAS 38), in which the development part of R&D costs is required to be capitalised, all internal R&D costs are expensed as incurred (KPMG, 2021). The consequence is that firms reporting under U.S. GAAP will have less capitalised software and other R&D-related costs on their balance sheet. As only acquired R&D may be capitalised for firms reporting under U.S.

GAAP, R&D costs may serve as a better proxy to the share of software costs and other internally generated R&D. As almost all companies in our sample report according to the U.S. GAAP, R&D expenses may serve as a good proxy for the level of technology and innovation in our firm sample.

Table 5.4 reports the regression estimates for R&D as a share of total assets. The regression in column (1) reports no significant difference in R&D expenditure between SPAC and traditional IPO firms. As a result of removing missing values, we lose a disproportionately high number of observations on SPAC firms. This could affect the representativeness of the dataset.

Table 5.4: Regression estimates: Research & Development

	Dependent variable:	
	R&D / TA	R&D / Total Revenues
	(1)	(2)
SPAC	−0.030	5.935
	(0.035)	(8.025)
Acquired Intangible Assets	−0.066	
	(0.056)	
Constant	−0.017	−5.178
	(0.079)	(5.307)
Observations	450	314
R^2	0.390	0.183
GICS sub-industry FE	Yes	Yes
IPO year FE	Yes	Yes
Accounting std FE	Yes	Yes
NAs removed	Yes	Yes

Note: $^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table 5.4 examines the difference in R&D as share of total assets and total revenues, between SPAC and traditional IPO firms. Robust standard errors (clustered on the sub-industry level) are reported in parenthesis. Fundamentals from first annual report after going public. Acquired intangible assets is from the first annual report after going public and is measured as a share of total assets.

Column (2) reports R&D expenditure as a share of total revenue. However, there is no significant difference between SPAC and traditional IPO firms.

As discussed in our hypothesis section, we expected R&D to be significantly higher for SPAC firms. Our findings indicate no difference in R&D expenditure between SPAC and traditional IPO firms. However, when looking more closely we find that many of the SPAC firms that reported missing values in R&D have businesses that are inherently contingent on R&D. Case in point; Priority Technology Holdings Inc. provides software based consumer and commercial payment solutions that inherently are dependent on continued R&D. However, in the holding company's consolidated income statement R&D as an item is not found. We infer that a holding company's structure causes R&D to be unreported, i.e., R&D expenses are reported in the holding company's subsidiaries. We find it to be the case for several other R&D-dependent companies[2]. We note that this poses a weakness to our analysis and thus our finding.

Based on our regression estimates, we fail to find evidence that SPAC firms have a significantly higher share of R&D. SPAC and traditional IPO firms seem to have the same level of R&D expenditure in relation to their size. We do, however, note that unreported values in the dataset may pose a weakness to our regression estimate.

5.5   Debt and cash

Table 5.5 reports the results for additional balance sheet sizes. Columns (1) and (2) show no significant differences in the share of total debt and long-term debt between the SPAC and traditional IPO firms.

Given the findings of Bai et al. (2021) combined with our finding that SPAC firms are riskier, it might be expected that SPAC firms are less qualified to bear debt on their balance sheet than traditional IPO firms. Furthermore, we have established that SPAC firms have a higher share of intangible assets post going public, which, all else equal, also suggests that SPAC firms should be less qualified to bear debt. Therefore, we find it somewhat surprising that SPAC firms seem to have the same level of debt financing as traditional IPO firms.

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[2]Other similar cases of SPAC firms that are R&D dependent and report missing values in R&D are, for example, VivoPower, NextDecade, and Verra Mobility.

Table 5.5: Regression estimates: Debt and cash

	Dependent variable:		
	Total Debt/TA	Long-Term Debt/TA	Cash/TA
	(1)	(2)	(3)
SPAC	0.053	0.052	0.049
	(0.042)	(0.039)	(0.048)
Constant	0.186*	0.108	−0.053
	(0.100)	(0.067)	(0.149)
Observations	597	634	645
R^2	0.393	0.377	0.440
Adjusted R^2	0.317	0.303	0.326
GICS sub-industry FE	No	No	Yes
GICS industry FE	Yes	Yes	No
IPO year FE	Yes	Yes	Yes
Accounting std FE	Yes	Yes	Yes
Aquired Intangibles FE	Yes	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5.5 examines the difference in total debt, long-term debt and cash, as share of total assets, between SPAC and traditional IPO firms. Robust standard errors (clustered on the sub-industry level) are reported in parenthesis. Fundamentals from first annual report after going public. Acquired intangible assets is from the first annual report after going public and is measured as a share of total assets. Refer to Appendix A1.1 for descriptive statistics.

