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Do Earnouts Sweeten the SPAC Deal?

An empirical study on the effect earnouts have on SPAC deals

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Abstract

The purpose of this research is to explore contractual agreements related to Special Purpose Acquisition Companies (SPACs). Even though this backdoor to the public market has been around for decades, the SPAC market has seen a spike in popularity during the last two years. Despite the rise in attractiveness, the SPAC sponsor's equity stake has gained criticism due to misaligned incentives. Moreover, information asymmetries connected to the valuation risk of the target firm have also reached the agenda. These two areas of improvement have facilitated the introduction of earnouts. Earnouts have been relatively unexplored in research about SPACs, and we aim to contribute with new insights into the effect of earnouts.

We study 226 US-listed SPACs that announced a target between January 2020 to the end of May 2021. By applying an event study methodology using the market-adjusted model, we investigate whether target or sponsor earnouts affect SPAC's cumulative abnormal returns (CAR) on announcement returns for stock and warrant securities. In addition, we examine the relationship between redemption rates and earnouts.

Earnouts are often portrayed as something positive, but our results indicate the opposite. We find a negative association of CAR regressed on earnouts. Moreover, our results show that CAR is higher for earnout than non-earnout deals conditional on sponsor experience. We further find that large deals that include at least one earnout agreement, sponsor earnout, or both target and sponsor earnout are, on average, associated with higher redemption rates. This demonstrates that investors are skeptical towards earnout-based SPAC deals, perhaps because they tend to be associated with other negative deal characteristics or used in less valuable transactions. Market participants should thus consider the whole picture before applying earnouts to the deal contracts.

Keywords - SPAC, earnout, contingent considerations, sponsor earnout, target earnout, misaligned incentives, sponsor promote, announcement returns, cumulative abnormal returns, redemption, event study, market-adjusted model, stock, warrant

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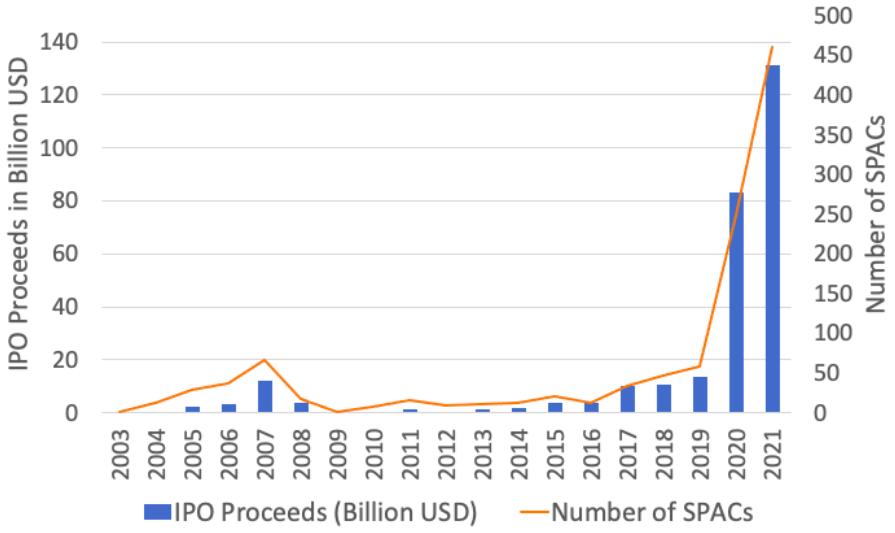
1. Introduction

A SPAC is a shell company, also denoted a blank check company, with no operating business that is created to take a private company public through a reverse merger. A reverse merger refers to a business combination where the private company merges into the publicly listed firm. SPACs consequently act as an alternative to the traditional initial public offering (IPO) process (U.S. SECURITIES AND EXCHANGE COMMISSION, 2021). In this way, SPAC is a topic in the intersection between mergers and acquisitions (M&A) and IPOs.

Parallel with the turbulence following the Covid-19 pandemic, SPACs have rocketed both in terms of the number of SPAC IPOs and the capital raised. From 2019 to 2020 in the US, we saw an increase of 320% in the number of SPACs and an even higher increase when comparing capital raised in SPAC IPO proceeds (SPAC Analytics, 2021). This trend is illustrated in *Figure 1*. It is also worth noting that 2020 was the first year where SPACs outnumbered traditional IPOs in the US. SPACs completed 248 IPO listings compared to 223 for other IPOs in 2020 (Rudden, 2021a). While proceeds raised were a bit higher for traditional IPOs than SPAC IPOs in 2020, this trend was reversed for the first half of 2021 (Rudden, 2021b).

Figure 1 – Trend in SPAC Activity in the US



Numbers obtained October 8th, 2021, from SPAC Analytics (2021)

PwC (2021) points to speed, certainty, and expertise as three main factors for the surge in SPAC activity. SPACs enable companies to become listed as fast as 3-6 months, whereas a traditional IPO process usually takes 12-24 months. With regards to certainty, SPACs avoid

the underpricing phenomenon that is common in IPOs due to SPACs facilitating a price decided on during the merger negotiations. Moreover, SPAC sponsors usually carry with them a lot of expertise that can prove beneficial for companies looking to go public (PwC, 2021). Fede et al. (personal communication, 2021) projected a surge in SPAC activity as early as 2017, but they also stated that the pandemic has made the process more efficient through digital meetings and quantitative easing provided by the Fed.

The recent popularity, as well as new, structural SPAC features in the later years, make this a relevant topic to investigate. SPACs are continuously changing their structure and trying to better align incentives among the players. Particularly, SPACs are often criticized for the misaligned incentives between the sponsors and the investors. The misaligned incentives especially stem from the sponsor who is granted a relatively large portion of the capital raised in the SPAC IPO as an equity stake in the merged company. A recent trend to align incentives is the introduction of sponsor earnouts. Earnouts provide an equity stake contingent on post-merger performance. Furthermore, to reduce the target's valuation risk from price disagreements, initiating target earnouts is viewed as a possible solution (Klausner, Ohlrogge, & Ruan, 2021).

In this thesis, we will investigate how the relatively unexplored earnout phenomenon impacts SPAC announcement returns. We divide earnouts into four different classifications: i) sponsor earnout, ii) target earnout, iii) at least one of the former (*General Earnout)*, and iv) both sponsor and target earnouts (*Both Earnout)*. The two formers are included together in the same regressions, whereas the two latter are run independently. Since earnouts are often announced at the same time as the SPAC announces a deal, we are particularly interested to see if announcement returns differ between earnout and non-earnout deals. This can provide valuable information on the effect an earnout has on the value creation in a SPAC deal and investors' perception of the deal. Consequently, this leads us to our main research question:

What effect do earnouts have on SPAC deal announcement returns?

With the market-adjusted model as the basis for computing the normal return and the S&P SmallCap 600 index as a benchmark, we found that *General Earnout, Sponsor Earnout,* and *Both Earnout* are related to lower CAR for stock when not controlling for other variables. *General Earnout, Target Earnout,* and *Both Earnout* are associated with lower CAR for warrants also when adding control variables. This indicates that earnouts are not a way to

sweeten the deal, perhaps because earnouts are more common in less valuable transactions. For warrants, we can therefore reject our main null hypothesis that earnouts have no effect on announcement returns for three of the earnout classifications.

Furthermore, *General Earnout* and *Target Earnout* in combination with a sponsor who has previously closed a SPAC deal have a higher announcement return than non-earnout deals. This is consistent with earnouts having a positive effect on deals with experienced sponsors. Moreover, *Both Earnout* in large deals has a lower announcement return than non-earnout deals, which indicates that contracts with both sponsor and target earnouts have a more positive effect in smaller deals. Whether we can reject our main null hypothesis that earnouts do not affect announcement returns, therefore, depends on the earnout type, deal characteristics, and the security in question.

We further find that *General Earnout, Sponsor Earnout,* and *Both Earnout* are associated with higher redemption in larger deals, which may translate into lower deSPAC returns (Moffatt, 2021; Gahng, Ritter, & Zhang, 2021). This suggests that earnouts have less redemption in smaller deals. Earnouts are thus not as attractive in the eyes of investors as the recent earnout scope would suggest. We can reject our sub-hypothesis that earnouts do not impact redemption rates for three of the earnout classifications conditional on large deals.

This thesis is organized into twelve sections. Section 2 introduces SPACs. Section 3 reviews the existing literature on SPACs by looking into SPAC characteristics, drivers, and performance. In section 4 we present our hypotheses. Section 5 provides information on our data sources followed by the variables we will use to test our hypotheses in section 6. Moreover, we will discuss methodology in section 7, results in section 8, and robustness and limitations in section 9. The subsequent sections consider recommendations for further studies, the future of SPACs, and a conclusion in sections 10, 11, and 12, respectively.

2. Introduction to SPACs

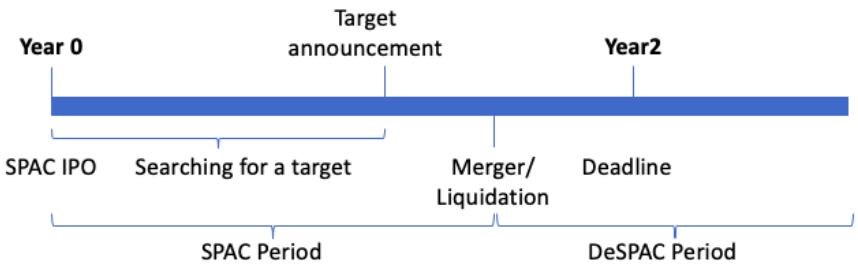
As the topic of SPAC is still relatively unexplored, we start by introducing the phenomenon, its origin, as well as elaborate on some important trends.

2.1 What Is a SPAC?

A SPAC is a shell company with no operating business that is created to take a private company public through a reverse merger. The sponsors, also referred to as the founder team, start the process by taking the blank check company public through an IPO. Thereafter, the sponsors have a limited time to find a private target company to merge with. Often this period is between 18-24 months, with the possibility to ask for an extension. The SPAC process is illustrated in *Figure 2*. The private company that the SPAC merge with therefore becomes listed without going through the traditional, and often drawn-out, IPO process. The SPAC is allowed to target a specific industry but is not bound to choose a private company within that predefined industry (U.S. SECURITIES AND EXCHANGE COMMISSION, 2021). However, it is not allowed to seek a specific target company before the SPAC IPO (Gahng, Ritter, & Zhang, 2021).

We will throughout this paper refer to the period between the SPAC IPO and the business combination as the *SPAC period* and the period after the reverse merger or liquidation as the *deSPAC period*, inspired by Gahng et al. (2021). For a list of terminologies, see Appendix *A.1 Terminology*.

