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Playing Poker without Looking at the Cards—Does it Even Matter?

A Study Exploring the Relationship between SPAC Characteristics
and Stock Performance

Bachelor's Thesis, 15hp

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Abstract

In 2020, the recent boom of Special Purpose Acquisition Companies (SPACs) resulted in this financial vehicle overtaking traditional IPOs as the leading firm structure for taking companies public. The dormant structure of SPACs forces investors to primarily rely on the management team to find value-creating acquisitions. Thence, this thesis aims to find SPAC characteristics capable of being deemed as determinants for stock performance. Utilized variables are gender diversity in management, operational experience and specified scope of geography or industry. The investigated sample consists of 59 SPACs that consummated a business combination between 2014 and 2020. This study applies an event study methodology to obtain abnormal returns related to business combination specific events, which is followed by a multiple linear regression in order to derive stock performance determinants. We report non-significant results across all variables and event windows, although gender diversity indicates a positive short term relationship to performance, which is in accordance with preceding studies. Operational experience shows contradictory negative outcomes. In contrast, the coefficients for Scope show supporting positive trends with prior research. While the insignificant results of this study may be insignificant, they do serve a worthy cause as this study supplements prior research with meaningful insights.

JEL Classification: G12, G14, G17, G34

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1 Introduction

For anyone following the U.S. financial markets, the surging phenomenon of Special Purpose Acquisition Companies (SPACs) has been hard to avoid. The modern SPAC format was conceived in the early 1990s, eventually creating the foundation for the first documented SPAC initial public offering (IPO) in 2003 (Seber, 2017). Since then, SPAC IPOs have accounted for a respectable, although varying, proportion of total IPOs, overtaking traditional IPOs in 2020 (SPAC Analytics, 2021). As of May, SPACs have raised \$100 billion in 2021, an increase of approx. 23%, compared to the record-breaking year of 2020 (Graffeo, 2021). One of the major factors contributing to the recent uproar in SPAC activity has been the interest and engagement of a considerable number of renowned investors and companies. For instance, popular activist investor, hedge fund manager and billionaire William Ackman and former Facebook executive Chamath Palihapitiya created their own SPACs in 2020 (Gara and Haverstock, 2020). Moreover, companies such as the famed American company Virgin Galactic, created by billionaire entrepreneur Richard Branson, became the world's first publicly traded commercial spaceflight company in October 2019 via a SPAC merger with Social Capital Hedosophia (Virgin Galactic, 2019).

SPACs—a type of blank check company—are publicly listed shell companies whose sole goal is to merge with a private company, thus making the newly formed business combination publicly listed (Dimitrova, 2017). The Securities and Exchange Commission (SEC) labels SPACs as blank check companies under the 6770 Standard Industrial Classification (SIC) code and defines the shell companies as popular vehicles for transitioning a company from a private company to a publicly traded company (SEC, 2021). The SEC (2021) further states that SPACs, compared to traditional IPOs, provide private companies with the opportunity to go public with enhanced deal terms, such as lesser risk of underpricing and a greater possibility to influence the transaction. The New York Stock Exchange (NYSE)(2021, para. 1) provide more context, explaining that “SPACs bring together experienced management teams, often comprising industry veterans, private equity sponsors or other financing experts who can leverage their expertise to raise capital to acquire, then operate, a new public company within 24 months or less”. Due to the nature of SPACs, compared to traditional IPOs where investors can rely on extensive data on past performance and substantial information, investors are left to solely confide in the management's

ability to acquire a value generating target company. Pre-existing literature has, in part, focused on what drives the likelihood of successful mergers, i.e. merger determinants, such as research by Kim (2009), Cumming et al. (2014) and Lakicevic et al. (2014). In addition, other authors have complemented the field by investigating incentives structures (Jog and Sun, 2007; Nilsson, 2018) as well as pricing and performance (Dimitrova, 2017; Jenkinson and Sousa, 2011; Kolb and Tykvová, 2016). Nevertheless, the defining comparison introduced by Cumming et al. (2014) still holds today, namely that research on SPACs is still comparatively meagre, to that of traditional IPOs. Literature exploring SPAC performance is, as previously stated, naturally disqualified from the comfort of utilizing historic performance to observe long-term trends and thereafter draw conclusions. The dormant firm structure of SPACs instead leaves stakeholders with a conjecture-based approach, driven by characteristics, when determining abnormal stock performance. Consequently, when analysing SPAC performance, distinct pre-disclosed characteristics are key to finding any explanatory determinant. Recurring characteristics found in earlier empirical research within the broader IPO literature have often been centered around management composition and traits. These empirical studies have found that companies with gender-diverse boards are often experiencing superior stock returns (Smith et al., 2005; Welbourne, 1999; Welbourne et al., 2007). Moreover, Kim (2009) suggests that SPAC market value corresponds to the perceived experience of its managers, providing a second intriguing characteristic. Lastly, Lewellen (2009) found SPACs to primarily focus on the geography or industry of which the management had expertise within, thus indicating a third potential performance determinant. Jointly, the aforementioned characteristics serve as prominent potential determinants for stock performance.

The purpose of this thesis is therefore to contribute to the existing empirical literature on SPACs in multiple ways. Firstly, this thesis complements previous studies on SPAC performance by expanding the studied traits and characteristics of SPACs that could be deemed as performance determinants. Secondly, there is a shortcoming of empirical studies of SPACs. Compared to the number of studies focused on reverse-mergers and IPOs in general, the studies on SPACs are lagging behind in numbers. Furthermore, the majority of earlier literature on SPACs were conducted before the recent surge in SPAC IPOs and this study will thereby contribute by including recent market data, thus setting this thesis apart from earlier literature.

The remainder of the thesis is structured as follows: *The second section* describes and explains the fundamental aspects of the modern SPAC and the history leading up to it. *The third section* presents a theoretical review of existing literature on SPACs and compares it to studies in similar fields, followed by the development and presentation of three hypotheses. *The fourth section* explains the data collection process and the methodology used in the empirical study. *The fifth section* summarizes the properties of the sample and presents the empirical results. *The sixth section* analyses the results and discusses the findings in comparison to earlier research. *The seventh section* concludes and suggests further research.

2 Special Purpose Acquisition Companies

2.1 History of SPACs

Even though SPACs remain fairly unchanged since their inception, they have been subject to structural developments. The first generation of SPACs, which were conceived during the 1990s, had strong connections to the blank-check companies of the 1980s (Riemer, 2007). These blank-check companies were often involved in penny stock fraud and manipulation, due to the marginal disclosure requirements (Castelli, 2009). Until the 1990s, the blank check companies were practically unregulated since they did not trade on national exchanges and did not meet the criteria for federal securities regulation, thus acting unnoticed by regulatory authorities (Heyman, 2007). As time progressed, blank-check offerings increased in numbers and drew the attention of the SEC, which in 1988 recognized blank-check companies as an instrument for fraudulent practices (Riemer, 2007). In 1990, the US Congress responded to the widespread fraud by enacting the Penny Stock Reform Act (PSRA) which authorized the SEC to issue rules related to blank-check companies. As a result of the PSRA, the SEC issued rule 419 which made it almost impossible for blank-check managers to conduct fraudulent practices (Riemer, 2007). At this time, David Nussbaum¹ saw the opportunity to create a second-generation blank-check company that could create value for shareholders even though it was exempt from rule 419 since companies that hold more than 5 million USD in net tangible assets are not defined as penny stocks. However, Nussbaum—and later other managers—voluntarily complied with almost all of the restrictions of rule 419, thus satisfying regulators and ensuring a higher degree of investor protection (Riemer, 2007; Heyman, 2007). Nussbaum and other managers who adhered to rule 419, even though they were exempt from it, are frequently referred to as the creators of the first generation SPAC. Even though SPACs gained traction during the 1990s, the following tech boom resulted in easy access to capital for companies looking to go public, making SPACs redundant.