The regression results in column (3) report no significant difference between SPAC and traditional IPO firms in their share of cash to assets. This contradicts Bai et al.'s finding, as they find that SPAC firms have significantly lower cash as a share of total assets.

Based on our regression estimates in this section, we conclude that SPAC firms have similar levels of debt financing as traditional IPO firms. Furthermore, we do not find any significant difference in cash as a share of total assets between the two firm samples.

5.6 Cash flows

Table 5.6 reports our regression results on net operating cash flow and net cash flow from investment activities. We see from column (1) that SPAC firms have a 6 percentage points lower cash flow from operations, significant at the 10% level. This finding is in line with

our expectations as the result indicates that SPAC firms' ability to generate cash from the core activity is lower than traditional IPO firms. This indicates that SPAC firms are less profitable. Higher business risk is also associated with lower net operating cash flow, which indicates and adds to the notion that SPAC firms are riskier.

It could, however, be pointed out that operational cash flows may vary significantly from year to year. As a result, we should rely on average operational cash flows spanning several years. However, we argue that we have a large enough sample to even out such cycles. The same argument applies to cash flows from investing activities.

Table 5.6: Regression estimates: Cash flows

	Dependent variable:	
	Net Operational CF/TA	Net Investment CF/TA
	(1)	(2)
SPAC	−0.060*	0.110**
	(0.032)	(0.044)
Constant	0.344***	−0.327***
	(0.064)	(0.078)
Observations	642	642
R^2	0.419	0.187
Adjusted R^2	0.300	0.020
GICS sub-industry FE	Yes	Yes
IPO year FE	Yes	Yes
Accounting std FE	Yes	Yes
Aquired Intangibles FE	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5.6 investigates differences in net cash flow from operations and investment activities, as share of total assets, between SPAC and traditional IPO firms. Robust standard errors (clustered on the sub-industry level) are reported in parenthesis. Fundamentals from first annual report after going public. Acquired intangible assets is from the first annual report after going public and is measured as a share of total assets. Note that net cash flow from investment activities are reported in negative numbers for cash outflows and positive numbers for cash inflows. Refer to Appendix A1.2 for descriptive statistics.

As the data section mentions, cash outflows from investments are reported in negative numbers. Column (2) therefore shows that SPAC firms on average have 11 percentage points less net investment as a share of total assets, significant at the 5% level. This

result contradicts our initial assumption as we would expect SPAC firms to have higher investment levels than traditional IPO firms.

5.7   Earlier stage narrative

Thus far in our analysis section, we find little confirmation with our initial beliefs. We estimate that SPAC firms are smaller than traditional IPO firms. However, we do not find evidence that SPAC firms have more R&D or intangible assets than traditional IPO firms. We also do not find a difference in debt financing, which indicates a similar financial structure. Our initial industry segmentation also does not indicate that SPAC firms are more tech-oriented. Except for firm size, there seems to be little difference between SPAC and traditional IPO firms when looking at fundamental data. However, our finding that SPACs on average have 53.1% and 59% lower assets and revenues, respectively, which is also in line with the findings of Bai et al., is quite substantial. In the following section, we will argue that SPAC firms seem to go public at an earlier stage in the firm's life cycle than traditional IPO firms. We call this the earlier stage narrative. Our findings and understanding of SPAC firms' placement in the conventional firm life cycle is not, to our knowledge, raised or discussed in existing academic literature.