Figure 2 – The SPAC Timeline

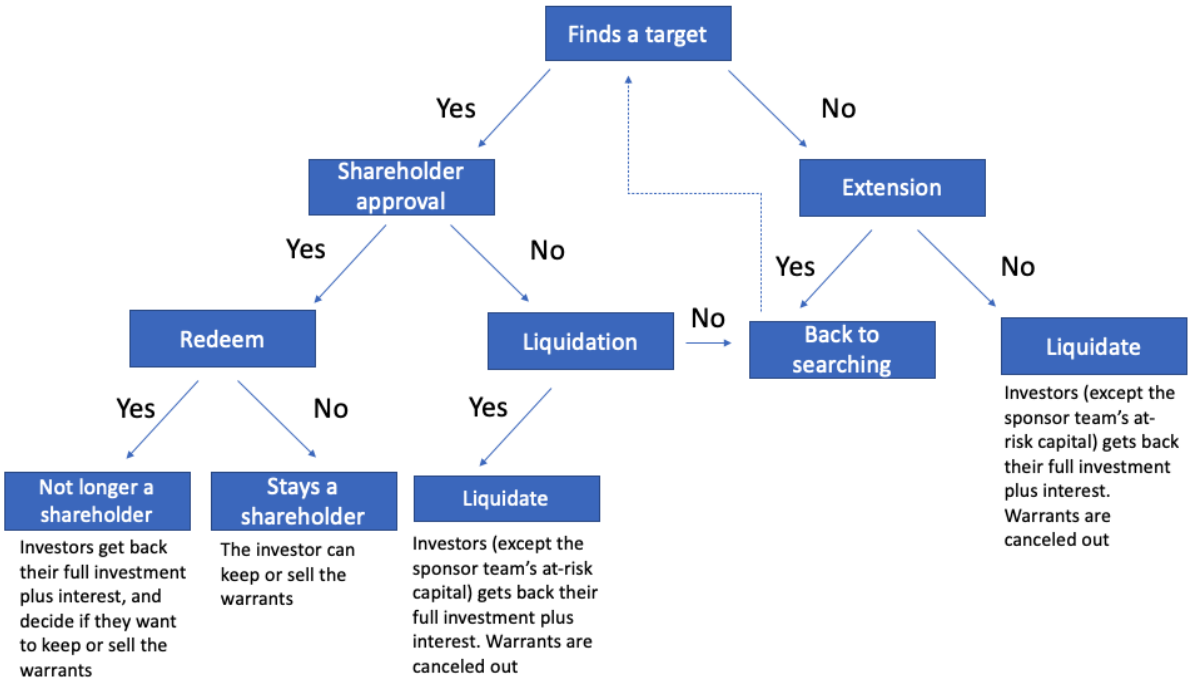


The choices following a SPAC process can be illustrated in a decision tree, see *Figure 3* below. If the SPAC does not find a target within the timeframe and if an extension is approved, the

SPAC will go back to searching for a target. If, however, an extension is not approved, the SPAC will liquidate and the funds with interest will go back to the investors (Gahng, Ritter, & Zhang, 2021). When the SPAC announces a target, the investors vote on the deal. A majority vote is required for approval. Sponsors and directors are excepted from voting (Lee, Keepin, & White-Tsimikalis, 2021). A business combination or a liquidation will both result in the deSPAC period. Approved deals typically offer sponsors around 20% of the SPAC stocks, known as the sponsor promote. Redeeming investors do not take part as shareholders in the post-merged company but will nonetheless get back their funds with interest and keep their warrants (Gahng, Ritter, & Zhang, 2021).

Sponsors may also invest in the SPAC, referred to as at-risk capital. At-risk capital covers underwriting fees and operating costs. This is a term related to the funds provided by the sponsors through the purchase of stocks or warrants (Klausner, Ohlrogge, & Ruan, 2021). Since the at-risk capital is not granted redemption rights, the money will be lost if the SPAC liquidates (Moffatt, 2021).

Figure 3 – The SPAC Decision Tree



SPAC securities are divided into four separately traded parts: i) units, ii) stocks, iii) warrants, and iv) rights. One unit comprises a stock, a fraction of a warrant, and sometimes also a right.

A warrant is an out-of-the-money call option with an exercise price of $11.5, that gives the holder the option to buy one stock after the merger. A right typically enables investors to receive one-tenth of a share in the combined firm for free (Klausner, Ohlrogge, & Ruan, 2021). In connection with the SPAC IPO, the SPAC raises money from investors at $10 per unit. The proceeds are placed in a trust account that earns interest (U.S. SECURITIES AND EXCHANGE COMMISSION, 2021). The SPAC IPO issues units, which are typically split up into stocks, warrants, and rights 52 days after the issuance (Clifford Chance, 2021).

Even if the investors redeem, they can nonetheless keep (or sell) their warrants and rights as these are non-redeemable. Hence, they are still able to become shareholders in the merged company (Gahng, Ritter, & Zhang, 2021). The deadline for investors to redeem is two days prior to the shareholder vote (SPAC Research, 2021a). They will then get back their initial funds with earned interest, which gives rise to the saying that the SPAC period investment is like a risk-free convertible bond (Gahng, Ritter, & Zhang, 2021; Klausner, Ohlrogge, & Ruan, 2021).

A high redemption rate will drain the SPAC from capital, which the sponsor can solve through Private Investment in Public Equity (PIPE). PIPE is usually done by institutional investors. This serves two different purposes: i) it provides additional equity, and ii) it gives the PIPE investors confidential information about the deal. The former may signal that PIPE investors believe in the deal. The latter shows that PIPE is a way to convey important information about a target company to other investors (Klausner, Ohlrogge, & Ruan, 2021).

2.2 The Origin of SPACs

The history of SPACs can be separated into three different eras, where SPAC 1.0 extends from 1993 to 1999, SPAC 2.0 from 2000 until 2009, and the last stage that we are currently in, SPAC 3.0, started in 2010 (Gahng, Ritter, & Zhang, 2021). Our focus will be on the latter.

The SPAC 3.0 is characterized by investors who can redeem their shares and at the same time approve a merger. The latest SPAC era is also characterized by smaller underwriting fees, which are now around 5.5%. Out of these fees, 2% are paid in connection with the SPAC IPO, while the rest is contingent on the completion of a business combination. Furthermore, nowadays at least 100% of the IPO proceeds are deposited into a trust account in comparison to around 85% before 2010. Lastly, the fraction of warrants and their affiliated exercise price

have decreased in the later years. Previously, it was common to have a 1:1 relationship between stock and warrant in one SPAC unit, but now this ratio can be much lower, often a quarter of a warrant per unit (Gahng, Ritter, & Zhang, 2021).

2.3 SPAC Trends

Earnouts

Earnouts have become more common in the last years parallel with the spike in SPAC activity. SPACs can contain both target and sponsor earnouts. Sponsor earnout ties the sponsor's compensation to deSPAC performance. A common structure is that some of the sponsor promote is granted after the merger whereas the rest is provided after certain stock price milestones are reached (Gahng, Ritter, & Zhang, 2021).

Target earnouts grant additional shares to target shareholders based on deSPAC stock price performance or earnings performance. These shares are either newly issued or taken from the sponsor promote (Matican, 2020). Target earnouts reduce asymmetric information of the target valuation and illustrate that target shareholders believe in the post-merger firm. Approximately 32% of completed deals in 2019 and 2020 included sponsor earnouts while 53% included target earnouts (Klausner, Ohlrogge, & Ruan, 2021).

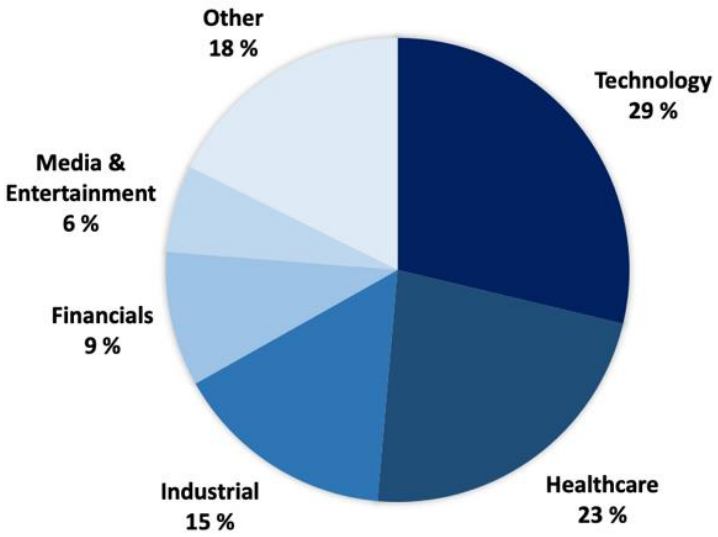
Earnout thresholds are often set at $12, $14, or $16 (Klausner, Ohlrogge, & Ruan, 2021). The earnout duration usually has a length of three, four, five years, or more (Hall, Hallam, & Dorsey, 2021). This means that the stock price (or another contingent measure) needs to reach the thresholds within the earnout period. An example of sponsor earnout for the SPAC called Amplitude Healthcare Acquisition Corporation is given by an excerpt from the filing:

> If, during the period from and after the Closing until the third anniversary of the Closing (the "Earnout Period"), over any twenty (20) Trading Days (as defined below) within any thirty (30) consecutive Trading Day period the VWAP (as defined below) of the AMHC Shares is greater than or equal to $15.00 (the "First Milestone"), then 500,000 Sponsor Earn-Out Shares shall vest and be released to the Sponsor (such 500,000 Sponsor Earn-Out Shares, the "First Milestone Earnout"). (EDGAR, 2021a, Page H-4)

Target Company Trends

SPAC is particularly a way for companies that are hard to value to become publicly listed (Klausner, Ohlrogge, & Ruan, 2021). From January 2019 to September 2021, over half of the completed deals merged with a target within technology or healthcare. Additionally, the sectors industrial, financials, and media and entertainment have shares of 15%, 9%, and 6%, respectively (White & Case LLP, 2021). This is illustrated in *Figure 4*.

Figure 4 – Target Companies by Sector



Numbers obtained from White & Case LLP (2021)

We also see an increasing trend of SPACs that have a focus on Environmental, Social, and Governance (ESG) targets at the time of their IPO. SPACs have facilitated scaling good technologies that would otherwise not have the necessary capital. Hence, SPACs have been viewed as a way of bridging capital and making more ESG companies become publicly listed (Fede, Getten, Mehta, & Wofford, personal communication, 2021).