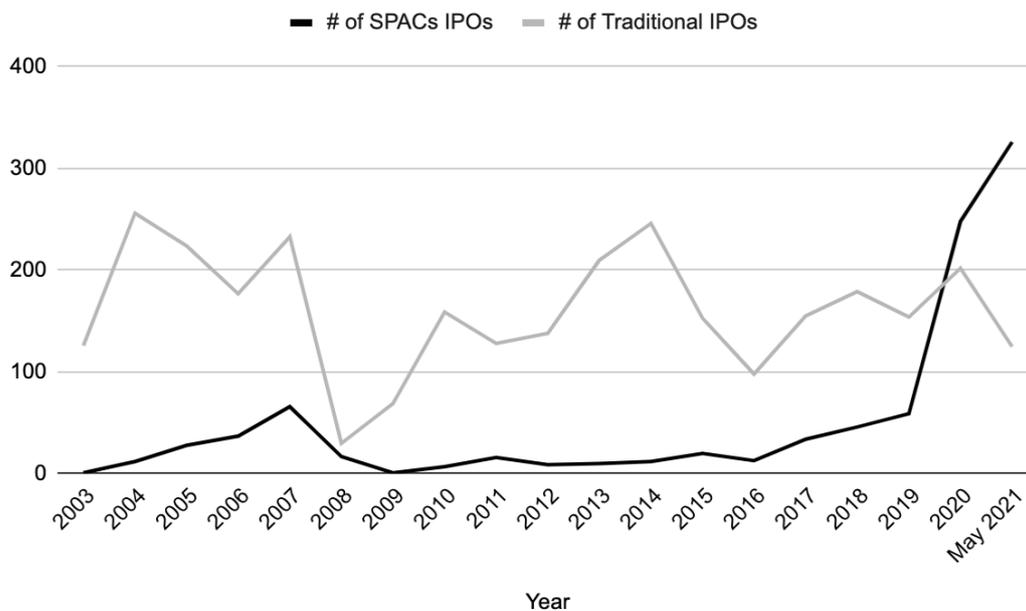
The second generation of SPACs emerged during the early 2000s. In the years leading up to the financial crisis they increased rapidly in numbers, as well as in IPO size. During this period, prominent investment banks were drawn to-

¹**David Nussbaum** is an experienced front figure for SPACs. He is credited with creating the modern SPAC and has since founded Early Bird Capital which has underwritten over 70 SPAC IPOs.

wards underwriting SPACs, and noteworthy target companies such as American Apparel went public by merging with Endeavour Acquisition Corp which consequently resulted in SPACs gaining additional reputation (Castelli, 2009). At the beginning of the second generation of SPACs, they were predominantly traded on the Over-The-Counter Bulletin Board (OTC-BB) which mainly consists of thinly traded securities that do not meet the listing requirements of the national exchanges (Riemer, 2007). Therefore, when the American Stock Exchange (AMEX) allowed SPACs to be listed in 2005, the reputability of SPACs increased further. These factors can be seen as contributing in the first surge of SPAC IPOs.

Following the major implications induced by the financial crisis, there was only one new SPAC listed during 2009 (Lakicevic et al., 2014). In the following years, SPACs experienced another renaissance, although SPAC IPOs per year only modestly increased up until 2016 (SPAC Analytics, 2021). Within this time period, SPACs underwent institutional changes, such as SPAC founders and underwriters committing more of their own capital along with an increase in the percentage of IPO proceeds stored in the trust account (Lakicevic et al., 2014). Since then, SPACs have experienced an unprecedented yearly increase of IPOs in the U.S. financial markets, rising from 34 SPACs in 2017 to 326 as of May 2021, as can be seen in figure 1.

Figure 1: Historical activity of yearly SPAC IPOs and traditional IPOs



2.2 The Life Cycle

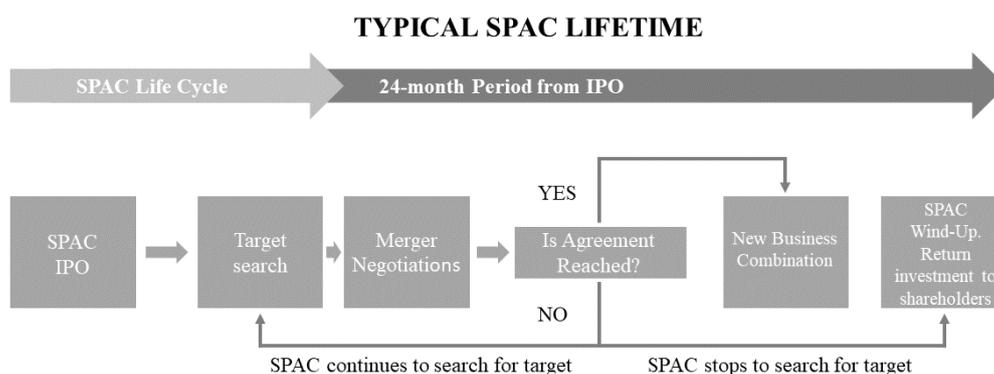
A SPAC is usually founded by a small number of financial or operational experts, also referred to as the founders (Jenkinson and Sousa, 2011). The SPAC structure displays many similarities with a traditional private equity fund; the main difference being that private equity structures raise capital from closed pools of professional investors, while SPACs raise capital from the public markets (Nilsson, 2018). Therefore, when the founders have created the SPAC, the next step is to publicly list the company through an IPO process, which will raise the proceeds needed to make an acquisition by issuing units that contain one share and at least one warrant. Lewellen (2009) identifies three mutually exclusive periods, where the first one is the post-IPO pre-announcement period. This stage spans from the IPO up until the SPAC announces that they have found a target company to merge with (Cumming et al., 2014). When the IPO is consummated, a majority of the proceeds is directly transferred to a trust account, where they will be kept until a business combination occurs, or if the SPAC liquidates. There is currently no federal regulation that requires specific amounts to be put in these trust accounts, although the exchanges where SPACs are listed impose restrictions regarding trust accounts. For example, if a SPAC were to be listed on NYSE, they would have to store 90% of the IPO proceeds in a trust account (NYSE, 2017). From the date of the IPO, the founders usually have 18 months to announce a merger, and 24 months from the IPO to consummate the merger. If the founders fail to announce and complete a merger within this time period, the entire value of the trust account will be distributed to each investor at their pro-rata share (Jenkinson and Sousa, 2009).

The SPAC enters the next phase when they have identified a suitable target to pursue. In this phase, the management team conducts thorough research and provides the SEC with the necessary documents that have to be filed before the actual acquisition. There are now several criteria that the proposed acquisition must fulfil. Firstly, the size of the target company must exceed 80% of the net asset value of the SPAC. Next, if this requirement is met, a date for a shareholder meeting will be set, at which a vote regarding the acquisition will be held (Cumming et al., 2014). To fulfil the acquisition, a majority of the shareholders must vote in favour of the acquisition and the percentage of investors who vote against the acquisition and want to redeem their shares must not exceed a certain limit, which is usually between 20-40% (Cumming et al., 2014). When the vote has

been held, an 8-k form must be published which is required by the SEC to inform shareholders about significant events. If the shareholders voted against the proposed business combination, the management has two possible options going forward. Firstly, if there is time remaining in the 24-month lifespan of the SPAC, the managers can continue to search for a new suitable target. Alternatively, if the managers are unable to continue the search for a new target, the SPAC liquidates and the investor pro-rata shares will be distributed (Jenkinson and Sousa, 2011). “To summarize, we can consider a SPAC as a single-deal private equity fund, where investors have voting rights” (Cumming et al., 2014: 200).

The following and final phase is when the SPAC and the target company merges and forms a new publicly listed entity, through a reverse merger (Rodrigues and Stegemoller, 2011). The SPACs trust account now becomes available liquidity for the acquired company and the SPAC ceases to exist. Depending on the SPAC structure, the founders and sponsors of the SPAC may have their shares locked up for a set time after the business combination has been completed to mitigate any opportunistic behaviour (Cumming, Hass, and Schweizer, 2014). The timeline in figure 2 displays a generic SPAC life cycle divided into distinct steps from the IPO up to a business combination or wind-up.

Figure 2: The Typical SPAC Lifetime



2.3 Strengths and Weaknesses of the SPAC

As mentioned earlier, SPACs provide several benefits to private investors such as providing access to unlisted companies and having a safety net of redemption rights. However, the benefits are not exclusive to private investors. Private com-

panies that are interested in becoming listed are often faced with an extensive preparatory process, which is time-consuming and costly. Due to SPACs being listed by nature, much of the preparatory work can be avoided by the target company and the listing process can be facilitated in as little as 4 months from a definitive agreement. Thus, private companies looking to raise capital rapidly through the public market can be provided with a substantial shortcut by merging with a SPAC (Boyer and Baigent, 2008). In addition, any private company that seeks strategic guidance often has the possibility to confide in SPAC managers, as they generally possess extensive corporate experience and may take on board positions in the new business entity.

In the eyes of SPAC sponsors, who are the early investors in the SPAC and provide the initial capital, the SPAC structure provides several benefits over other types of investment funds. SPAC sponsors receive their shares at a significantly lower price than other shareholders, although they are completely illiquid until the merger has been completed, or if other terms are stated (Jog and Sun, 2007). Klausner et al. (2020) found that sponsors are generally compensated by 20% of the outstanding shares after the IPO, at a nominal price, which can be seen as a main contributing factor for the surge of SPACs recently. This structure does however come with implications for the shareholders. Firstly, since the sponsors acquire their shares at marginal prices compared to the shareholders (Tran, 2012), a divergence of interests arises. Both the sponsors and the shareholders share the same upside in regards to the stock price, albeit they do not share the downside risks (Klausner et al., 2020). Since all SPACs face a time constraint if no merger has been announced when the deadline approaches, sponsors are incentivized to find a target of any quality since the other alternative is to liquidate (Dimitrova, 2017). Regardless of the target quality and the following stock performance, SPAC sponsors will gain from entering into a value-destroying deal since they receive 20% of the shares at essentially no cost. Therefore, approaching a target company of any quality can be preferred over not completing a business combination at all, which may result in a moral hazard problem².