The startup financing cycle towards an IPO can, in broad terms, be summarised by figure 5.1. However, it is important to note that as no startup is the same, some companies might differ from the general path laid out in this paragraph. The first investment in a business is made by founders, family and friends, and/or angel investors. The capital raised is called seed capital, and as the company has no track record, this investment is risky. As the company reaches certain milestones, for example, being profitable or gaining a regular customer base, they increase their financing. Usually, a startup holds three financing rounds, and at each stage, the investment is less risky as the company has a better track record and key milestones reached. It is usual for venture capital (VC) firms to participate in these financing rounds depending on the VC firm's risk level. Private equity (PE) firms are also common in the third financing round. The startup financing cycle also illustrates a firm's general life cycle regarding revenue.
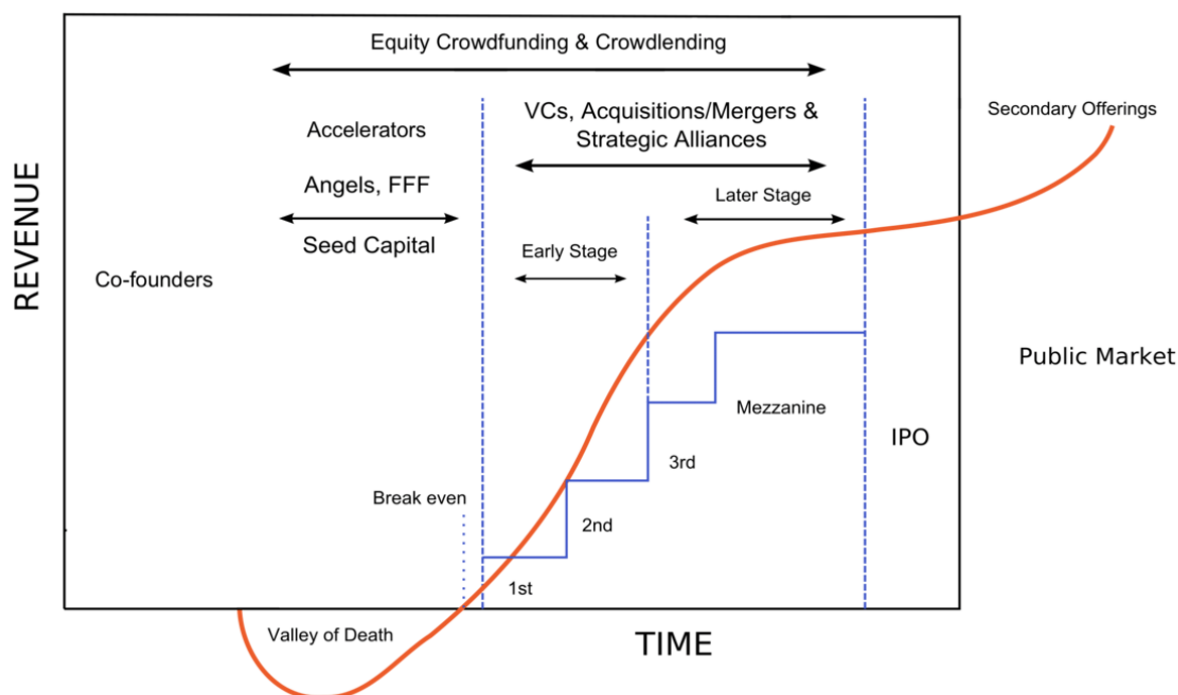
Figure 5.1: Startup Financing Cycle

Figure 5.1 shows the financing cycle of startups on their road towards a traditional public offering. Initially, seed capital is raised, and as the company reaches certain milestones, the startup will raise additional capital. The types of investors that participate generally change as the firm grows. Source: Wikipedia (2021).