3. Literature Review

Having introduced SPACs, we next continue with a review of relevant SPAC research. This section starts with a review of SPAC characteristics such as warrants, redemption, PIPE, sponsor promote, sponsor at-risk capital, and earnouts. Most of these characteristics are broadly discussed in the SPAC literature and help form our control variables. Further, we will discuss value drivers for investors, sponsors, and target companies followed by looking at SPAC performance returns. Even though SPACs have been around since 1993 (Gahng, Ritter, & Zhang, 2021), there has been relatively little research on the concept, particularly on earnouts and announcement returns.

Because of the structural differences between the various eras (Gahng, Ritter, & Zhang, 2021), it is reasonable to put most emphasis on the latest literature on SPACs. From these research papers, we have gained a larger understanding of the relevance of SPACs, both their advantages and limitations. This has helped us to identify gaps in the existing literature, which has further motivated our research question.

3.1 SPAC Characteristics

Warrants

There is consensus among researchers that warrants have a dilutive effect on the SPAC shareholders (Jenkinson & Sousa, 2009; Gahng, Ritter, & Zhang, 2021; Klausner, Ohlrogge, & Ruan, 2021). Gahng et al. (2021) find that SPACs with high dilution underperform when it comes to deSPAC returns. They also take this a step further and look at the dilutive effect in connection with redemption rates. The warrant structure creates an incentive for the investor to vote for any deal, including those that are value-destroying. This effect is, however, reduced by lowering the fraction of warrants in the SPAC unit (Gahng, Ritter, & Zhang, 2021).

Klausner et al. (2021) look at who bears the cost of the dilution. They conclude that the non-redeeming investors get the entire diluted effect. Gahng et al. (2021) point to contingent warrants as a recent feature to better align the investors' incentives. Contingent warrants give investors who do not redeem their shares the option to purchase additional shares after the merger is completed. This can help solve the misaligned incentives from investors as they are now less likely to redeem their shares and more inclined to approve value-creating deals. At the same time, it aims to incentivize sponsors to suggest good deals as fewer investors likely

will redeem. With less dilution, as a result, the share price performance is expected to increase (Gahng, Ritter, & Zhang, 2021).

The topic of warrant is relevant to our thesis as it describes a contractual agreement that directly impacts returns through dilution (Gahng, Ritter, & Zhang, 2021), and hence acts as a good control. As the concept of contingent warrants is still new to the SPAC sphere, the data material is likely not sufficient yet to compute the whole effect.

Redemption Rates

Another SPAC characteristic is related to redemption rights. Scholars agree that the structure of the redemption rights can provide an incentive to vote yes for any deal, also those that are value-destroying, and then later redeem their shares (Gahng, Ritter, & Zhang, 2021; Klausner, Ohlrogge, & Ruan, 2021). Gahng et al. (2021) discuss that SPACs are an attractive investment to redeeming investors. Even so, many researchers agree that higher redemption rates are associated with lower deSPAC returns (Moffatt, 2021; Gahng, Ritter, & Zhang, 2021).

Private Investment in Public Equity

PIPE is closely related to redemption rates. Even though the redemption rates have seen an upward trend in the later years, this has been offset by PIPE. PIPE is therefore a way to complete a business combination that would otherwise not have gone through due to cash restraints. Based on completed business combinations in 2019 and 2020, 77% of them received additional financing. It is also a way for the sponsor to get validation on the deal. The investors who take part in the PIPE sometimes receive a discount on their investments as compensation for an early commitment (Klausner, Ohlrogge, & Ruan, 2021). Moffat (2021) supports this notion and adds that PIPE is one reason why we are seeing a downward decline in SPAC liquidation rates.

As our main research question aims to say something about investors' expectations of the deal, PIPE is thus a good control due to the signaling effect (Klausner, Ohlrogge, & Ruan, 2021).

Sponsor Promote

It is not just the current dominant investor incentive scheme through warrants and redemptions that have received criticism for misalignment and dilution. Criticism is also aimed towards sponsors and their compensation. There is broad agreement between scholars that this promote cause dilution for existing shareholders (Jenkinson & Sousa, 2009; Klausner, Ohlrogge, & Ruan, 2021).

Klausner et al. (2021) add to the literature on sponsor incentives by stating that, given the compensation the sponsors receive, they have an incentive to go for value-destroying deals if the alternative is liquidation. Cumming et al. (2012) go one step further and find that sponsors try to rush through deals by shortening the duration of the process. This is because they can then try to avoid the pressure to find a target at the last minute and thus circumvent liquidation. They look at US SPACs from 2003 to May 2010. Even though their study is based on rather early SPAC data, recent studies also support the misaligned incentives (Gahng, Ritter, & Zhang, 2021; Klausner, Ohlrogge, & Ruan, 2021). Dimitrova (2016) finds that SPACs that complete business combinations close to the deadline have, on average, lower deSPAC returns. Hence, a shorter time to announcement might say something about the sponsor's incentives and is, therefore, a good control variable.

Other researchers also support the misaligned incentives between sponsors and investors. Both Jenkinson and Sousa (2009) and Dimitrova (2016) find that sponsors have incentives to purchase large blocks of openly traded stocks with voting rights before the voting to increase the probability of deal approval. They further find that a majority of the SPAC deals are value-destroying. Jenkinson and Sousa (2009) point to the negative CAR in the first six months of -24% and one year post-merger CAR of -55%, while Dimitrova (2016) finds a negative abnormal stock return over a long time horizon. Dimitrova (2016) also finds that sponsors' stock purchases before voting are more likely to happen for bad deals. Both researchers state that this creates a conflict of interest given the potential upside for sponsors and consequently emphasizes the sponsor's role in increasing the number of value-destroying deals.

Even though several researchers agree that sponsors would rather see a value-destroying business combination as opposed to liquidation, the actual sponsor compensation is not discussed (Cumming, Haß, & Schweizer, 2012; Jenkinson & Sousa, 2009). On the other hand, Gahng et al. (2021), find evidence that the actual sponsor compensation is not as lucrative as previous research has implied. They find that sponsors forfeit on average 34% of their compensation. This is transferred to investors with the aim that they will not redeem their shares. Gahng et al. (2021) interpret this as a way of having any deal achieved. This is also supported by their finding that underwrites on average forfeit 24% of their compensation.

The studies on sponsor's misaligned incentives through the sponsor promote is relevant to our research, because it gives opportunities to change the SPAC structure to provide better

alignment. This is exactly what sponsor earnouts are trying to achieve, which will be further discussed under *Sponsor Earnout*.

Sponsor At-Risk Capital

Another topic related to misaligned incentives is connected to the sponsor's at-risk capital. While Klausner et al. (2021) claim that the misaligned incentives between sponsors and investors will be broadened with more at-risk capital, Moffatt (2021) dismisses this result. Based on his study of completed SPAC business combinations from the beginning of 2016 to April 2020, he finds evidence of a positive connection between at-risk capital and share price growth. He, therefore, concludes that at-risk capital is a way to connect sponsor's compensation to deSPAC performance for 90 days, 180 days, and 1-year deSPAC returns.

The conflicting findings on the sponsor's at-risk capital provide an opportunity for us to see how this impacts their incentives connected to announcement returns. This makes at-risk capital highly relevant to control for in our thesis.

Sponsor Earnout

Klausner et al. (2021) discuss the sponsor's transfer of proceeds and sponsor earnouts as features that may solve the misaligned incentives. While sponsors forfeit erases the securities, sponsors can also transfer stocks or warrants to PIPE investors to sweeten the deal (Gahng, Ritter, & Zhang, 2021). On the other side, Fede et al. (personal communication, 2021) speculate on how earnouts might overcomplicate the SPAC deal.

As the topic of earnouts, to our knowledge, lacks research on the effect on investors' reaction to the use of these contractual agreements, this makes it relevant to investigate. Earlier researchers have mentioned the characteristics of earnouts, but not more in-depth (Cumming, Haß, & Schweizer, 2012; Jenkinson & Sousa, 2009; Gahng, Ritter, & Zhang, 2021; Klausner, Ohlrogge, & Ruan, 2021). Consequently, this motivated us to investigate this unexplored area and by this bridge a gap in the current SPAC literature.

Target Earnout

There is extensive research on earnouts in the M&A literature. These kinds of earnouts can be viewed as comparable to target earnouts in SPAC deals. Due to the narrow SPAC literature concerning target earnouts, it thus makes sense to review the current M&A earnout literature.

There has been pointed out that moral hazard and adverse selection are important factors for the popularity among earnout-based M&A deals. Moral hazard is asymmetric information between the management and the owners, where the management has superior information. Adverse selection is caused by the buyer not knowing the true value of the seller and the seller is incentivized to hold back damaging information to maximize their profit (Gencheva & Davidavičienė, 2016). Kohers and Ang (2000), who look at earnout-based M&A deals, support their notion and state that earnouts are aimed at reducing the valuation risk that stems from moral hazard and adverse selection. This is supported in the SPAC literature as well, where Klausner et al. (2021) highlight that target earnouts address symmetric information.

Another interesting similarity between M&A and SPAC-based earnout deals is related to the target sector. Earnouts are particularly common in M&A deals among high-tech and healthcare targets (Kohers & Ang, 2000). Increasingly more SPAC targets are within the healthcare and tech sector (NYSE, 2021a), which is consistent with the increase in the number of target-earnout-based SPACs in the later years (Klausner, Ohlrogge, & Ruan, 2021). This is also consistent with Hung et al. (2021) who focus on SPAC returns in, among others, the tech, and medical industries.

The M&A literature can further enhance the understanding of target earnouts and their effect concerning other features. Barbopoulos and Danbolt (2021) look at 31,214 M&A deals from 1986 to 2016. They look at the effect of size and maturity of acquiring firms for earnout-based and non-earnout-based deals. Their results show that larger and more senior acquiring firms that include earnouts have higher acquirer gains than smaller and younger firms. As size can be thought to be comparable with SPAC proceeds and seniority comparable with sponsor experience, these are relevant variables for us to include as controls.

Klausner et al. (2021) emphasize that target earnouts are a way for the market to evaluate the deal before compensating the target shareholders. Another positive trait, though with an M&A focus, put forward by Enrile (n.d.), states that a benefit of including target earnouts is to better distinguish between good and bad targets. Particularly, he proposes that low-quality targets should be less willing to accept earnouts as they know their true value. Nevertheless, there can also be downsides to the use of target earnouts. According to Bruner and Stiegler (2001), a downside with earnouts is if the target management team does not obtain a large enough portion of the earnout compensation, for example, if the target management holds a small

share in a large target firm. In this case, the earnout consideration might not fulfill its purpose by not adequately incentivizing the management team (Bruner & Stiegler, 2001).