²**Moral Hazard** occurs when a party may be inclined to take on excessive risk when they do not bear the full risk exposure, thus creating a divergence of interests between the involved parties.

3 Theoretical Framework

3.1 The Efficient Market Hypothesis

One of the most fundamental pillars of today's financial world is the assumption of an efficient market. The notion of the efficient market was first introduced by the renowned economist Eugene Fama in a paper published in 1970. The hypothesis is centered around market adjustment. Presuming all information is publicly available, all publicly traded securities should be priced accordingly as soon as new information is introduced. There are three strength levels of the efficient market hypothesis. A weak form, a semi-strong form and a strong form (Fama, 1970). To analyse how new information is reflected in a given security, efficient markets must exist, at the minimum, in a semi-strong form.

3.2 Literature Review on SPACs

Modern Special Purpose Acquisition Companies are traced, through the broader blank check companies, back to 18th century England and the notorious South Sea Bubble (Shachmurove and Vulcanovic, 2018). Dans (2021, para. 2) describe blank check companies during the South Sea bubble era as “a company of great advantage, but nobody knows what it is”. Despite this history, research on SPACs is relatively scarce compared to more established fields of research, such as IPOs (Cumming et al., 2014). The initial literature regarding modern SPACs began to appear during 2007 when both the financial and legal communities began to have an interest in SPACs (Shachmurove and Vulcanovic, 2018). The authors further state that the initial legal research (e.g. Hale, 2007; Heyman, 2007; Riemer, 2007; Davidoff, 2008; Sjostrom, 2008) did not perform any empirical analysis and focused solely on explaining the structural and historical connection to the blank check companies. Castelli (2009) later continued this trend by, more specifically, portraying the evolution from the often fraudulent offerings in the 1980s to the legitimate blank check companies present during the 1990s.

Simultaneously as the initial legal research was conducted, the sparser financial research took an empirical approach when investigating SPACs. Jog and Sun (2007) and Boyer and Baigent (2008) were the first to offer more intense research on SPACs (Lakicevic et al., 2014). The first-named, Jog and Sun (2007), empirically examined market performance, in the context of incentives and returns to major shareholders, on 62 SPACs during the period 2003-2006. Among

their findings, they reveal a staggering case of diverging incentives with a reported 1900% return to SPAC founders, while initial investors endure a negative annual return of 3%. Boyer and Baigent's (2008) paper studied the same time interval as Jog and Sun (2007), although their sample was greater at 87 SPACs, and concludes in two main takeaways. They first provide empirical evidence that shows no significant underpricing at the time of IPO. Second, Boyer and Baigent (2008) identify three inherent properties of SPACs. Firstly, they found that SPACs provide retail investors with the opportunity to access private equity investments at inexpensive costs. Secondly, SPACs display greater transparency due to their disclosure requirements, compared to traditional private equity investments. Lastly, as most of the SPAC IPO proceeds are required to be stored in a trust account, investors experience a reliable limitation of risk, making SPACs a more appealing offer. Contrary to the traditional IPO route, Berger (2008) claims that SPACs provide valuable features, such as an assured amount of cash. Berger (2008) studied SPACs during its growing trend between 2003-2007 and concluded that SPACs address certain shortcomings of the capital markets and consequently results in more optimal capital allocations.

Following the literature on IPOs, research on SPACs evolved into primarily focusing on analysing pricing and performance around corporate events, returns to stakeholders and merger determinants (Vulanovic, 2017). For example, Kim (2009), Jenkinson and Sousa (2011), Flores and Sapp (2011) and Datar et al. (2012) all used benchmarks when examining SPAC returns between the years 2003 and 2009. Kim (2009) and Jenkinson and Sousa (2011) also studied determinants, such as managerial quality. In general, they conclude that certain characteristics of SPACs can significantly influence future returns and that average returns often underperform their benchmarks. Jenkinson and Sousa (2011) specifically categorized SPACs into one 'bad' group and one 'good' group. The 'bad' group experienced cumulative average returns of -39% in six months and furthermore -79% in annual returns. On the other hand, the 'good' group did not perform very well either, with a comparable return of 0% in six months and negative 6.2% in a year. To summarize, most authors report a majority of SPACs to be value-destroying investments, post-merger.

Later in the 2010s, Kolb and Tykvová (2016) and Dimitrova (2017) are seen as the two major studies that conducted comprehensive research on post-merger SPAC performance, by benchmarking it against traditional IPOs (Vulanovic, 2017). Similar to previously cited articles examining performance, the two papers con-

duct event studies focusing on abnormal returns caused by SPAC characteristics, around and after the acquisition of target companies. Kolb and Tykvová (2016) study 130 SPACs between 2003 and 2015 and Dimitrova (2017) observes a sample of 73 post-merger SPACs between 2003 and 2010. The outcome of the two studies reconfirms previous results, describing SPACs as significantly underperforming in comparison to their similar counterparts in the IPO category. Beyond comparable IPOs, Dimitrova (2017) also uses the market and industry as benchmarks. Furthermore, Kolb and Tykvová (2016) underline the importance of SPACs as they allow private firms to enter the public markets when other alternatives are costly. Moreover, seeing that SPACs are financed with debt, SPAC acquisitions will be more frequent during periods when debt is cheap (Kolb and Tykvová, 2016). Lastly, Dimitrova (2017) suggests that incentives of management and other stakeholders are not aligned, consequently linking underperformance to the managerial team's pressure to consummate a merger even though it might not be value-creating.

In the third quarter of 2020, Chauviere et al. (2020) wrote an article reviewing the most recent uproar in SPACs by investigating any distinctive characteristics that have changed since before the start of the uproar around 2015. Three key explanations were found: firstly; there have been far more successful business combinations since 2015, secondly; the average size of SPACs have increased fivefold in value in the last decade, thirdly; SPAC has entered the mainstream, bringing more high-profile business leaders. Combined, these three components have driven SPACs to new heights (Chauviere et al., 2020).

In conclusion, the field of SPAC-specific research is approximately 15 years old and has mainly focused on benchmarked stock performance and any significant characteristics. The lion's share of the research has shown drastic underperformance on primarily longer time intervals. Furthermore, certain characteristics have been observed to influence future performance, which subsequently could result in predictability.

3.3 SPAC Characteristics

When it comes to specific SPAC characteristics, this study will limit itself to three main characteristics that have been shown to have some implicit relationship to performance. Thus, in this section, a literature review will be conducted of 1) Gender diversity in top management, 2) managerial experience and 3) a

preidentified scope of target characteristics.

Firstly, Benhamou and Tse (2020) reviewed the state of gender diversity among the management team of pre-merger SPACs. Their sample consisted of 151 SPACs that underwent IPOs between 2017 and November 2020. The study found that 15.5% of the total 671 SPAC board seats were occupied by women. In comparison to newly formed traditional IPOs, the number was 19.8% of a total of 1610 board seats. Moreover, Benhamou and Tse (2020) also benchmarked companies in the Russell 1000 index, where the average number of board seats are twice as large, and found that more than 99% of boards had at least one woman elected as a director. Apart from Benhamou and Tse (2020), research focused on gender diversity as a characteristic is meagre. However, as dynamics in top management teams in U.S. SPACs could be associated with top management teams in other corporate climates in general and especially top management in U.S. IPOs, this study will instead cite corresponding studies in general, and within the research field of American IPOs.

Rau et al. (2021) examine, in a comprehensive study, the economic impact of gender diversity on IPO performance. The paper presupposes two main hypotheses. Primarily, the ‘superior firm hypothesis’ which claims that firms with greater board diversity are better firms due to the presence of women. More specifically, the presence of a more gender-diverse board would counteract group-think, overconfidence and excessive risk-taking. The second hypothesis, called the ‘investor demand hypothesis’ assumes that investors and stakeholders might demand gender diversity beyond the scope of economic reasons. The paper’s sample, consisting of 1100 US IPOs throughout the period 2000 to 2018, was divided into two groups. The first group of companies were listed between 2000 and 2009, whereas the second group represented the years 2010 to 2018. The study showed that the first group had less than 35% gender-diverse boards. The corresponding number for the second group was 50%. Furthermore, only the second group was found to positively relate gender diversity to underpricing and consequently, gender-diverse boards missed approximately 34 million in IPO profits, ergo indicating gender diverse boards to be value creating by financial markets. However, the paper did not find any significant relationship between gender diversity and stock or economic performance after the IPO date (Rau et al., 2021). In contrast, previous studies examining top management’s gender diversity found evidence that there is a statistically significant positive relationship between more gender-diverse management and firm performance (Joy et al., 2007; Smith et al., 2005;

Welbourne, 1999; Welbourne et al., 2007).