For VC firms, it is important to have an exit from the firm in which they are invested. The reason is two-folded. Firstly, it is because they need to give a return to their investors. Secondly, venture capitalists are specialised early investors and therefore not oriented towards being invested as the company matures. The two main exiting strategies are to either do an IPO making their shares publicly tradable, or having the company and thus their shares acquired by a larger company. Figure 5.2 shows the change in the preferred exit strategy by venture capital invested firms.
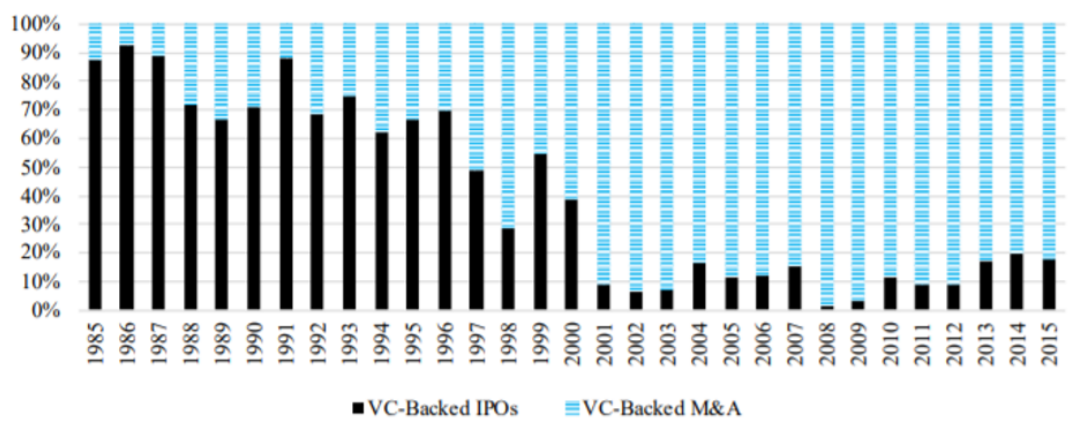
Figure 5.2: Exit strategy of venture firms

Figure 5.2 shows to what degree venture capital firms use IPOs versus M&As as their exit strategy. Source: Lemley and McCreary (2019).

Previous studies have viewed sponsors as similar to general partners in private equity (Gahng et al., 2021) and SPACs as a one-shot PE deal (Dimitrova, 2016). We agree with Ghang et al., noting that many high-profiled sponsors are also capable venture capitalists[3]. Therefore, we infer that sponsors may be viewed as similar to venture capitalists or a PE general partner. As noted earlier in this section, VC investment can occur in all financing rounds, and PE investments are also common in late financing rounds. Thus, if SPACs and sponsors are similar to PE or VC, it can be argued that sponsors are interested in firms earlier in their life cycle.

According to investopedia[4], a company will most commonly end its equity financing with a series C. This is the same as third-round financing, as presented in figure 5.1. They also note that this late-stage financing can be used to boost valuation prior to an IPO. Investopedia's description of the typical company valuation after a series C financing is in line with *Corporate Finance* by Berk and DeMarzo (2020). In the illustration "*From Launch to Liquidity*"(found in Appendix A2), Berk and DeMarzo describe the typical amounts and investors involved in a successful startup company's financing rounds. Their depiction also refers to a series D financing as being common. While Berk and DeMarzo do not comment on what each financing series entails, Investopedia notes that series

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[3]For example, Forbes list these individuals as capable (but fallible) VC-investors: Vinod Kohsla, founder and CEO of the VC fund Khosla Ventures; Chamath Palihapitiya, founder and managing partner of the VC fund Social Capital; and Peter Hébert, co-founder and managing partner of the VC fund Lux Capital (Forbes, 2021).

[4](Reiff, Nathan, 2021)

D financing is even more oriented towards boosting valuation towards an IPO than a series C financing is. Berk and DeMarzo note that a firm's typical age is five years when performing series C financing, six years when performing series D, and nine years when undertaking an IPO.

In line with our earlier stage narrative and the paragraphs above, we should expect SPAC firms to be smaller and younger than traditional IPO firms. We have already established, in line with previous studies, that SPAC firms are smaller than traditional IPO firms. Given the amount raised in later financing cycles as described by Berk and DeMarzo, the substantial difference in firm size between SPAC and traditional IPO firms could imply that SPAC firms skip a financing series compared to the normal IPO route. We have not researched firm age. However, as stated in the literature review section, Bai et al. (2021) found that SPAC firms, on average, are 27% younger than traditional IPO firms. In accordance with the example figure by Berk and DeMarzo, where a company is nine years at the time of their IPO, a 27% younger company would then be almost two and half years younger. Thus, SPAC firms would fit the age difference relative to a traditional IPO firm doing a late D series financing event. Our lack of findings in characteristics that distinguish SPAC firms from traditional IPO firms further supports that the two groups are similar, only differentiated by their place in the firm life cycle.