If the signaling effect with earnouts is prominent, one would assume that the SPACs having target earnouts are those where the targets are indeed good (Enrile, n.d.). This is an interesting perspective when formulating our hypothesis but should also be weighed against the increased structural complexity of earnout deals, as stated by Fede et al. (personal communication, 2021). Also, one should consider the potential dilutive nature of target earnouts in SPAC deals, especially if new shares are issued (Matican, 2020).

3.2 What Are Value Drivers for Choosing a SPAC?

Given the SPAC popularity, it is interesting to review some of the value drivers for choosing a SPAC. Here we will focus on value drivers for investors, sponsors, and target firms. We believe that value drivers shape investors' expectations, where the drivers can be used as control variables in our study.

3.2.1 Investor Drivers

Who Are the SPAC IPO Investors?

SPACs have traditionally been outlined as the "poor man's private equity funds" (Dimitrova, 2016, page 1) as it provides regular people the opportunity to access the private equity (PE) market (Dimitrova, 2016). For example, Dimitrova (2016) compares SPACs to a one-shot PE transaction for regular investors, and Agarwal (2021) points to the low $10 IPO price per share which also attracts retail investors.

There are, however, not all researcher who agrees with this saying. The saying has particularly received criticism from Klausner et al. (2021). They emphasize that SPACs can not be compared to PE because most SPAC investors redeem their shares before the business combination. It is, however, common for PE investors to hold the investment through, PE exit. Moreover, since most of the SPAC investors are large funds, the saying that SPACs facilitate for retail investors gives a wrong picture of how it usually unfolds (Klausner, Ohlrogge, & Ruan, 2021).

A well-known term in this regard is the *SPAC Mafia*. This group consists of hedge funds that are known to trade shares in the SPAC period but then redeem before the business combination

(Klausner, Ohlrogge, & Ruan, 2021). Klausner et al. (2021) argue that they instead see the downside protection as an opportunity for gains. The SPAC Mafia hence leverages the arbitrage opportunity (Aliaj, Indap, & Kruppa, 2020).

Risk-Free Convertible Bond Structure

Numerous researchers have defined SPACs as a risk-free option to take part in a business combination (Jenkinson & Sousa, 2009; Gahng, Ritter, & Zhang, 2021; Klausner, Ohlrogge, & Ruan, 2021). Jenkinson and Sousa (2009) emphasize that the market prices at announcement should be a good indication of whether to approve or not approve the deal. Since redeeming investors receive their full investment back plus earned interest while retaining warrants and rights, this is viewed by the authors as attractive as it provides low risk and high control.

The attractive investment opportunity is also highlighted by Gahng et al. (2021). They find that during the SPAC period, early-stage investors earn, on average, 9.3% in annualized returns, either through selling or redeeming their shares five trading days before the business combination or liquidation. They base their study on 114 SPACs that went through an IPO between the beginning of 2010 and May 2018. The annualized return of 9.3% originates from a 2% return from the liquidated SPACs and a 10.6% return from the merged SPACs.

While Gahng et al. (2021) look at redeemed and sold shares in combination, Klausner et al. (2021) instead focus on the annualized returns that stem from redemption during the SPAC period. They only include completed deals and not the ones that got liquidated. The annualized return of early-stage investors who redeemed their shares was on average 11.6%. This return is computed based on the earned interest from the trust account plus the value of their warrants and rights that is observed in the market at the time of the merger.

Upside Potential

Investors have an upside potential through their warrants and rights, which can also be viewed as an important value driver. Gahng et al. (2021) find that on the first anniversary after the completion of the business combination, warrant investor's average return is 44.3% while common shares investor's average return is -15.6%. Besides, they find that more warrants and rights are associated with lower deSPAC performance for those holding common shares, and the same is true with higher redemption rates. Klausner et al. (2021) refer to the latter finding as warrants being essentially given out for free.

Other drivers for investors

Another value driver for investors is access to liquid security in contrast to a PE fund. Likewise, investors can benefit from the sponsor team's expertise and network (Fede, Getten, Mehta, & Wofford, personal communication, 2021). The role of the sponsor team has been highlighted throughout most papers on SPACs. It is, for example, referred to as "betting on the jockey" (Cumming, Haß, & Schweizer, 2012, page 23). Since SPACs are shell companies with no operating business, the best information that investors base their decision on is the experience of the sponsors (Cumming, Haß, & Schweizer, 2012). This is an essential control variable for us to test as it says something about investors' expectations towards the sponsor team. Lastly, the companies going public through a SPAC often vary from those in a traditional IPO. In this way, investors get access to more investment opportunities (Bai, Ma, & Zheng, 2021).

3.2.2 Sponsor Drivers

Who Are the Sponsors?

The typical SPAC sponsor is an industry executive. They usually have prior experience with M&A, listed companies, or previous entrepreneurial experience (Jefferies, n.d.). Klausner et al. (2021) highlight that 51% of the sponsors in their data sample had experience from either being the senior executive of a Fortune 500 company or from a large fund with a minimum of 1 billion (Bn) dollars under management.

The literature on SPACs varies according to what is defined as a sponsor with previous experience. In a webinar organized by the law firm Baker Botts, the participants highlighted several features about the ideal SPAC sponsor. According to them, the ideal sponsor has, among other things, M&A practice, previous SPAC experience, a track record showing their talent in creating shareholder value, and/or the skill to acquire capital (Fede, Getten, Mehta, & Wofford, personal communication, 2021). Moffatt (2021), on the other hand, defines sponsor expertise as having completed at least two SPAC mergers. Another interesting angle to sponsor's experience is raised by Hung et al. (2021). They particularly look at founder characteristics such as level of education, financial experience, age, and patent proprietorship and study if these traits affect SPAC performance.

In the webinar, it was also stated that serial sponsors are becoming more and more experienced with the SPAC process. In their view, this increase in experience for the sponsors and other

actors facilitating the deal is why we have seen a shorter period between the IPO and the merger. The increase in the SPAC efficiency can also somewhat be attributed to the digital era following the Covid-19 pandemic (Fede, Getten, Mehta, & Wofford, personal communication, 2021).

Upside potential

Similar to the investor's motivation to engage in a SPAC deal, the sponsor also has upside potential. Most importantly, there is consensus among researchers that the most prominent upside is the sponsor promote (Gahng, Ritter, & Zhang, 2021; Klausner, Ohlrogge, & Ruan, 2021). Besides, the sponsor can purchase attractively priced warrants that provide an upside in case of a successful deal. However, the risk-free bond structure is not present for sponsors, as the at-risk capital will be lost in case of liquidation (Klausner, Ohlrogge, & Ruan, 2021). Nonetheless, the at-risk capital invested is often minimal (Gahng, Ritter, & Zhang, 2021).

Other drivers for sponsors

Fede et al. (personal communication, 2021) also point to other drives that can incentivize sponsors to take part in a SPAC deal. For example, sponsors can increase their reputation, get access to a broader range of target companies, and work under attractive funding opportunities through the SPAC IPO and PIPE. The attractiveness related to PIPE is broadly supported in the literature (Gahng, Ritter, & Zhang, 2021; Klausner, Ohlrogge, & Ruan, 2021).

3.2.3 Target Drivers

Who Are the Target Companies?

Bai et al. (2021) state that the private companies that go public through a SPAC are characterized as "Good Risky" whereas IPO firms are "Good Safe". Although both types of firms are defined by them as value-creating, the former will achieve high returns in the upper state but have a lower likelihood of success. They emphasize that the inherent bond-like payment to investment banks in the IPO process hinders them to take good and risky companies public. Bai et al. (2021) conclude that the SPAC structure is a way to solve this misallocation, such that firms that can generate value in the upper state are matched with yield and risk-seeking investors.

Valuation and Deal Terms

A key driver for target companies is to avoid underpricing that is common for traditional IPOs (Cumming, Haß, & Schweizer, 2012). Instead, the pricing is negotiated directly with the

sponsor team. In addition, the target can achieve greater flexibility than in an IPO due to potential earnout agreements, sponsor forfeiture, and a faster deal process (U.S. SECURITIES AND EXCHANGE COMMISSION, 2021; Klausner, Ohlrogge, & Ruan, 2021).

Sponsor Experience

Target companies can leverage sponsors' industry experience and network. This can signal credibility and easier attract additional financing. Moreover, a high-profiled sponsor on board can increase expectations in the long term (Fede, Getten, Mehta, & Wofford, personal communication, 2021). This again shows that sponsor experience is an important control variable. Bodewes (2021), on the other side, finds a negative relationship between SPAC experience and long-term performance.

3.3 SPAC Announcement Returns

The last thing we want to highlight before we present our hypotheses is a review of SPAC announcement returns. The recent literature focuses on different SPAC return intervals, with the most emphasis on SPAC period returns and deSPAC returns. While we have previously mentioned several SPAC return findings within these two periods, we have not yet reviewed announcement returns, which therefore is the topic of this section.

We want to review two papers that have applied an event study methodology to obtain SPAC target announcement returns (Lakicevic & Vulanovic, 2013; Slomp, 2009). These papers are relevant to our thesis as they apply a similar testing approach.

Slomp (2009) applies a market-adjusted model that adjusts for a three-month US T-bill and finds a CAR over a three-day window of 2.6% for the SPAC shareholders. Moreover, when using a one-day return window, he finds that SPACs that announce a target close to the deadline are associated with lower abnormal returns. This variable is consistent with the timing variable that we have discussed concerning Dimitrova (2016).

The paper by Lakicevic and Vulanovic (2013) applies the market model with an estimation window of 50 days to calculate abnormal returns for common stocks, warrants, and units. This paper is relevant as it looks at all three security types, not just stocks as most of the other papers focus on. Even though the market model is often one of the preferred statistical models

to be used in event studies (MacKinlay, 1997), a limit with Lakicevic and Vulanovic's study (2013) is their short estimation window. Armitage (1995) suggests having at least 100 days.

We have now reviewed the existing literature on SPACs. There is broad agreement that sponsor's incentives are a major issue (Jenkinson & Sousa, 2009; Klausner, Ohlrogge, & Ruan, 2021), in addition to potential valuation gaps (Klausner, Ohlrogge, & Ruan, 2021). Previous papers help us form relevant variables, testing strategies, and define our hypotheses. Despite the seemingly positive aspects of earnouts, SPAC researchers have only briefly touched upon this on a general level (Cumming, Haß, & Schweizer, 2012; Jenkinson & Sousa, 2009; Gahng, Ritter, & Zhang, 2021; Klausner, Ohlrogge, & Ruan, 2021). Whether earnouts can sweeten the SPAC deal is, therefore, a gap in the current literature, and this is the basis for our hypotheses.