Secondly, the research studying the effect of managerial experience is broader than gender diversity in the context of SPACs specifically. Previously mentioned Kim (2009), provides a substantial analysis on the performance effect of managerial experience in SPAC management teams. Kim (2009) further describes SPACs as companies with no operation but management quality. Moreover, the study samples 158 SPACs between 2003 and 2008 and concludes with three main take-aways. First, Kim (2009) presumes that the market price of SPACs (after IPO) reflects partly the value of the proceeds, saved in a trust account, and partly the perceived management quality to find beneficial acquisitions. Derived from this, SPACs were found to consist of management with, on average, more industry experience than comparable IPOs. Consequently, SPACs with ‘better’ managerial experience gain relatively greater market valuations. Second, observed SPACs show that greater experience of management results in shorter search periods, i.e. able to find acquisition targets faster. Third, more industry experience also results in better long-term unit price performance. With respect to research on industry experience, McKinsey’s Chauviere et al. (2020) specifically highlight the benefits of the so-called ‘operator’s edge’. The paper presumes a distinct differentiation between ‘operators’ and investors by defining operator-led SPACs as firms whose leadership exhibit C-Suite³ experience (in contrast to pure investors or financial professionals). When examining 36 SPACs from the recent SPAC boom, the paper finds that SPACs that are led or co-led by ‘operators’ perform 40% better than other SPACs and 10% more than the sector index. Although the results are not found to be statistically significant, they provide interesting grounds for future research.

Thirdly, the research investigating how a scope of industry or geography affect SPAC performance is more cohesive than the two previous sections. Lakicevic et al. (2014) and Lewellen (2009) investigate the relationship between the probability of business combination and the predetermined target-focus by either industry or geographic location. Lakicevic et al. (2014) observed that Chinese focused SPACs had greater absolute returns to investors, while Lewellen (2009) found that SPACs generally focus on the specific industry of which the founders have the most expertise in. Finally, SPACs exhibiting a preidentified focus are reported to pay less for mergers in comparison to other acquirers (Tran, 2012).

³**C-Suite** refers to executive-level managers within a company (e.g. Chief Executive Officer, Chief Operating Officer).

3.4 Hypotheses

To reiterate the findings of previous literature, three main characteristics signal explanatory power for determining stock performance related to merger specific events. Firstly, gender diversity in board positions has extensively been examined as a performance determinant within the empirical research on IPOs. However there is an obvious shortfall of studies related to diversity within SPACs, especially as an explanatory characteristic of stock performance. Since gender diversity could possibly counteract group-thinking and excessive risk exposure in accordance with Rau et al. (2021), gender diverse SPACs should approach and acquire superior target companies and therefore earn abnormal stock returns. Furthermore, the research on operator-led SPACs is more extensive compared to literature on gender diversity and also focuses on operator experience as a performance determinant. Although recent research has been performed in analysing operator experience as a performance determinant by Chauviere et al. (2020), they concluded in insignificant findings that could be the result of the study using a restricted sample of only 36 SPACs. Following the reasoning put forth in Chauviere et al. (2020) that the operator edge will yield a more efficient target search and therefore a greater value creation for shareholders, further examining the operator experience with a more extensive sample will present further empirical evidence on operator experience as a performance determinant. Moreover, the previous literature has hypothesized that a predetermined scope of SPACs is a significant merger completion determinant, since having a predetermined acquisition focus could more efficiently lead to identifying a value-creating target. These studies have shown that having a predetermined scope has an impact on merger approval probability, however there is a deficit on earlier literature observing scope as performance determinant. In line with the study by Lakicevic et al. (2014) which studied the effect of a defined scope on stock performance for Chinese SPACs, studying scope as a performance determinant on US SPACs would complement and contribute to the existing literature.

Given the previously presented literature and the absence of research within certain areas of SPAC performance determinants, three hypotheses are developed to provide further knowledge concerning SPAC characteristics' effect on stock performance:

H_{0a} = Gender diverse management in SPACs has no impact on stock performance

H_{1a} = Gender diverse management in SPACs has an impact on stock performance

H_{0b} = Operator led SPACs has no impact on stock performance

H_{1b} = Operator led SPACs has an impact on stock performance

H_{0c} = The Scope of SPACs has no impact on stock performance

H_{1c} = The Scope of SPACs has an impact on stock performance

4 Data and Methodology

4.1 Data Collection and Requirements

The data concerning the SPAC characteristics are retrieved using a manual screening of the EDGAR database, provided by the U.S. Securities and Exchange Commission (SEC). Since all SPACs have to comply with the Securities Act of 1933, all filings necessary for this thesis have to be disclosed to the public via the SEC (Lakicevic et al., 2014). The initial document provided by a SPAC is the IPO Investment Prospectus (form S-1), which purpose is to provide investors with the relevant information for investments. In the S-1, companies are required to provide a brief CV of all managers, which will reveal their background (financial or C-suite). The gender distribution and target industry can also be retrieved from the same prospectus. To ensure that there are no changes in management or industry focus during the period ranging from the IPO to the merger announcement, the current report filings (form 8-K) in that interval are audited as such changes have to be disclosed with an 8-K form. The study also retrieves daily data for stock returns of individual SPACs and the comparable index using Capital IQ.

The sample of SPACs used in this thesis is obtained from Capital IQ. The sample is obtained by using the screening function in Capital IQ. Data were obtained from the period **(01.01.2014-01.10.2020)**. The chosen period will thus result in the screened companies having at least six months of stock performance data post-merger, which is needed for this analysis. A total of 67 SPACs fulfilling the requirements have been identified in the initial screening. Furthermore, the sample has been adjusted for data availability resulting in a sample size of 59 SPACs in total. The Capital IQ screening requirements are outlined in table 1, in appendix.

4.2 Event Study Methodology

4.2.1 Event Study - General

Event studies have had a widespread presence in financial research since Fama et al. (1969) studied how stock prices adjust to information about stock splits. The methodology presented in this study to observe how companies stock prices fluctuate around firm-specific events is still widely used, and only minor modifi-

cations have been made during the following decades (MacKinlay, 1997).

Event studies serve multiple purposes in the financial-economic research areas. By observing short periods, specifically company announcements, Kothari and Warner (2007: 4) states that “the usefulness of event studies arises from the fact that the magnitude of abnormal performance at the time of an event provides a measure of the (unanticipated) impact of this type of event on the wealth of the firms’ claim holders”. The insights provided by these types of event studies can thus yield sufficient information for understanding the isolated effect of firm-specific announcements. When observing a longer time period, event studies can also be used as a methodology to test market efficiency. If systematic nonzero abnormal returns are persistent after an event, the finding stands in contrast with the assumption that prices should adjust instantly to reflect new information (Brown and Warner, 1980).

The basic methodology regarding how to conduct an event study is fairly intuitive and uncomplicated. MacKinlay (1997) presents a step by step overview of the process broken down into four separate steps which form a complete framework for event studies. The first step is to define the event of interest and determine the corresponding event window which will capture the effect of the event. Secondly, the following step is to determine which characteristics that the sample companies have to fulfil to be included in the study. In the following two steps, normal, i.e. expected, returns and abnormal returns are calculated and tested for significance.

Since this thesis studies whether SPAC characteristics have an impact on the perceived quality of the business combination, an event study methodology will be conducted to capture the abnormal returns surrounding significant events related to the merger which acts as an indicator of the business combination quality.

4.2.2 Event Window

When modelling an event study, the event window is one of the core elements that the entire study is based upon. Typically, event windows are the aggregate of three parts; pre-event period, event period and post-event period (Mackinlay, 1997). The event window is often expressed as $[-X; Y]$, where X is the number of days before the event and Y is the number of days after the event. The day of the event is also often denoted as day zero (Konchitchki O’leary, 2011).

To find the most reliable event-related abnormalities, event windows are preferably shorter when investigating MA transactions (Andrade et al., 2001). In contrast, Krivin et al. (2003) propose, in a paper exploring appropriate event window lengths, a more ad hoc approach, where event studies should use a fluid event window proportionally to the magnitude of the news. The authors argue further that the market must have time to react to the event, which could require several days (Krivin et al., 2003). As a compromise, this paper will apply two windows for the short term abnormal returns around the announcement. The main event window of $[-1; 1]$ days aimed at capturing the most imminent abnormal reactions, recommended by Konchitchki O'leary (2011). The main window is then complemented with a secondary, supporting, event window of $[-3; 3]$ days. Even though an expanded event window reduces the power properties of the model, MacKinlay (1997) argues that using a stretched event window around the announcement date is a cost worth bearing for capturing the whole effect of the merger announcement. In conjunction, these event windows will precisely observe the event-related abnormal effects as well as grant the market more time to react.