There are two other supporting arguments for our earlier stage narrative. The first argument is Bai et al.'s findings that show a significantly higher revenue growth rate post IPO for SPAC firms. The growth findings are in line with what we would expect as the ability to sustain high growth decreases as a firm grows larger. As a result, companies earlier in the firm life cycle are expected to have a higher revenue growth rate than firms later in the firm life cycle (Koller et al., 2020). The second supporting argument is our finding of lower net operating cash flow to assets. Dickinson (2011) establishes that firms earlier in their life cycle are expected to have lower net operating cash flow. The authors' finding is reasonable as one would expect cash flow from operations to increase and the firm to be more cost-efficient as it matures.

According to figure 5.2, undertaking an IPO as an exit strategy is no longer the most used method. As SPACs, in practice, is an IPO, it could be implied that venture capitalists would not look to SPACs as a primary exit as M&As are a preferred exit strategy.

Therefore, it can be argued that venture capitalists should have a low level of connection to SPACs. However, we do not argue to what degree SPACs are an exit to venture capitalists. We argue that SPACs in and of themselves are interesting for VC and PE partners. This is because venture capitalists and some PE general partners are experts in early-stage investments and finding interesting pre publicly traded business cases. Thus, this, in fact, supports our earlier stage narrative, as it could be that SPACs allow PE general partners or venture capitalists to have companies skip a financing series and go straight for an IPO. It also allows an eventual easy exit. As a result, SPACs allow smaller private investors access to smaller and younger firms with higher risk and reward.

There are two possible weaknesses to our earlier stage narrative. First, we would expect profitability to increase with firm age as the company matures. This is because expenses relative to firm size are generally higher in the beginning, while revenues are also yet to materialise fully. In our regression, we do not find profitability to be higher for traditional IPOs, even though our regression indicates the expected direction of the coefficient. Nevertheless, Bai et al. find the profitability of SPAC firms to be 8 percentage points lower, which is in line with our expectation. The second reason is that Bai et al. argue that riskiness could be inherent to SPAC firms. The fact that SPAC firms tend to be smaller implies, in and of itself, that SPAC firms are riskier. This is, among other reasons, due to smaller firms having a limited ability to handle external market shocks and a relatively weak power in negotiating and competing with external actors. Indeed, firm size is frequently used in bankruptcy models and attains a relatively great explanatory power in bankruptcy outcomes (Plenborg and Kinserdal, 2021). Therefore, we conclude that these two possible weaknesses should not affect our earlier stage narrative.

We choose not to draw conclusions on the possible implications cash flow volatility and net investment cash flow can have on our earlier growth stage narrative. This is because it is not established how cash flow volatility is expected to be when looking at a firm's life cycle. Although, one would expect higher net investment cash flow to assets to be higher for firms in the growth stage than in the mature stage. It is not established how net investment cash flow is throughout the growth stage. As reported in Compustat, net investment cash flow also includes different investment activities, which adds to the difficulty of gaining expected results of growth stage firms. Minton and Schrand (1999) also note that higher cash flow volatility lowers investments in R&D, advertising, and

capital expenditures. As Bai et al. find cash flow volatility for SPAC firms to be higher, the findings of Milton and Schrand make it even more challenging to comment on how net investment cash flow predicts a firm's place in the life cycle.

Future studies looking into a SPAC firm's placement in the company life cycle could look at the number of financing rounds that SPAC firms hold versus traditional IPO firms.

We find strong evidence and arguments in support of our earlier stage narrative. SPAC firms seem to go public earlier in a typical firm's life cycle than traditional IPO firms. Although Bai et al. comment on SPAC firms being too risky for investment banks, they base this assessment on, among other characteristics, SPACs' higher cash flow volatility. We argue that SPACs allow younger and smaller firms, which are earlier in their life cycle, to be publicly traded. We also argue that this draws the attention of venture capitalists and some PE general partners specialising in assessing these earlier stage firms. However, we believe that more research should be conducted with a basis in our earlier stage narrative, as this narrative was not the basis of our research, but rather a result of our findings and previous studies.