4. Hypotheses

This section outlines the main hypothesis that we are going to explore to answer our main research question. In addition, we have included a sub-hypothesis. Our aim is that our findings will further enhance the literature on earnouts in SPAC deals. Our main research question is:

What effect do earnouts have on SPAC deal announcement returns?

As M&A-based earnouts can be viewed in relation to the agency theory, we see similarities for target and sponsor earnouts in SPAC deals as well. Target earnout is a source of skewed information sharing between target shareholders (agent) and sponsors (principal) (Gencheva & Davidavičienė, 2016). Likewise, we argue that sponsor earnouts are a form of asymmetric information between sponsors and investors. Particularly, we believe that the investor (principal) indirectly gives the sponsor (agent) the task of finding a value-creating deal. Because the sponsor usually encompasses more information and can benefit from not listening to the needs of the investors due to the sponsor's promote, asymmetric information is present.

Due to Covid-19, it was expected that earnouts would increase in magnitude for M&A deals as the unstable situation led to valuation gaps (Mennerick & Trame, 2020). The pandemic is probably a factor for why we have seen earnouts increasingly more common in SPAC deals as well. With the pandemic facilitating for increased target earnouts, sponsor earnouts can be considered mainly triggered by the inherent criticism towards the sponsor promote (Gahng, Ritter, & Zhang, 2021). Consequently, this has been a starting point for our hypothesis.

H0$_{\textbf{Main hypothesis}}$: *Earnouts do not impact SPAC announcement returns*.
H1$_{\textbf{Main hypothesis}}$: *Earnouts have an impact on SPAC announcement returns*.

There are contradictive views among researchers on the effect of earnouts. On a positive note, sponsor earnouts may reduce the misaligned incentives between sponsors and investors, and additionally target earnouts can signal that the players believe in the deal (Klausner, Ohlrogge, & Ruan, 2021). From the M&A literature, it has been pointed out that when financial institutions add earnouts to the deal, the announcement period returns outperform the non-earnout deals (Barbopoulos & Wilson, 2013). Moreover, it may have a signaling effect where low-quality targets should be less willing to accept earnouts as they know their true value (Enrile, n.d.). Earnouts may also solve the potential principal-agent problem (Gencheva &

Davidavičienė, 2016). If investors view earnouts positively, redemption might be less attractive.

On the contrary, there are mainly four counterarguments. First, earnouts may lead to dilution (Matican, 2020). Another argument is the complicated contractual structure (Fede, Getten, Mehta, & Wofford, personal communication, 2021). Third, poor historical deSPAC returns (Klausner, Ohlrogge, & Ruan, 2021) may provide skepticism towards if the stock price milestones will be met. Hence, sponsor earnouts might lose their purpose. Lastly, we believe that self-selection of earnouts might be an issue. By this, we mean that the sponsor might only include earnouts to increase the likelihood of getting the deal approved. This can signal that the deal is bad or that there is a presence of high misaligned incentives. Redemption is thus a more likely road for all four arguments.

If we can reject our null hypothesis, earnouts' effect on CAR will not be equal to zero. This can signal investors' perception of earnouts. How investors perceive the deal will probably also be reflected in the subsequent redemption rates. This is interesting as it may imply a relationship between earnouts and redemption rates, which further brings us to our sub-hypothesis.

H0$_{\text{Sub-hypothesis}}$: *Earnouts do not impact redemption rates*.
H1$_{\text{Sub-hypothesis}}$: *Earnouts have an impact on redemption rates.*

If we can reject our null sub-hypothesis, there is not enough evidence that earnouts do not affect redemption rates. Since earlier research documents that higher redemption is associated with lower deSPAC returns (Gahng, Ritter, & Zhang, 2021), it is interesting if we find a relationship between earnouts and redemption rates. This is however contingent on a violation of the market efficiency assumption (Hall, 2019). If we assume the projected redemption rates are not fully captured in the security prices, this argument can be defended.

We are not aware of previous studies that investigate the effect of earnouts in SPAC deals. This most likely stems from the fact that earnout data is not a default function on SPAC databases. As earnouts have increased in magnitude in the last couple of years, there might also not have been enough data material to run robust regressions before now. We believe that research on earnouts will provide useful knowledge and further enrich the SPAC literature.

5. Data

In this section, we will present the databases we have used to collect our data sample. The process has been time-consuming due to manual computing and filtering. As there is, to our knowledge, not one database that contains all the data points we find necessary to test our hypotheses, we have made use of several different and complementary ones. For detailed information regarding the data selection process, see Appendix *A.2 Data Selection*.

5.1 SPAC Research

We make use of SPAC Research to collect SPAC deals that were announced between the beginning of 2020 to end of May 2021. SPAC Research comprises pre-IPO, pre-deal, live deals, and closed deals that are listed in the US (SPAC Research, 2021b). The live and closed deals are the relevant ones for our hypotheses as they have announced a target company. Our data period captures the latest trend in earnouts. Moreover, the period makes it easier to compare results with Klausner et al. (2021).

From SPAC Research, we identified 228 SPACs that announced deals in our period. However, two of the SPACs are removed from the dataset as they got liquidated without announcing a target (EDGAR, 2020; EDGAR, 2019). Hence, we are left with 226 SPACs after the initial screening. We further utilized SPAC Research to gather additional information such as IPO date, target announcement date, name of target, closing date/deadline date, IPO proceeds, the board size, deal size, the fraction of warrants and rights in one unit, and redemption rates.

Redemption rates are cross-checked with Boardroom Alpha. A potential issue with cross-checking Boardroom Alpha and SPAC Research is that they communicate the data somewhat differently. SPAC Research is more accurate with decimals whereas Boardroom Alpha rounds up, and sometimes the rounding is not in accordance with SPAC Research. An example is with Good Works Acquisition Corp. where SPAC Research publishes 74.4% (SPAC Research, 2021b) while Boardroom Alpha publishes 76% redemption (Boardroom Alpha, 2021). In these cases, we have utilized SPAC Research. In cases where SPAC Research is insufficient or lacking data, we have utilized Boardroom Alpha as a proxy. Redemption data is available for 209 of the SPACs. For data on underwriters, we have used those that are listed as book runners on SPAC Research, which is double proofed on the S1 filings on the EDGAR database.

5.2 SPAC Track

Another database that contains useful information on SPACs is SPAC Track. This database consists of several tools such as completed SPACs from 2019 and onwards, sponsor tracker, and deal screener. We utilized SPAC Track parallel to SPAC Research to double-check the consistency of the data. Moreover, we collect sponsors' experience using SPAC Track. The sponsor tracker shows the sponsor's track record, and the list contains sponsors who have one or more completed SPACs and already launched the second one or the sponsors who have founded two or more SPACs (SPAC Track, 2021).

5.3 EDGAR

From the SEC filings in the EDGAR database, we manually collect contractual agreement details. The EDGAR database contains company reports such as merger filings and registration statements (EDGAR, 2021b). Particularly we make use of the 8-K current report, Exhibit 2.1, and Exhibit 10.2 that are published at or shortly after the target announcement date, as well as the initial 8-K filing. From these filings, we gather information on earnouts, PIPE, and at-risk capital.

From the 8-K current report after target announcement, we search for target earnouts under the *Merger Agreement* section. Sponsor earnouts are also collected from the same report under the *Sponsor Support Agreement* with Exhibit 10.2 used to gather additional information on the terms of the sponsor agreement. Moreover, the way earnouts are presented in SEC filings differs from SPAC to SPAC with various expressions such as "earnouts", "contingent rights", "sponsor vesting" etc.

Information about the sponsor's at-risk capital is obtained from both the first 8-K and the 8-K after the target announcement. To double-check that the capital provided by the sponsor is indeed at-risk (non-redeemable) we check this with the first S1 filing "Registration Statement". We collect initial at-risk capital for summary statistics purposes and the additional at-risk after target announcement as a control variable. We use Exhibit 2.1 to gather data on PIPE, and this form is also used in the cases where 8-K is deficient.

All the selected SPACs are available in the EDGAR database, and since we do not exclude non-earnout SPACs from the dataset, we are still left with 226 SPACs. When running the

regressions, we use a dummy for deals containing earnouts to be able to compare announcement returns between earnout and non-earnout deals. This process will be further described in section *6.2 Independent Variables*.

5.4 Wharton Research Data Service

We employed Wharton Research Data Service (WRDS) to obtain data on stock prices (S) and warrant prices (W). WRDS contains a broad dataset across disciplines (Wharton Research Data Service, 2021), and contains stock and warrant prices for nearly all SPACs in our dataset. For lack of data, we used SPAC Research to fill the gaps. Particularly, we obtained daily closing stock and warrant prices from three days before the announcement to two days after the announcement. However, some of the SPACs were not split up into stocks and warrants and some SPACs do not include warrants. After the price data collection, we ended up with 223 SPACs with stock returns and 211 SPACs with warrant returns in the period from one day before the target announcement to one day after the announcement.

It is worth noting that we do not attain information on unit prices. Ideally, we would like to look at announcement returns for all three security types, but due to data limitations, we have chosen to focus solely on stock and warrant prices.

6. Variables

In this chapter, we outline our dependent variables, independent variables, control variables, and interaction terms that are used to answer our research question. Our dependent variables are announcement returns and redemption rate, and our independent variables of interest are different versions of earnouts. We additionally include several control variables, depending on the regressions. These include a dummy for sponsor experience, a ratio of PIPE to proceeds, a dummy for large deals, a dummy for additional at-risk capital, the number of book runners, a dummy for a fast announcement, the board size, and the warrant fraction.

We include descriptive statistics for the variables when presenting these, as well as including a summary statistics table under *6.5. Summary Statistics and Correlation*. In addition, a presentation of how the different variables vary with earnouts will be discussed throughout this section. See also Appendix *A.3 Variables* for a table summarizing the variables and Appendix *A.4 Correlation Table*.

6.1 Dependent Variables

Announcement Returns

Our dependent variable for our main hypothesis is *Announcement Returns*. We apply an event study methodology, and thus our dependent variable is CAR. Since stocks and warrants are relevant securities in a SPAC, we look at the CAR of each one individually. Our main event window runs over three days starting the day before the target announcement to one-day post-announcement. Hence, the dependent variables are given by CARS3 and CARW3, respectively. Additionally, we use a two-day event window for robustness, given by CARS2 and CARW2.