The results from the short term windows, however, should merely be regarded as an indication of the quality of the target (Ikenberry et al., 1995). Therefore, in addition to the short term windows surrounding the business combination announcement, this study will look at abnormal performance on a medium-term basis. Thus, complementing the short term abnormalities, allowing for further analysis of continued abnormal performance. Weighing the focus to include SPACs from the recent upward trend against a longer time window, the event study will follow Kolb and Tykvová (2016) and Dimitrova (2017) and employ a 6-month medium-term window starting from the announcement event. Furthermore, a second medium-term abnormal performance will also be utilized, using the merger closure date as starting point, in order to solely capture the performance of the newly listed entity. More specifically, the second starting point adds additional value to the model due to the SPAC being completely excluded, resulting in the public security being purely valued based on the merged target. Consequently, the study will be able to conduct a more comprehensive discussion of SPACs ability to find qualitative targets.

4.2.3 Estimation Window

For event studies, the period used as a benchmark for the normal return of a security is called the estimation window. The estimation window is the aggregate number of trading days prior to the event (Kwoka and Gu, 2015). Choosing an estimation window involves a constant tradeoff between longer periods and shorter periods. By using a long period, the estimation of the alpha⁴ and beta⁵ would be more precise as it would avoid temporary fluctuations. However, this would result in the coefficients becoming more and more outdated (Armitage, 1995). Armitage (1995) continues stating that 100 to 300 daily observations prior to the event is common practice. Mackinley (1997) confirms this by claiming that a typical estimation window is between 120 to 250 days prior to the event.

The very fundamental structure of SPACs is unlike any other, as SPACs essentially are dormant companies prior to the announcement of a business combination. Consequently, this study will therefore yield very low correlation to the benchmarked index. Furthermore, considering the life-cycle of a SPAC is rather short, this study will employ an estimation window of 100 trading days prior to the event, including a 10 day buffer to ensure that the estimation window does not overlap with the event window.

4.2.4 Normal Returns

To calculate the abnormal returns, the daily normal returns first have to be obtained in order to be used as a benchmark for the deviation to be measured of. There are multiple models to calculate the normal return, varying in complexity. However, MacKinlay (1997) presents and recommends two models; the constant mean return model and the market return model, that are amongst the most simplistic normal return models. The constant mean return model is the most simple in its nature and is calculated by obtaining the average stock return over the estimation window and assuming it to be the normal return. The market return model is more extensive compared to the constant mean return model and relates the stock return to the return of a chosen market portfolio, thus making the normal returns variable. MacKinlay (1997) states that the market model may yield an improvement over the constant mean return model, since it accounts for the variance in the market which can result in an increased ability

⁴**Alpha** refers to the intercept that individual securities have to a benchmark index.

⁵**Beta** refers to the correlation that individual securities have to a benchmark index.

to detect the real event effect. The more sophisticated models are extensions of the market model which uses multiple factors. However, according to MacKinlay (1997), the gains of using multifactorial models are limited, and therefore, the market return model is chosen for this thesis as it may provide potential benefits over the constant mean return model.

In order to estimate the corresponding market return for SPACs, the Russell 2000 index is used. Earlier event studies of SPACs have used the Russell 2000 index as the market index because of the similar characteristics with SPACs, making it a good market proxy (Dimitrova, 2017; Kolb and Tykvová, 2016; Lakicevic et al., 2014).

For security i , the market model normal return at time t is calculated as follows:

$$\begin{aligned} E(R_{it}) &= \alpha_i + \beta_i R_{mt} + \epsilon \\ E(\epsilon_{it}) &= 0 \quad ; \quad var(\epsilon_{it}) = \sigma_{\epsilon t}^2 \end{aligned} \tag{1}$$

where:

- R_{it} = Actual return for security i , at time t
- α_i = Mean return for security i , not explained by the market
- β_i = Beta for security i
- R_{mt} = Actual return for the market, Russell 2000 in this thesis, at time t
- ϵ_{it} = Zero mean disturbance term
- $\sigma_{\epsilon t}^2$ = Sample variance

4.2.5 Abnormal Returns

When the normal returns are obtained, the event window abnormal returns can be calculated. The abnormal return (AR) is the difference between the daily actual return for the studied days within the event window and the corresponding normal return for those days (MacKinslay, 1997).

For security i , the abnormal return at time t is calculated as follows:

$$AR_{it} = R_{it} - E(R_{it}) \tag{2}$$

4.2.6 Cumulative Abnormal Returns

In order to draw conclusions from the abnormal returns, they must be aggregated since observing abnormal returns individually will not disclose the true effect of the event (MacKinlay, 1997). By summing the abnormal returns within the chosen event windows, we receive the cumulative abnormal returns (CAR):

$$CAR_i[t_1, t_2] = \sum AR_{it} \quad (3)$$

When analyzing SPAC merger announcements, CARs can be used as a measurement for shareholder value of the acquisition, assessed from the market's point of view (Dimitrova, 2017). Therefore, CARs will be used as a quality indicator of how good the management team has been at finding a suitable target for the SPAC to acquire.

Although not the focus of this thesis, by taking the cumulative average abnormal returns ($CAAR$) across the whole sample, significance tests can be conducted to observe if there are statistically significant abnormal returns present at the time of a merger announcement. To test for significance, a t-test will be employed:

$$T_Statistic = \frac{CAAR}{\frac{s}{\sqrt{N}}} \quad (4)$$

where:

$$\begin{aligned} s &= \text{Sample standard deviation} \\ N &= \text{Number of observed SPACs} \end{aligned}$$

4.2.7 Buy and Hold Abnormal Returns

CARs cannot be used on longer time periods as it creates an upward bias over time, even if the raw data is serially independent (Cowan, 1993). Therefore, buy and hold abnormal returns (BHAR) will be used for measuring the longer event windows, which more closely reflects the actual investor experience since it includes the effect of compounding (Barber and Lyon, 1997; Lyon et al., 1999; Kothari and Warner, 2007). BHAR will also be tested on an aggregated level across the whole sample, denoted BHAAR, using the same t-test presented in the previous section. The BHAR formula is defined as:

$$BHAR = \prod_{t=t_1}^{t_2} (1 + R_{it}) - \prod_{t=t_1}^{t_2} (1 + R_{mt}) \quad (5)$$

4.3 Regression Analysis and Specification

To determine if gender diversity, previous managerial experience or scope has any significant effect on the abnormal stock performance of SPACs, a multiple linear regression analysis will be conducted. The results from the short- and medium-term abnormal returns will serve as dependent variables in four regression models. One regression will be conducted for each of the event windows; [-1; 1], [-3; 3], merger announcement to 6 months after and finally merger closure to 6 months later. In an attempt to find explanatory power for abnormal performance, this study will use the same independent variables for all of the defined dependent variables. The regression analysis is constructed in line with the specifications provided by Brooks (2014) and Gujarati and Porter (2009).

There are several assumptions underlying the Ordinary Least Square (OLS) regression that need to be met in order to ensure certain statistical integrity when using the model. Therefore, prior to finalizing results, the study will conduct diagnostic tests recommended by Brooks (2014) or Gujarati and Porter (2009). First, the study examines for any heteroskedasticity by employing the Breusch-Pagan test. A non-constant error variance indicates that heteroskedasticity affects the model (Gujarati and Porter, 2009). When heteroskedasticity is found, all OLS variance estimates are deemed biased, consequently influencing the t-tests which may induce wrongful conclusions. Second, to test for multicollinearity, the Pearson-Correlation Matrix is utilized. Multicollinearity is present when two or more explanatory variables are highly correlated. More extreme, if the set of variables exhibit an exact linear relationship, perfect multicollinearity exists. This is problematic as it becomes harder to precisely derive the effect of one single variable. The notion of no multicollinearity is an implicit assumption when using an OLS regression (Brooks, 2014). Therefore it is important to test the correlation between explanatory variables to ensure that the regression results are trustworthy. Third, the study employs the Ramsey RESET test to determine if the linear regression model exhibits any misspecification of functional form. The null hypothesis assumes that the model has no omitted variables (Brooks, 2014). If any test yields results that require model adjustment, the regression will take necessary steps, described by Brooks (2014) or Gujarati and Porter

(2009). The specifications of the tests and any contingent change to the models are documented in the results section.