6 Conclusion

In this thesis, we examined if SPAC firms have different characteristics than traditional IPO firms. We used data on SPACs completing a merger and companies going public in an IPO from 2016 to 2020. We conducted cross-sectional regressions on different fundamental data that we expected to be different for SPAC firms and traditional IPO firms. In particular, we expected to find that SPAC firms were smaller and less profitable than traditional IPO firms. We also expected SPAC firms to be more innovative and technology-oriented, and as proxies to this, we looked at R&D and intangible assets as a share of total assets.

We found that SPAC firms, on average, are substantially smaller than traditional IPO firms. In fact, more than 50% smaller when looking at both total assets and total revenues. However, we did not find evidence that SPAC firms are less profitable or more technology-oriented. SPAC firms seem to be quite similar to traditional IPO firms, with the major difference being related to size.

As a result, we establish an earlier stage narrative that explains this size difference. Our earlier stage narrative implies that SPAC firms are similar to traditional IPO firms. However, they seem to go public earlier in a standard firm's life cycle. By looking at our findings and the existing literature, we find strong evidence for this theory. There are five main reasons in support of our earlier growth stage narrative. The first is our finding that SPAC firms are substantially smaller than traditional IPO firms. The second is the finding of Bai et al. of SPAC firms being 27% younger than traditional IPO firms. The third supporting argument is another finding by Bai et al. which shows that post IPO revenue growth is significantly higher for SPAC firms. The fourth is the lack of findings for other factors that might indicate a difference between SPAC and traditional IPO firms. The first three arguments are in line with what is expected if a company is earlier in the firm life cycle. The earlier stage narrative is further reinforced when combined with a lack of other explanatory factors. The fifth supporting argument is that several SPAC sponsors are experienced venture capitalists and PE general partners. This is because venture capitalists are specialists in early-stage firms and thus not oriented towards investing in firms that are close to being publicly traded. We witness that several

sponsors are capable venture capitalists, which further supports that SPAC firms are an early investment opportunity. It also indicates that it is the SPAC structure that allows companies to go public at an earlier stage in their life cycle.

We also briefly comment that SPACs, as a result, allow private individuals easier access to investing in earlier stage firms and thus offer higher risk and reward.

Our thesis contributes to the existing literature in two ways. First, we deliver more robust results as we control for increases in acquired intangible assets. This is because the SPAC process, as a result of technically being a merger, can increase intangible assets and inflate the balance sheet. Second, we establish the earlier stage narrative that explains the difference between SPAC and traditional IPO firms. Our finding that SPAC firms are earlier in a firm's life cycle than traditional IPO firms has not been discussed in the existing literature.

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Appendix

A1   Appendix A

A1.1   Descriptive statistics

Table A1.1: Debt and cash

	Mean	Median	Min	q1	q3	Max	N
Debt / TA							
SPAC	26.4%	20.1%	0.0%	1.3%	45.4%	91.1%	90
Traditional IPO	14.9%	4.3%	0.0%	0.0%	23.8%	92.2%	509
Long-term Debt / TA							
SPAC	23.4%	16.0%	0.0%	0.4%	44.1%	99.7%	93
Traditional IPO	13.0%	2.9%	0.0%	0.0%	19.7%	91.2%	543
Cash / TA							
SPAC	27.3%	10.6%	0.0%	3.5%	47.8%	97.8%	95
Traditional IPO	38.9%	28.1%	0.0%	8.2%	66.7%	99.9%	550

Table A1.1 reports the statistical distributions of total debt, long-term debt and cash, as share of total assets, for SPAC and traditional IPO firms. These relate to the regressions estimates in table 5.5.

Table A1.2: Cash flows

	Mean	Median	Min	q1	q3	Max	N
Net operational CF / TA							
SPAC	-5.2%	0.0%	-91.6%	-12.9%	5.1%	30.6%	94
Traditional IPO	-11.4%	-7.4%	-91.6%	-21.7%	3.1%	30.6%	550
Net Investment CF / TA							
SPAC	-11.8%	-5.5%	-75.2%	-20.2%	-1.1%	24.7%	94
Traditional IPO	-17.8%	-7.3%	-86.2%	-29.6%	-1.1%	24.7%	550

Table A1.2 reports the statistical distributions of net cash flows from operations and net cash flow from investing activities as share of total assets for SPAC and traditional IPO firms. These relate to the regressions estimates in table 5.6.