The raw security returns are calculated by applying a natural logarithm approach (Adnan & Hossain, 2016), as shown in equation 1. Thereafter the abnormal return is computed using the S&P SmallCap 600 index as a benchmark for the normal return. Lastly, CAR is found by taking the sum of abnormal returns over the event window. See section *7. Methodology* for more in-depth about the methodology and calculations that we applied.

(1) $$R_{it} = \ln\left(\frac{Price_t}{Price_{t-1}}\right)$$

From the beginning of 2020 to the end of May 2021, the average CARS3 is 7.5% and the average CARW3 is 22.6%. Over the two-day event window, the average CAR is 7% and 19.3% for stocks and warrants, respectively.

Redemption

Our other dependent variable is *Redemption* which is included in our sub-hypothesis. This variable refers to the percentage of investors who choose to redeem their shares. The average redemption rate is approximately 38%. There are, however, not all SPACs where the investors redeem. Out of the 209 SPACs with available redemption data, approximately 32% of these have less than 1% redemption rate, while around 20% have a redemption rate higher than 80%.

6.2 Independent Variables

Earnouts

Our variable of interest is how earnouts affect announcement returns and redemption rates. Earnout considerations are most of the time announced at the same time as the SPAC announces a target. We divide earnouts into four dummy variables: *General Earnout*, *Target Earnout*, *Sponsor Earnout*, and *Both Earnout*. *General Earnout* is a dummy variable that takes the value 1 if the deal has at least either target or sponsor earnouts. *Target Earnout* is equal to 1 if target earnouts are present, whereas *Sponsor Earnout* takes the value of 1 if sponsor earnouts are present. Lastly, the dummy of *Both Earnout* is equal to 1 if both target and sponsor earnouts are present in the same deal. The variables are 0 otherwise. That means that if *General Earnout* equals 0, the deal does not contain any earnout considerations.

The variables *General Earnout* and *Both Earnout* are never included together in the same regression nor included with the two other earnout variables. This is because these are functions of target and sponsor earnouts and requires the exclusion of one dummy category if they are included in the same regression. *Target Earnout* and *Sponsor Earnout* are included together as they serve a different purpose in the SPAC contracts. They have a low degree of correlation of approximately 16%.

From our data, 56.2% of SPACs contained at least one earnout agreement while 16.4% had both. Our dataset also shows that 42.9% have target earnouts and 29.6% have sponsor earnouts, which is a bit lower than in Klausner et al. (2021).

To our knowledge, previous research on SPACs has not looked at how earnouts impact SPAC returns, whether it be announcement returns, SPAC periods returns, or deSPAC returns. Our independent variables are therefore where we contribute to existing research on SPACs and fill a gap in the current literature.

6.3 Control Variables

Sponsor Exp

Sponsor Exp is defined as a dummy for previous sponsor SPAC experience. The variable takes the value of 1 if the sponsor has previously completed at least one SPAC merger before the target announcement, and 0 if the sponsor does not have any previous SPAC experience. This means that the information of whether the sponsor has previous experience not necessarily is known at the time of the IPO. As long as the sponsor completes a previous deal before the SPAC that we are looking at announces a deal, it is included as experience. We believe that sponsor's experience will affect announcement return and redemption rates.

Our definition of sponsor experience is consistent with Moffatt (2021). Even though he defines sponsor expertise as having completed at least two SPAC mergers, his dataset is larger than ours. If we would have defined the variable accordingly, this would only be suitable for 19 SPACs in our dataset. It, therefore, made sense for us to use a limit of at least one previous SPAC completion.

Our data shows that 25.7% of the SPACs have a sponsor with previous experience. Among experienced sponsors, 66% include *General Earnout,* 57% include *Target Earnout,* 31% include *Sponsor Earnout*, and 22% include *Both Earnout.* In contrast, the distribution is 54%, 39%, 29%, and 14% for non-experienced sponsors, respectively. An experienced sponsor, on average, raises 391 million in proceeds and completes deals with an average size of about 3 Bn. In comparison, a non-experienced sponsor raises, on average, 280 million and completes average deal sizes of about 2 Bn.

Sponsor Exp correlates with *Additional At-Risk Capital,* with a correlation coefficient of 33.7%. We hence need to be careful when adding these two in the same regression. In the deals where the sponsor invests more at the target announcement, 63% of the deals have experienced sponsors.

Sponsor experience is also included because it might influence the choice of earnouts. We believe that if a sponsor previously has included earnouts that turned out successful, this increases the likelihood of including it in future SPACs as well. If we do not include sponsor experience as a control variable, this might therefore break with the zero conditional mean assumption, and we would have an endogeneity problem (Bütikofer, 2021).

PIPE/Proceeds

The variable of *PIPE/Proceeds* shows the ratio of PIPE divided by the level of IPO proceeds. This variable is consistent with previous research (Bodewes, 2021). If there is a lack of proceeds to complete a deal, additional PIPE is usually obtained to fill the gap. A ratio higher than 1 shows that the level of PIPE is higher than the initial capital raised in the IPO. PIPE might be obtained because the sponsor expects a high redemption rate, or that the sponsor has decided on a target that does not cover the initial proceeds. Furthermore, PIPE might suggest that institutional investors believe in the target and the deal (Klausner, Ohlrogge, & Ruan, 2021). The variable of *PIPE/Proceeds* is included for both hypotheses.

In some cases, the sponsor participates in the PIPE. An example is PTK Acquisition Corp. Here the total PIPE is $125 million whereof $4 million are purchased by the sponsor team (EDGAR, 2021c). We have then adjusted the PIPE to $121 million and considered the rest as additional at-risk financing, see the *Additional At-Risk Capital* variable below. If the sponsor's PIPE contribution is not specified in numbers, we have chosen to include this entirely under PIPE.

The average *PIPE/Proceeds* ratio is 94%. This shows that the level of PIPE is roughly the same as the amount raised in the IPO. Among deals with *General Earnout,* the *PIPE/Proceeds* ratio is about 83% while it is 108% for non-earnout deals. The average level of *PIPE/Proceeds* is 82% and 103.3% for deals with and without *Target Earnout,* respectively, and 79.3% and 100.3% with and without *Sponsor Earnout,* respectively. Lastly, the average ratio is about 73% for deals containing *Both Earnout* and roughly 98% otherwise.

Large Deal Size

Large Deal Size is a dummy that equals 1 for deals that are larger than the median of $1.307 Bn, and 0 otherwise. This variable is included for both hypotheses as we believe it might influence investors' perception of the deal. Among large deals, 55.8% add *General Earnout,* 38.9% add *Target Earnout,* 38.1% include *Sponsor Earnout,* and 21% include *Both Earnout.* The distribution is 56.6%, 46.9%, 21.2%, and 12% for smaller deals, respectively. One would assume that large deals correlate with the number of book runners, but we only see a relatively low correlation of 19.3%.

Additional At-Risk Capital

Additional At-Risk Capital is defined as a dummy for the sponsor's additional investment at the target announcement. The variable equals 1 if the sponsor team invests more capital at the target announcement, and 0 otherwise. Typically, almost every sponsor makes an initial investment in the SPAC which is often used to cover running expenses. That means that if the variable equals 0, the sponsor has nonetheless most likely invested at the time of the IPO.

By looking at the capital invested at the time of the announcement, we want to distinguish those cases where the sponsor has invested additional at-risk capital. This might be an indication that the sponsors believe in the deal or that PIPE financing is limited. The *Additional At-Risk Capital* variable is included for both hypotheses, as we believe that at-risk capital and earnouts are closely related. This is because sponsors would probably agree on earnouts if there is a risk of losing their supplemental capital.

In our dataset, sponsors contribute with $11.75 million on average in at-risk capital, whether it be at the start or at the announcement. This suggests that there is 3.8% of at-risk capital to proceeds, which is roughly equivalent to the 3.5% documented by Gahng et al. (2021). The sponsors add more capital in 13.3% of the SPACs in our dataset. Among the *Additional At-Risk Capital* deals*,* around 57%, 47%, 33%, and 23% added *General Earnout, Target Earnout, Sponsor Earnout,* and *Both Earnout,* respectively. In contrast, the distribution for deals where the sponsor did not add additional capital was around 57%, 42%, 29%, and 15%, respectively.

Additional At-Risk Capital slightly correlates with *Fast Anno,* with a correlation coefficient of 20.3%. Of the deals where the sponsor adds more capital at the target announcement, 40% announced a deal within 110 days.

Book Runners

The variable *Book Runners* consists of the number of main underwriters connected to the SPAC. Cumming et al. (2012) define a variable that is comparable to this but instead look at the number of syndicate underwriters. There can, however, be a lot of different underwriters connected to a SPAC deal, and consequently, we have decided to only look at the book runners. The risk of the investment bank is connected to the 3.5% in fees that are only paid contingent on the merger (Gahng, Ritter, & Zhang, 2021). We believe that increasing the number of book runners is a way of spreading this risk. Therefore, we project that adding more book runners will indicate that the investment banks believe it is a riskier deal, and hence it can affect both announcement returns and redemption rates.

From the beginning of 2020 to the end of May 2021, the number of *Book Runners* is about 1.57 on average. The average number of *Book Runners* is approximately 1.59, 1.58, 1.66, and 1.55 for deals with *General Earnout, Target Earnout, Sponsor Earnout,* and *Both Earnout,* respectively. On the opposite side, the average number is 1.7, 1.56, 1.53, and 1.54 for non-earnout deals, respectively.

Fast Anno

We have tracked the number of days it takes for the SPAC to announce a target company. This process is consistent with Dimitrova (2016). However, we are interested to see the effect of SPACs that quickly announce a target. Consequently, we have applied a dummy for *Fast Anno* that equals 1 if the number of days between the IPO and target announcement is less than 110 days. This number is arbitrarily chosen. As there are 253 trading days in 2020 and approximately 252 trading days in 2021 (NYSE, 2021b), 110 days constitutes roughly 75 trading days or almost four months. There are 44 SPACs in our dataset that satisfy this requirement. This is relevant because the SPAC deadline might create pressure on the sponsor (Cumming, Haß, & Schweizer, 2012), and we thus expect a fast announcement to be an indicator of good deals. The variable *Fast Anno* is included for both hypotheses.

In our dataset, 19.5% of the deals announced a target within 110 days. Among the fast announced deals, approximately 50%, 36%, 32%, and 18% include *General Earnout, Target Earnout, Sponsor Earnout,* and *Both Earnout,* respectively. The distribution for later announced deals is 58%, 45%, 29%, and 16%, respectively.