As previous research suggests, a gender diverse management team might have a significant effect on abnormal performance. Therefore, this study will investigate if one or more women have any explanatory power regarding short- or medium-term abnormal stock performance for SPACs between 2014 to November 2020. For simplicity, an independent variable called *Gender_div* will be used as a dummy variable. The variable will take the value of 1 if there are one or more women on the SPAC management team during the search (between IPO and acquisition announcement), and 0 otherwise.

The literature field on SPACs show that managerial experience for top management has a significant impact on abnormal performance. Hence, this study will explore the relationship between the ‘operator’s edge’ and abnormal returns by employing an additional dummy variable called *O_led*. To isolate ‘operators’ from financial professionals, anyone exhibiting solely chief executive experience from the financial sector will hereafter be excluded from the C-Suite classification. If a SPAC chairman or CEO displays unmistakable C-Suite experience, the dummy variable will take the value of 1, and 0 otherwise.

As earlier literature has shown that SPACs with a distinct scope, have a higher likelihood of a successful business combination, this study has chosen to investigate whether the relationship also can be found to influence returns. Consequently, the study will employ a third dummy variable, called *Scope*, to the model to explore any explanatory power for abnormal stock performance on and around the events. The independent dummy variable will take the value of 1 if the SPAC has a clearly defined scope of industry or geography, and 0 otherwise.

The regression model used in this study is specified as follows:

$$CAR[t_1, t_2] = \beta_0 + \beta_1 O_led + \beta_2 Gender_div + \beta_3 Scope \quad (6)$$

$$BHAR[t_1, t_2] = \beta_0 + \beta_1 O_led + \beta_2 Gender_div + \beta_3 Scope \quad (7)$$

where:

$CAR[t_1, t_2]$	= Cumulative Abnormal Return for the period t_1 to t_2
$BHAR[t_1, t_2]$	= Buy and Hold Abnormal Return for the period t_1 to t_2
β_0	= Constant, shows the significance of the dependent variable in general
0_led	= 1, if the chairman and/or CEO of the SPAC exhibit C-suite expertise
$Gender_div$	= 1, if there are more than, or, one woman on the management team
$Scope$	= 1, if the SPAC have a clearly defined scope of industry or geography

4.4 Limitations

Naturally, there are several limiting factors influencing the size of the chosen SPAC data set. Firstly, there is a limited number of SPACs that have completed a merger in our time frame. Secondly, the need for market data post-merger further narrows the sample as a large portion of SPACs only recently finalized their mergers.

To complement previous research, which mainly focused on either the period 2003-2008 or 2010-2017, this thesis observes the time period 2014 to 2020. The time frame is primarily governed by two conditions. Firstly, SPACs are required to have consummated a merger and thereafter have a 6 month track record on the public markets. Secondly, in order to conduct a rigid event study, the SPAC needs at least 110 trading-days between IPO and merger announcement to facilitate an estimation window. Furthermore, this study only includes SPACs listed on major American stock exchanges, since the SPAC phenomenon is predominantly represented within these markets.

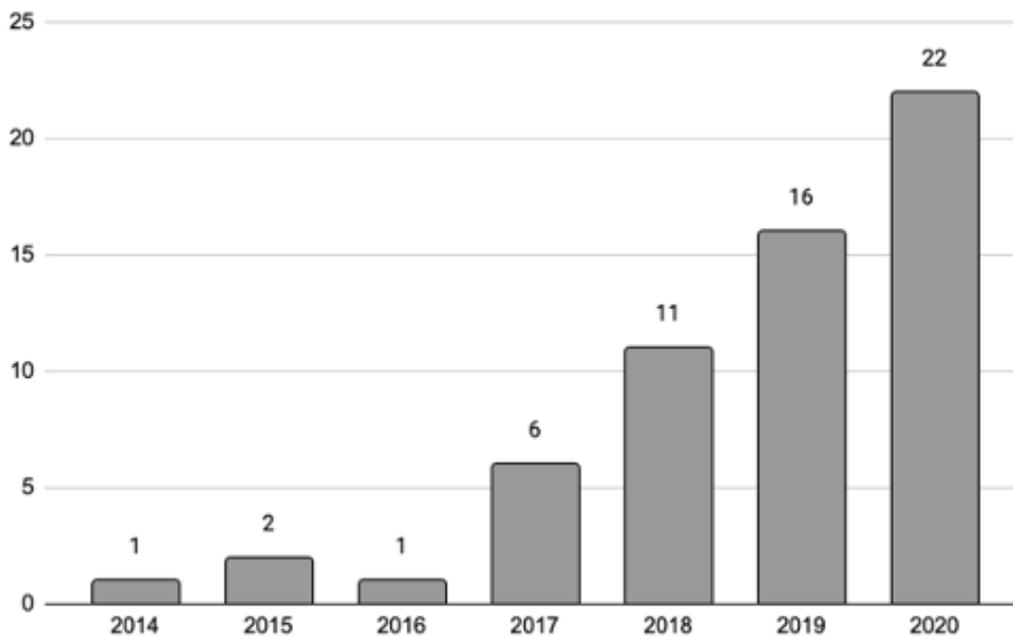
The manual sourcing of data for our variables of interest also poses a potential risk of data collecting error due to the lack of an automated process for collecting the data. However, we view this risk as fairly insignificant due to quality assurance conducted on every company in our sample. The manual sourcing of data regarding management experience also presents, to some extent, subjectivity in our sample. However, in order to conduct this study, given the chosen parameter and its non-binary nature, a subjective assessment is necessary.

5 Empirical Results

5.1 The Sample

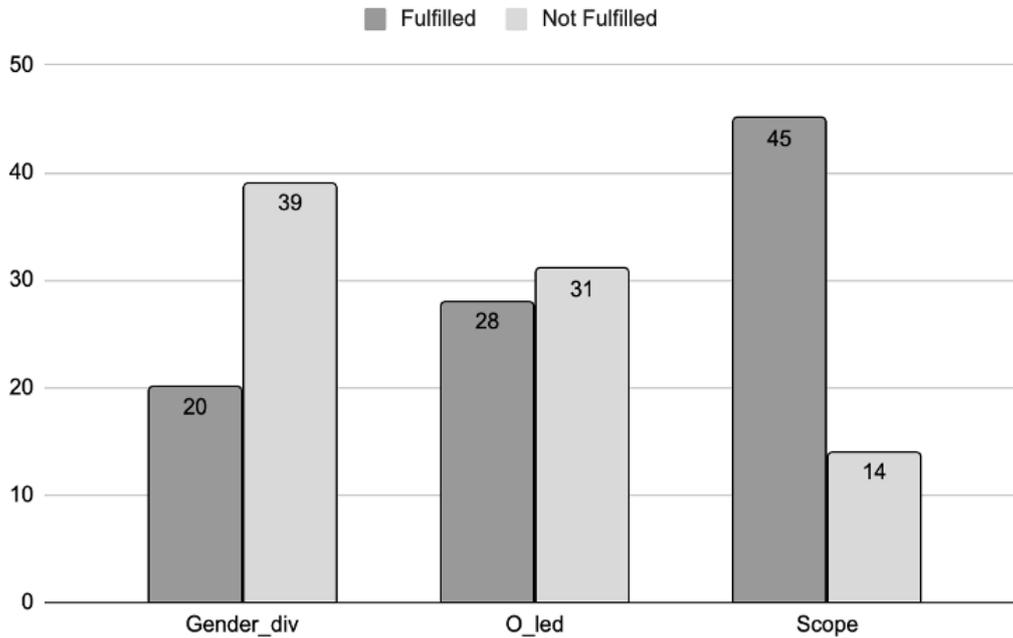
The forthcoming results presented in this thesis are based on a sample consisting of 59 SPACs that consummated a business combination between 2014 and 2020. Figure 3 illustrates the uneven distribution of business combinations included in the sample. The one-sided distribution of the sample displays similarities with the number of SPACs going public throughout the same time interval.

Figure 3: Sample breakdown by year of business combination



As shown in figure 4, the Scope is—by far—the most fulfilled SPAC characteristic. 45 out of 59 SPACs had a distinct scope of industry or geography. Meanwhile, only 20 SPACs had one or more women on the management team. An overview of the sample’s sector breakdown, as classified by the Global Industry Classification Standard (GICS), is provided for additional clarification in figure 5, in appendix.

Figure 4: Sample breakdown by fulfilled and not fulfilled characteristics



The data in table 2 displays more in-depth the distribution of the sample. The observed sample exhibits broadly distributed returns for both CAR and BHAR, although the CAR values are centered around a slightly positive return whilst the BHAR returns are spread in a wider spectrum. Important to note is that the presented results are not actual stock returns but stock returns adjusted with a predicted return, therefore the presented results may be more extreme compared to actual stock returns. A complete table of descriptive statistics can be found in table 3, in appendix.