A2   Appendix B

A2.1   From Launch to Liquidity
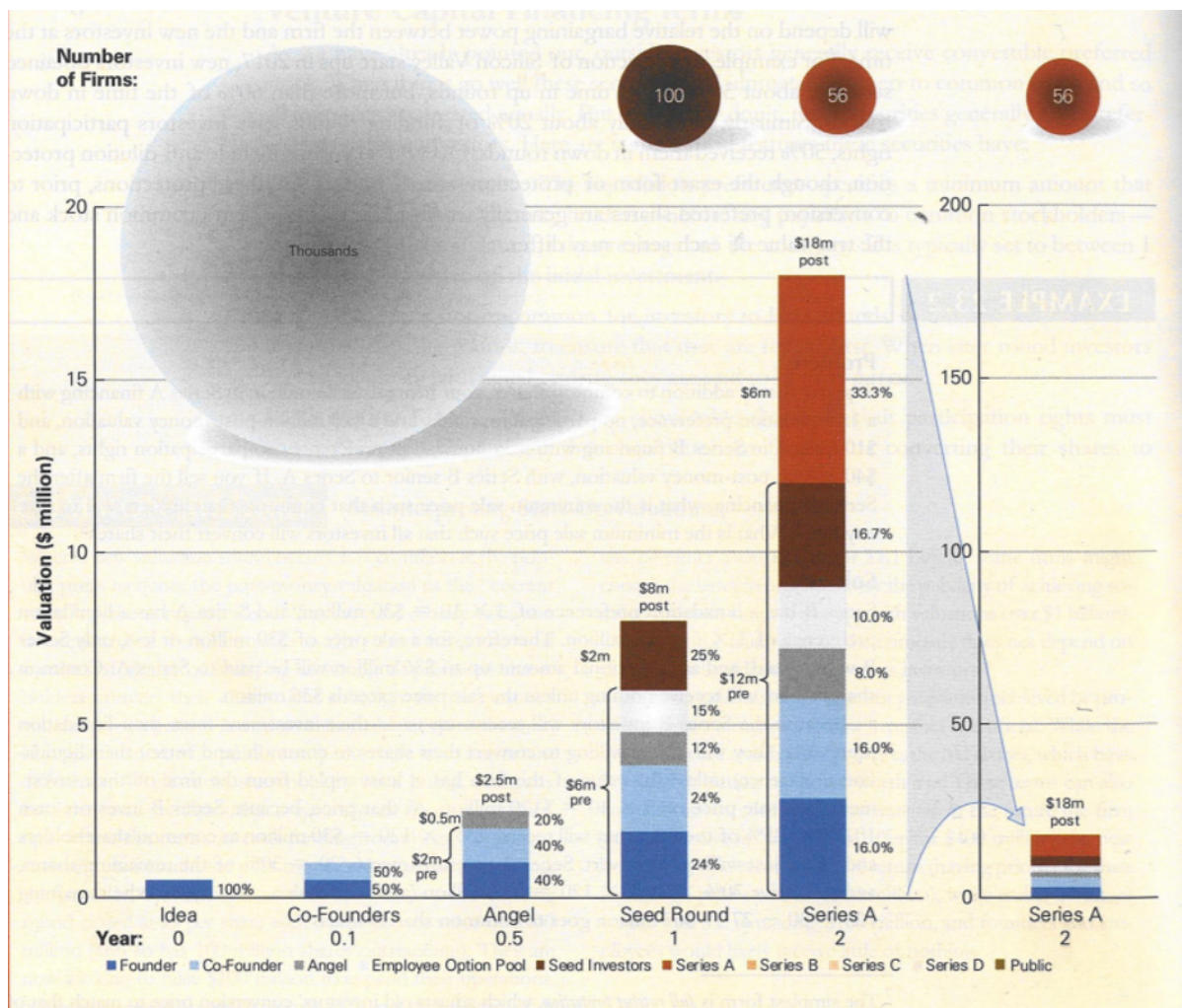
Figure A2.1: From Launch to Liquidity (part 1)

Figure A2.1 illustrates the typical funding round trajectory of a successful firm (part 1/2). Source: *Corporate Finance* by Berk and DeMarzo (2020)