Board Size

Board Size is the size of the board that runs and administers the SPAC, and the variable is included for both hypotheses. The data is obtained from "officers and directors" from SPAC Research. Hung et al. (2021) find that larger teams are correlated with higher deSPAC returns in the consumer and entertainment industries. However, they also find that the opposite relationship is true for the tech industry, namely that smaller teams perform better. Even though they define team size as founders and managers, their team sizes span from 6.5 to 8 in magnitude, and since our average board size is about 7.14, we assume this is somewhat comparable. We add *Board Size* as a control variable because we believe that it says something about the decision-making and proficiency that is brought on board the SPAC.

The data shows that there are minor differences with and without the various earnout types on the average *Board Size*. For example, deals with *Target Earnout* have an average *Board Size* of 7.1 and about 7.17 without.

Warrant

The *Warrant* variable is set at what fraction of warrant one unit provides. As redeeming investors keep their warrants free of charge, redemption is thus regressed on, among other things, warrants (Gahng, Ritter, & Zhang, 2021). We do not include rights as a variable because of the correlation with warrants and its few observations.

Our data illustrates that, on average, one unit consists of 0.456 warrants. Only around 4% of the SPACs do not have any warrant, while around 12.4% have a whole warrant in one unit. There are small variations in the average *Warrant* for deals with and without the various earnout considerations. For example, the average *Warrant* fraction is 0.43 and 0.46 with and without *Sponsor Earnout,* respectively. *Warrant* correlates with *Fast Anno,* with a correlation coefficient of -31.5%. Moreover, *Warrant* has a lower degree of correlation with *Large Deal Size* and *Book Runners.* Of the large deals, the unit contains, on average, a fraction of 0.38 warrant. In comparison, smaller deals have a fraction of about 0.53.

6.4 Interaction Terms

Earnouts x Sponsor Exp

We are also interested in testing for interaction terms. Particularly, we want to test if the value of earnout depends on sponsor experience. If we observe significant results from the

interaction term, then we can say something about earnouts' effect on deals with experienced sponsors. The interaction term is motivated by research from the M&A field, where Barbopoulos and Danbolt (2021) look at senior acquiring firms in relation to earnouts. We translate seniority to experience in our case. The interaction term is included to test both our hypotheses.

Earnouts x Large Deal Size

The other interaction term we have included for both our hypotheses is *Earnouts x Large Deal Size.* We want to test if the valuation effect of earnouts varies with deal size. Larger deals might already have a complex contract, so it will be interesting to examine if the value of earnouts is different when the deal is large.

6.5 Summary Statistics and Correlation

Table 1 illustrates the above-mentioned summary statistics for our variables.

Table 1 – Summary Statistics

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
General Earnout (D)	226	.562	.497	0	1
Target Earnout (D)	226	.429	.496	0	1
Sponsor Earnout (D)	226	.296	.458	0	1
Both Earnout (D)	226	.164	.371	0	1
Sponsor Exp (D)	226	.257	.438	0	1
PIPEProceeds	226	.94	1.026	0	8.23
Additional At-Risk Capital (D)	226	.133	.34	0	1
Book Runners	226	1.571	.758	1	6
Fast Anno (D)	226	.195	.397	0	1
Board Size	226	7.142	1.803	4	18
Warrant	226	.456	.247	0	1
Large Deal Size (D)	226	.5	.501	0	1

We have throughout this section mentioned which variables that correlate. Most of the variables, however, have a low degree of correlation. The correlation between our variables can be found in Appendix *A.4 Correlation Table*. This is relevant because it indicates which variables that can have problems with multicollinearity. We are cautious about potential multicollinearity issues and hence gradually include variables to see that the significance does not disappear. This further brings us into the methodology applied, which is the topic of the next section.

7. Methodology

In the following, we will present the event study methodology that we have applied, based on the broadly cited paper by MacKinlay (1997).

An event study is commonly used in finance and accounting, as well as in other disciplines. The purpose of such a study is to measure how a certain event influences a firm's value. In our case, the event is when the SPAC announces a target company. We aim to investigate if the SPAC target announcement returns differ between earnouts and non-earnout deals. This event is in accordance with the methodology, where an M&A announcement is presented as one such event (MacKinlay, 1997).

There are three main assumptions underlying event studies: i) market efficiency, ii) unforeseen events, and iii) no issues with confounding effects throughout the event window (McWilliams & Siegel, 1997). If we assume that investors are rational, the security prices should move to reflect the new information immediately after the event has taken place (MacKinlay, 1997). Then the markets are semi-efficient.

The second assumption is that there has been no leakage before the event (McWilliams & Siegel, 1997). Since SPACs are designated to take a company public within a pre-specified period (U.S. SECURITIES AND EXCHANGE COMMISSION, 2021), a SPAC deal announcement can be argued to be less unexpected than M&As. This is consistent with Lakicevic and Vulanovic (2013) who state that a SPAC merger announcement should be somewhat expected by investors. However, as the target firm and the valuation of the target are assumed to be unexpected at the time of the announcement, the second assumption is accepted.

Lastly, the assumption of confounding effects means that the event window should not incorporate any other events that can influence the security prices. Hence, it is recommended to keep the event window as short as possible (McWilliams & Siegel, 1997). It is common to expand the event window before and beyond the event day due to uncertainty regarding when the information reaches the market. For instance, if the SPAC announces a target after closing, including a one-day post-announcement is necessary. Moreover, potential leakage one day before makes it useful to expand the event window to one day prior to the announcement day. Particularly, one should at least include the event day (t=0) and the day after (t=1) (MacKinlay,

1997). As the time of day when SPACs announce a target deviate between the companies in our dataset, we will use a primary event window of three trading days (t-1, t+1). In addition, we will apply a two-day window (t=0, t+1) to ensure the robustness of our results.

The event methodology further involves determining selection criteria and calculating abnormal returns. We have only included US-listed SPACs due to data accessibility, and a wish to solely focus on the US SPAC market. Abnormal returns are calculated as the difference between the actual performance and the normal performance during the event window, see equation 2. The latter is the expected return if the event had not occurred (MacKinlay, 1997).

$$AR_{it} = R_{it} - E[R_{it}] \tag{2}$$

AR is the abnormal return, R is the actual return and E[R] is the expected, normal return for security i at time t (MacKinlay, 1997).

There are several methods to calculate the normal return. The market model and the constant mean return model are often the preferred statistical methods. These models are typically estimated over a period before the event window, and the windows should not overlap (MacKinlay, 1997). Our preferred choice is the market model as this is a common model used in event study research on target announcement for SPACs and M&As (Lakicevic & Vulanovic, 2013; Aybar & Ficici, 2009).

Despite these models' widespread appliance in event studies, they have some limitations, particularly for datasets with limited pre-event data (MacKinlay, 1997). Brown and Warner (1985) state that the estimation window should have a length of at least 30 days. MacKinlay (1997) argues that a 120-day estimation window is common for the market model, but if we would apply such a high window that would mean removing approximately half of our sample. We could have used a 30-day estimation window, but this could increase the uncertainty in the beta-estimation.

Since we have limited trading data before the SPAC target announcement, we use a market-adjusted model, which is considered a simple form of the market model. This model can be used for events with limited data, such as underpricing connected to IPOs, but one should nonetheless beware of potential biases. Such a bias could be nonsynchronous trading. Since the closing may occur at different times for different SPACs, applying daily prices can give

bias to our estimates (MacKinlay, 1997). Therefore, as mentioned, we are employing an event window that goes beyond the event date.

Whereas the market model conducts the alpha and beta from the estimation window, the market-adjusted model does not include an estimation window. Instead, it assumes that alpha is equal to 0 and beta is equal to 1. Hence, the normal return is coincident with the market return (MacKinlay, 1997). According to Maug (2015), the difference in results between the market-adjusted model and the market model will normally not differ substantially.

The next step is to obtain the relevant market return (MacKinlay, 1997). We use the S&P SmallCap 600 as a benchmark. This index represents 600 small-cap companies in the US (S&P Dow Jones Indices, 2021a). We believe this can be a good measure of the normal return due to SPACs being relatively small and acquiring targets having a riskier profile. The riskier profile stems from the technology and healthcare sectors. We apply a natural logarithm for the benchmark returns.

As our event window include multiple days, we compute the CAR over the main event period. This is given by MacKinlay (1997):

(3) $$CAR_i = \sum_{t-1}^{t+1} AR_i$$

We are running a linear multiple ordinary least square (OLS) regression. The assumptions underlying the OLS regression are outlined in *A.6 OLS Assumptions*. Equation 4 below outlines our regression for our main hypothesis, while equation 5 is for our sub-hypothesis.

(4) CARX3 = alpha + *Earnout* + *Sponsor Exp (D)* + *PIPE/Proceeds* + *Large Deal Size* + *Additional At-Risk Capital (D)* + *Book Runners* + *Fast Anno (D)* + *Board Size*

X = stock or warrant and where *Earnout* is used as a general term for the various earnout types. *Target Earnout* and *Sponsor Earnout* are included together in the regressions, whereas *General Earnout* and *Both Earnout* are run independently. Our CAR analysis is also tested by applying several interaction terms, see section *8.2.3. Announcement Returns Using Interaction Terms*.

(5) Redemption = alpha + *Earnout x Sponsor Exp (D)* + *Earnout x Large Deal Size (D)* + *Warrant* + *PIPE/Proceeds* + *Additional At-Risk Capital (D)* + *Book Runners* + *Fast Anno (D)* + *Board Size*

In addition to the above regressions, we also run a logistic regression (Logit) that regress *Target Earnout* and *Sponsor Earnout* on various variables to see what kind of characteristics that determine the choice of earnouts.

8. Results

In this chapter, we will first present our logit results. Thereafter, the OLS results are presented. We have conducted two regressions on the announcement return where we have independently looked at the CAR for stock and warrant as dependent variables. Secondly, we regressed CAR for the warrant on the interaction terms. Finally, we have run a regression to see if earnouts have a significant effect on redemption rates, which extant studies have shown are associated with lower deSPAC returns (Moffatt, 2021; Gahng, Ritter, & Zhang, 2021). The significance levels are given by 10% (*), 5% (**), and 1% (***), respectively.

8.1 Earnout Determinants

Since earnouts are dummy variables, we run a logit regression to investigate their determinants (Hosmer, Lemeshow & Sturdivant, 2013). The results are presented in *Table 2*.