Table 2: Descriptive Statistics

	CAR [-1:1]	CAR [-3:3]	BHAR ANNOUNCEMENT	BHAR MERGER
Min	-1,90%	-2,73%	-80,96%	-98,28%
Q1	0,02%	0,00%	-24,18%	-53,92%
Median	0,54%	0,71%	-1,79%	-19,56%
Q3	1,40%	1,72%	3,95%	16,07%
Max	67,13%	63,10%	241,32%	148,24%
Mean	3,36%	2,79%	-6,49%	-15,88%

5.2 Inferential Statistics

To complement the aim of this study, and give a first indication which variables might have an effect on stock performance, the CARs and BHARs are aggregated and observed on a variable basis. When studying abnormal returns, it is important to observe whether there are any significant results on an aggregate level, since studying individual companies will not yield sufficient information to draw initial conclusions from.

On an aggregated level, significant abnormal returns are found for a majority of the observed event windows. Three out of four observed time windows for gender diverse SPACs yield the most extreme abnormal returns as well as they are significant at one percent, which provides a strong indication that gender diverse boards of SPACs have an impact on abnormal returns. Moreover, a time-related trend is observed as the CAARs display positive abnormal returns, while BHAARs showcase large negative abnormal returns. This finding is in line with earlier research, which concludes that SPACs underperforms after a merger completion, on average (Kolb and Tykvová, 2016). This thesis does not investigate further why SPACs underperform post-merger. However, earlier research has stated reasons such as SPACs attracting lower-quality firms (Kolb and Tykvová, 2016) or the inherent structure that encourages managers to pursue bad acquisitions instead of liquidating (Dimitrova, 2017). Table 4 provides information in detail regarding the abnormal returns for all event windows.

Table 4: CAAR And BHAAR Returns

Variables	CAAR [-1:1]	CAAR [-3:3]	BHAAR ANNOUNCEMENT	BHAAR MERGER
Gender_div = 1	7.93%***	6.35%***	-0.43%	-25.21%***
Gender_div = 0	1.02%*	0.96%*	-9.59%**	-11.09%
O_led = 1	2.52%***	2.34%**	-4.84%	-20.28%**
O_led = 0	4.11%	3.19%	-7.97%	-11.90%
Scope = 1	4.16%**	3.47%**	-4.10%	-15.41%***
Scope = 0	0.79%*	0.59%*	-14.15%**	-17.39%***

■ * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$

5.3 Diagnostic tests and Regression Results

As the initial part of this study has been concluded, the regression analysis of the calculated and examined CARs and BHARs will follow. Four different regression models will be formed using the four abnormal returns as dependent variables.

When studying the Breusch-Pagan test in table 5, in the appendix, heteroskedasticity exists in at least one of the independent variables for the first three regression models. However, in the fourth regression model, the test yields a p-value of 0.1194 that transcends the range for a statistical significance level at both the typical 5% but also at 10%. As a result, the null hypothesis is rejected for the first three models, but not for the fourth. Consequently, heteroskedasticity is assumed to influence the significance tests and confidence intervals, in the first three regressions, by either an overestimation or underestimation. In response, the regression models that rejected the null hypotheses are adjusted by applying a heteroskedasticity-consistent standard error estimator (HC3) advocated by Hayes and Cai (2007).

In table 6, in the appendix, a Pearson Correlation has been conducted over all variables. In this case, the only variables of interest are the explanatory variables (independent variables). In practice, a satisfactory correlation is within the interval of $[-0.8; 0.8]$, where 1 is equal to perfect correlation (Brooks, 2014). The independent variables are far from the extremes of this interval. Consequently, the relationship between the explanatory variables is within a sufficient range and can thus be confidently used in the model.

The results from the Ramsey RESET test are shown in table 7, in appendix. The test clearly shows that there is no basis to reject the null hypothesis for any of the models and can thus support the suitability of the model.

The results of all four regression models are presented in table 8. To summarize, all regression outputs were statistically insignificant at 10%, 5% and 1%, except the constant for the third model. This shows that the value of the constant for Buy and Hold Abnormal Return from the day of announcement to 6 months later is not zero when all independent variables are zero, at a significance level of 10%. The R -squared values are found in the range of 1.6% to 9%, which reconfirms the limited explanatory power of the independent variables. Consequently, as no statistically significant findings have been produced, there is no basis for rejecting any of the three stated hypotheses.

Table 8: The Regression Models. (#) show the dependent variable for each regression

Variables	(1) CAR [-1:1]	(2) CAR [-3:3]	(3) BHAR ANNOUNCEMENT	(4) BHAR MERGER
<i>Gender_div</i>	0.064 (0.045)	0.050 (0.034)	0.076 (0.180)	-0.183 (0.153)
<i>O_led</i>	-0.011 (0.028)	-0.005 (0.024)	0.031 (0.133)	-0.114 (0.139)
<i>Scope</i>	0.013 (0.013)	0.012 (0.010)	0.069 (0.093)	0.102 (0.171)
Constant	0.007 (0.011)	0.004 (0.009)	-0.158 (0.088)*	-0.120 (0.149)
Observations	59	59	59	59
<i>R</i> -squared	0.090	0.077	0.016	0.032

■ Reg model (1), (2) and (3) use Heteroskedasticity-Consistent Standard Errors (in parantheses)

■ Reg model (4) use normal standard errors (in parantheses)

■ * = $p < 0.10$, ** = $p < 0.05$, *** = $p < 0.01$

6 Discussion

The empirical results presented in this thesis regarding the characteristics of SPACs listed on major US exchanges and how they affect the abnormal stock performance are interesting due to their insignificance. Since a SPAC's sole purpose of existence is to merge with the optimal target company, the management's attributes and industry focus should be of great importance when assessing and consummating a business combination. However, the insignificant empirical results do not come as a surprise due to the ambiguity of earlier research.

As previously stated, the independent variable *Gender_div* shows no statistically significant impact on any performance measure for the given event windows. However, *Gender_div*, for the two short-term abnormal return models, still exhibit noteworthy results. Although the values do not converge with any statistically significant level, they are found very close to the 10% mark at 11.8% and 14.8%. The corresponding coefficients show that having more or equal to one female on the management team of a SPAC could result in a 5% or 6.4% increase in the abnormal return, given the sample's estimation- and event window. This positive, although uncertain, effect is consistent with empirical evidence on the short-term performance for IPOs presented by Welbourne (1999). The medium-term models show still less statistical significance and are therefore deemed negligible as no evidence for any explanatory power is found. Preceding literature establishes a trend of both significant (Joy et al., 2007; Smith et al., 2005; Welbourne, 1999; Welbourne et al., 2007) and non-significant (Rau et al., 2021) findings for gender diversity impact on firm performance, wherein the results of this study fall in between, albeit leaning somewhat towards insignificance. A possible explanation as to why diverse management does not increase abnormal returns may be that within our sample, there is a maximum of two women in any given board. Women's influence when determining the target company might therefore be outvoted and thus not reflected in the announced acquisition. To conclude, there is not any statistically significant evidence to support a rejection of the first hypothesis (*H1*).

Following gender diversity, regression results for operator-led SPACs do not provide any level of significance in explaining an effect on short- or medium-term abnormal performance. The results, although far from significant, states that the operator's edge surprisingly has a negative impact on three out of four of our

dependent variables, which stands strongly in contrast with prior literature. Empirical data presented by Kim (2009) and later Chauviere et al. (2020) indicate that managerial experience of SPAC management teams are superior and should therefore have a positive impact on SPAC performance. One possible reason for the negative impact that operator experience imposes on stock performance may be that according to Kim (2009), operator-led SPACs find and acquire a target company faster than other observed companies. Dimitrova (2017) argues that taking longer time to acquire a company gives management the possibility to conduct more thorough due diligence, which would be positively reflected in value-creation for the investors. Following the findings of Kim and the discussion by Dimitrova, operator-led companies may complete a business combination perceived as premature and therefore induce negative effects on stock performance. Moreover, operator experience in itself might not be the true value-creating attribute, rather certain fields from which managers possess previous experience might provide better explanatory power. Managers with previous financial experience from venture capital or private equity, may through their previous investing experiences be more effective in sourcing and acquiring a value creating target company. Therefore, having solely operator experience overlooks important management traits that could be the reason as to why operator experience has a negative impact on stock performance. To recapitulate, there is not any statistically significant evidence to support a rejection of the second hypothesis ($H2$).