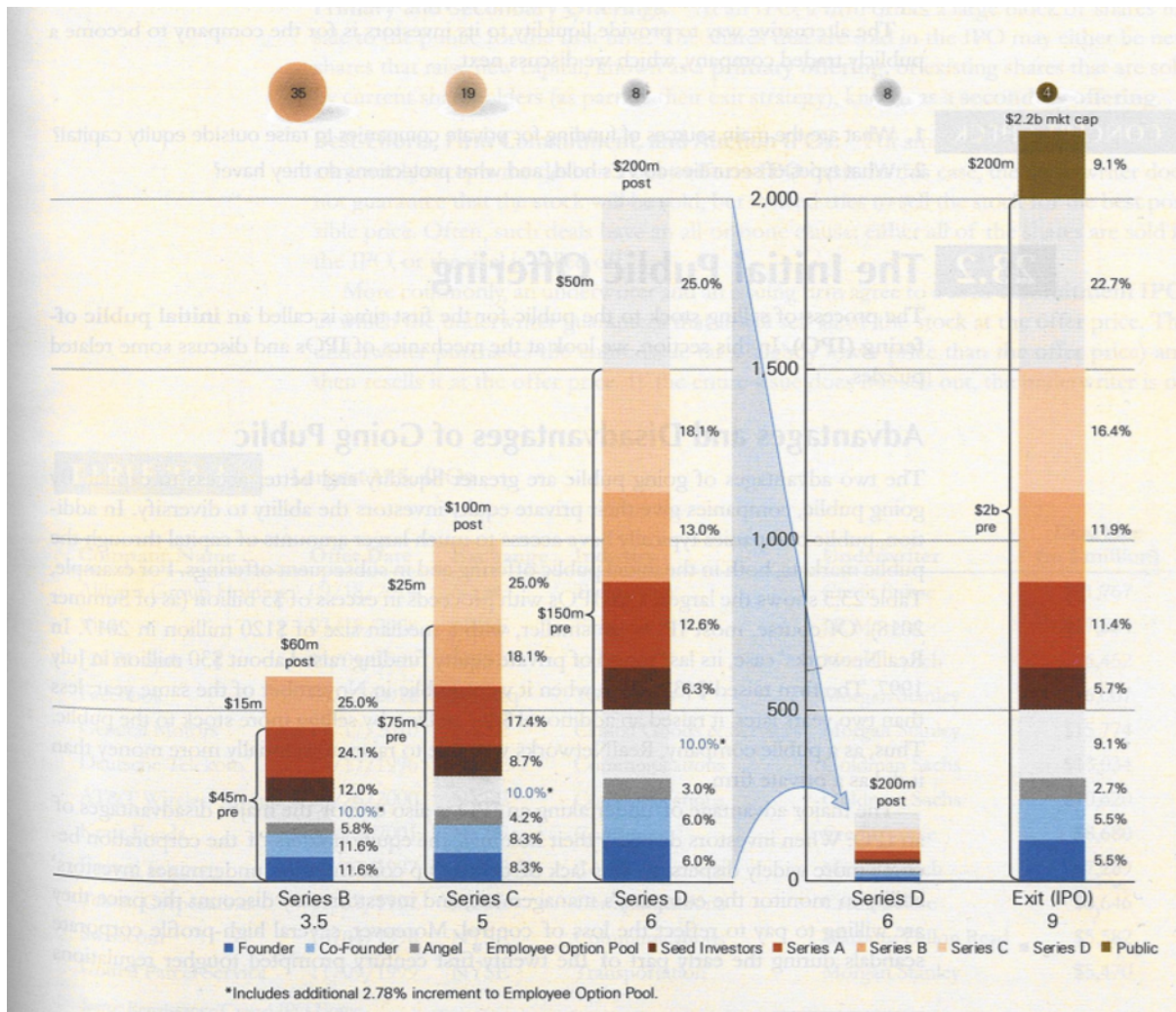**Figure A2.2:** From Launch to Liquidity (part 2)

Figure A2.2 illustrates the typical funding round trajectory of a successful firm (part 2/2). Source: *Corporate Finance* by Berk and DeMarzo (2020)