Furthermore, the third and final independent variable, Scope, does not provide any significant explanatory power to the abnormal returns in any event window, thus not providing any basis for rejection of the third hypothesis ($H3$). Although insignificant, the positive coefficients of Scope follow the rationale set by Lewellen (2009). Specifically, the notion that the specified scope of geography or industry coincides with prior management expertise suggests favourable results. Evidently, this study is unable to transition scope from the previous literatures' merger determinant to a performance determinant. However, coefficients for Scope exhibit, consistent with Lewellen (2009), a positive correlation with time, suggesting that a specified scope may result in acquired targets of higher quality. Consequently, this study is seemingly not fit to unveil explanatory power considering the chosen time periods.

Alternative reasons as to why this study presented insignificant results may be multiple. Firstly, the observed SPAC characteristics could be too broadly speci-

fied, thus not accounting for the true effect that sub-groups of the studied variables pose. By breaking down variables of interest into multiple variables, such as dividing operator experience into experience corresponding to the specified scope of the SPAC and the founder's number of years in top management positions, the study could potentially yield significant performance determinants. An additional potential cause as to why the study did not yield significant results may be the limited sample size since multiple linear regressions are usually conducted with a larger number of observations. Moreover, the studied characteristics may not solely have an explanatory effect on a SPAC's stock performance related to the business combination. Instead, additional factors could account for abnormal stock performance given the studied event windows, such as the time from IPO to merger announcement and if the merger is to be financed with debt or cash, as examined by Dimitrova (2017) and Vulcanovic (2017). Consequently, the study's probable omitted variable bias calls for further research to explore a more exhaustive list of explanatory variables.

7 Conclusion and Further Research

Due to the recent surge of SPACs in the leading financial markets, this paper aimed to investigate any pre-announcement identifiable performance determinant as specified in each respective archived prospectus. An evident shortcoming of empirical SPAC research in conjunction with insignificant results have resulted in a demand for further research on performance determinants. Based on preceding literature, gender diversity in SPAC management, previous operational experience and scope of geography or industry were selected for analysis, as they were hypothesized to have significant influence on abnormal performance.

To conduct this study, we first collected data through qualitative assessments and quantitative measures, including the most recent modern SPAC activity. The study continued by conducting an event study to retrieve relevant abnormal returns, followed by a multiple linear regression analysis in effort to observe performance determinants. Therefore, this thesis complements and further expands previous literature by including SPACs operating during the recent surge.

The study concludes in insignificant findings for all studied performance determinants, over all observed event windows. Gender diversity has, however, shown the most noteworthy effects in this study, with a generally positive correlation to performance. This is appealing as the correlation seemingly follows a relationship found in earlier research. Given the obtained findings of gender diversity, we suggest further research to probe in more depth on details derived from women's effect on performance, such as isolating women with substantial experience. In contrast to gender diversity, managerial experience demonstrates a surprisingly negative correlation with performance. This finding is the most unexpected as it starkly contradicts earlier research and our initial hypothesis which creates a void, left for further research to explore. Out of experience from conducting this study, we urge further studies to instead distinctly examine various fields of managerial experience as separate performance determinants, for instance previous field of expertise or years of operator experience. In regards to scope, all event windows indicate a positive effect for SPACs fulfilling the criteria. Although insignificant, this stands in agreement with both prior research and the constructed hypothesis. Nevertheless, to achieve explanatory power, future studies should attempt to develop more precise subcategories derived from the predetermined scope of a SPAC. Presumably, this variable-breakdown would output results capable of

better determining performance. In addition, all findings are impaired due to the exclusively short to medium time periods investigated in this paper. However, this was a deliberate consequence in order to capture data from the most recent SPAC boom. Further research could therefore complement the results of this thesis by observing longer time periods to find long-term performance determinants. In conclusion, while the non-significant results of this study may leave one underwhelmed, they do serve a worthy cause in that this study supplement prior research with meaningful insights into the field of SPAC research and subsequently provide future studies with valuable recommendations.

Finally, investing in SPACs without knowledge of performance determinants is much like playing poker without looking at the cards, however, as no hypotheses have been rejected—does it even matter?

8 References

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9 Appendix

Table 1: Capital IQ Screening Inputs

	Screening Type	Criteria	Comment
1)	Industry Classifications (Target/Issuer):	Blank Checks (Primary)	This criterion isolates Blank Check companies
2)	Merger/Acquisition Features:	Reverse Merger-Backdoor IPO OR Reverse Merger-Other	This criteria further narrows the Blank Check companies to more specifically Special Purpose Acquisition Companies
3)	Transaction Status:	Closed	This study is only interested in completed transactions
4)	All Transactions Closed Date:	1/1/2014 - 10/1/2020	The sample is restricted to closed transactions between 1 January 2014 until 1 October 2020
5)	Exchanges (All Listings) (Buyers/Investors):	All US Exchanges	This limits the sample to only contain business combinations listed on US exchanges

Table 3: Descriptive Statistics for the Full Sample

	CAR [-1;1]	CAR [-3;3]	BHAR ANNOUNCEMENT	BHAR MERGER	O_led	Gender_div	Scope
Observations	59	59	59	59	59	59	59
Mean	3.36%	2.79%	6.49%	15.88%	0.34	0.47	0.76
St.Dev	11.24%	9.46%	43.77%	51.71%	0.48	0.50	0.43
Minimum	1.90%	2.73%	80.96%	98.28%	0.00	0.00	0.00
Maximum	67.13%	63.10%	241.32%	148.24%	1.00	1.00	1.00

Table 5: Breusch-Pagan Test for Heteroscedasticity

	CAR[-1;1]	CAR[-3;3]	BHAR Announcement	BHAR Merger
$\chi^2(3)$	60,57	61.03	38.09	5.85
Prob > χ^2	0.0000	0.0000	0.0000	0.1194

Figure 5: Sample breakdown by GICS sector

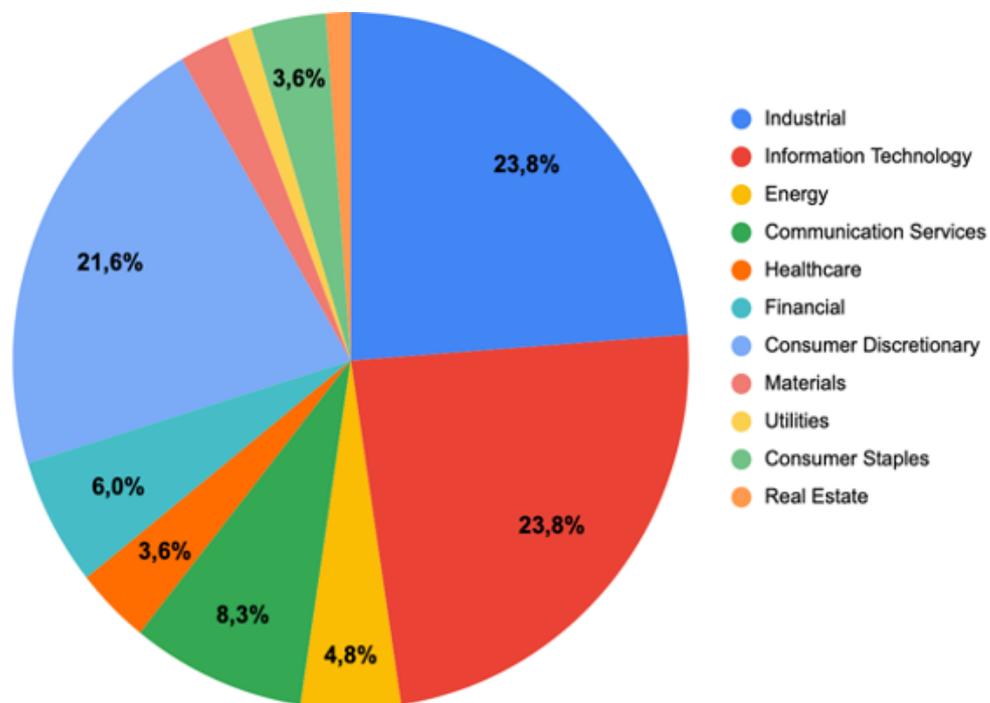


Table 6: Pearson Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) CAR[-1;1]	1.000						
(2) CAR[-3;3]	0.9766	1.000					
(3) BHAR Announcement	0.5150	0.5204	1.000				
(4) BHAR Merger	-0.3181	-0.3164	-0.0044	1.000			
(5) Gender_div	0.2936	0.2722	0.1000	-0.1304	1.000		
(6) O_led	-0.0714	-0.0452	0.0360	-0.0816	-0.1069	1.000	
(7) SCOPE	0.1286	0.1303	0.0986	0.0165	0.3153	0.1312	1.00

Table 7: The Ramsey Test

	CAR[-1;1]	CAR[-3;3]	BHAR Announcement	BHAR Merger
F(3, 52) =	0.31	0.27	1.05	1.00
Prob > F =	0.8152	0.8499	0.3776	0.3989