Table 2: Earnout Determinants

	(1) Target Earnout (D)	(2) Sponsor Earnout (D)
main		
Sponsor Exp (D)	0.757**	-0.152
	(2.24)	(-0.39)
PIPE/Proceeds	-0.176	-0.400*
	(-1.04)	(-1.88)
Large Deal Size (D)	-0.289	0.932***
	(-0.99)	(2.77)
Additional At-Risk Capital (D)	0.020	0.242
	(0.05)	(0.51)
Book Runners	0.010	0.065
	(0.05)	(0.32)
Fast Anno (D)	-0.407	0.024
	(-1.10)	(0.06)
Board Size	-0.035	0.108
	(-0.46)	(1.29)
Constant	0.124	-1.894***
	(0.20)	(-2.87)
N	226	226
Pseudo R^2	0.032	0.051

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Experienced sponsors are more likely to include target earnouts, which is significant at the 5% level. Moreover, our results show a marginal significance that a higher PIPE/Proceeds ratio is

less expected to contain sponsor earnouts. Larger deals, on the other hand, have a higher likelihood of including sponsor earnouts. The latter result is significant at the 1% level. These findings suggest that there can be endogeneity issues when including earnouts, which might give bias to the CAR regressions. This is elaborated on in *9. Robustness and Limitations*.

8.2 Announcement Returns

Our main event window is running over three days (t-1, t+1) with the S&P SmallCap 600.

8.2.1 Stock Price

Table 3 presents the results on the CAR for the stock over a three-day event window.

Table 3: Cumulative Abnormal Stock Return at Merger Announcement

	(1) CARS3	(2) CARS3	(3) CARS3	(4) CARS3	(5) CARS3	(6) CARS3
General Earnout (D)	-0.044*			-0.036		
	(-1.81)			(-1.46)		
Target Earnout (D)		-0.029			-0.022	
		(-1.30)			(-0.94)	
Sponsor Earnout (D)		-0.036*			-0.030	
		(-1.73)			(-1.39)	
Both Earnout (D)			-0.045*			-0.033
			(-1.84)			(-1.27)
Sponsor Exp (D)				-0.010	-0.011	-0.012
				(-0.34)	(-0.37)	(-0.44)
PIPE/Proceeds				0.024	0.023	0.024
				(1.56)	(1.51)	(1.58)
Large Deal Size (D)				-0.016	-0.012	-0.013
				(-0.63)	(-0.47)	(-0.51)
Additional At-Risk Capital (D)				-0.030	-0.028	-0.027
				(-0.85)	(-0.80)	(-0.80)
Book Runners				0.010	0.011	0.011
				(0.65)	(0.68)	(0.68)
Fast Anno (D)				0.055	0.055	0.056
				(1.47)	(1.48)	(1.55)
Board Size				-0.004	-0.004	-0.004
				(-0.81)	(-0.68)	(-0.66)
Constant	0.100***	0.098***	0.082***	0.092*	0.084	0.069
	(4.76)	(5.15)	(6.15)	(1.68)	(1.56)	(1.39)
N	223	223	223	223	223	223
Adj. R-sq	0.01	0.01	0.00	0.02	0.02	0.01
F	3.28	2.36	3.37	1.13	1.08	1.11

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

General Earnout, Sponsor Earnout, and *Both Earnout* show a marginal negative effect without control variables in columns 1-3. This shows that SPACs with sponsor, both, and in general

earnouts have, on average, lower stock CAR than non-earnout deals. For example, column 1 shows that SPACs with at least one earnout consideration is associated with having, on average, 4.4% lower stock announcement returns than non-earnout deals. The negative earnout effect might suggest that earnouts are associated with negative deal characteristics or used in less valuable transactions. It might also indicate that investors view the earnout structure as complex (Fede, Getten, Mehta, & Wofford, personal communication, 2021) and are thus restrictive. Alternatively, it might reveal a negative signaling effect or fear of dilution (Matican, 2020). In columns 4-6 we have added control variables. There are no longer significant earnout coefficients, nor are there any significant control variables. Hence, we can not say that the coefficients are statistically different from zero.

8.2.2 Warrant Price

In *Table 4* below, we present our results from the CAR for warrants over a three-day event window.

Table 4: Cumulative Abnormal Warrant Return at Merger Announcement

	(1) CARW3	(2) CARW3	(3) CARW3	(4) CARW3	(5) CARW3	(6) CARW3
General Earnout (D)	-0.158**			-0.132**		
	(-2.38)			(-2.07)		
Target Earnout (D)		-0.128**			-0.106*	
		(-2.02)			(-1.73)	
Sponsor Earnout (D)		-0.130**			-0.093	
		(-2.21)			(-1.57)	
Both Earnout (D)			-0.206***			-0.141**
			(-3.09)			(-2.11)
Sponsor Exp (D)				-0.115*	-0.113*	-0.123*
				(-1.70)	(-1.65)	(-1.85)
PIPE/Proceeds				0.074*	0.071*	0.075*
				(1.89)	(1.82)	(1.91)
Large Deal Size (D)				-0.058	-0.049	-0.042
				(-0.92)	(-0.75)	(-0.63)
Additional At-Risk Capital (D)				-0.110	-0.102	-0.100
				(-1.26)	(-1.17)	(-1.18)
Book Runners				-0.002	0.000	0.000
				(-0.05)	(0.00)	(0.01)
Fast Anno (D)				0.018	0.017	0.019
				(0.24)	(0.23)	(0.26)
Board Size				-0.038**	-0.036**	-0.034**
				(-2.41)	(-2.33)	(-2.16)
Constant	0.319***	0.324***	0.261***	0.578***	0.556***	0.483***
	(5.83)	(6.52)	(7.20)	(3.98)	(4.00)	(3.42)
N	211	211	211	211	211	211
Adj. R-sq	0.02	0.03	0.02	0.07	0.07	0.06
F	5.69	5.11	9.55	2.58	2.57	2.67

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

It is interesting to study the effect of warrant announcement returns, as warrants are assumed to have a greater upside per dollar of value creation. All four earnout categorizations are significantly associated with lower CAR for warrants for the first three columns. The earnout coefficients are even greater than CAR for stocks. For stocks, the effect varied from -3.6% to -4.5%, while the ones for warrant vary between -12.8% to -20.6%. This might indicate that warrant prices are more sensitive to events than stock prices. The adjusted R-squared is 2%, 3%, and 2% in columns 1, 2, and 3, respectively.

When controlling for the other variables, *General Earnout, Target Earnout,* and *Both Earnout* still show a negative effect. *Target Earnout* is marginally significant, while the two others are significant at the 5% level. *Sponsor Earnout*, on the other hand, has lost its significance. This might be a combination of a low degree of correlation with both *Target Earnout* and *Large Deal Size.* If *Target Earnout* is removed from column 5, the effect of *Sponsor Earnout* is significant at the 10% level. The explanatory power has increased for the three last columns, where we see the highest explanatory power in columns 4 and 5 with 7% explanation.

Compared to the announcement returns for stock that did not have any significant control variables, the coefficients for *Sponsor Exp* and *PIPE/Proceeds* show marginally significant results. Moreover, *Board Size* is significant at the 5% level. None of the other control variables are significant, and we can therefore not conclude that they are different from zero.

Our findings indicate that experienced sponsors have, on average, lower announcement returns than non-experienced sponsors. This effect is largest for column 6 where experienced sponsors are associated with 12.3% lower CAR for warrants. These results are not what we would expect based on the higher deSPAC returns presented by Moffatt (2021).

The ratio of PIPE to proceeds shows positive coefficients for columns 4-6 that are significant at the 10% significance level. For example, in column 6 the coefficient is 0.075. This can be interpreted as a 1% increase in PIPE to proceeds being associated with 7.5% higher warrant announcement returns. A high amount of PIPE may signal that the institutional investors support the deal and find it attractive. It may also give sufficient capital to close larger deals (Klausner, Ohlrogge, & Ruan, 2021). These results are what we would expect given the recent research by Bodewes (2021). He looks at the log of PIPE to proceeds in the deSPAC period and finds that a higher ratio is positively associated with higher returns.

The size of the board shows a negative sign when looking at warrant's CAR, and the results are significant at the 5% level. This signifies that including one more director or officer is associated with around 3.4% to 3.8% lower announcement returns. Compared to Hung et al. (2021), even though they look at deSPAC returns, our results are thought to be in line as they find that smaller teams outperform larger ones for the technology sector. Adding more directors or officers might make the decision-making process slower, which can explain the negative effects we have found. We believe that being able to make quick decisions is particularly important for SPACs as they only have two years to find a target company.

8.2.3 Announcement Returns Using Interaction Terms

In addition to the above analysis, we have also examined several interaction terms. We use interaction terms to investigate if there is a difference in announcement returns for earnout and non-earnout deals conditional on sponsor experience or large deals. It is important to note that the results are only significant for warrant's CAR, perhaps due to the presumed higher upside, and we have thus not added an analysis for CAR of stocks. *Table 5* present the results.

The best information that investors base their decision on, as mentioned previously, is the experience of the sponsors (Cumming, Haß, & Schweizer, 2012). We hence believe that the outcome of an earnout will vary with *Sponsor Exp* due to the credibility the sponsor brings (Fede, Getten, Mehta, & Wofford, personal communication, 2021). Moreover, research from the M&A field has investigated senior acquiring firms in relation to earnouts (Barbopoulos & Danbolt, 2021), where we have translated seniority to sponsor experience in our case.

The uncertainty regarding the valuation of the target can be thought to depend on the deal size. Larger deals might be more complex, and the valuation more uncertain. Earnouts in smaller deals, on the other hand, are perhaps more efficient due to management's role in subsequent performance. This is consistent with Bruner and Stiegler (2001) who imply that earnouts are more influential in smaller deals due to a larger ownership by the management.

Table 5: Interaction Terms for Cumulative Abnormal Warrant Returns

	(1) CARW3	(2) CARW3	(3) CARW3
General Earnout (D)	-0.128		
	(-1.28)		
Sponsor Exp (D)	-0.295**	-0.244**	-0.140*
	(-2.30)	(-2.14)	(-1.79)
General Earnout (D) * Sponsor Exp	0.274*		
	(1.88)		
Large Deal Size (D)	0.021	0.048	0.010
	(0.19)	(0.49)	(0.14)
General Earnout (D) * Large Deal Size (D)	-0.132		
	(-1.01)		
PIPE/Proceeds	0.073*	0.068	0.074*
	(1.78)	(1.65)	(1.84)
Additional At-Risk Capital (D)	-0.096	-0.108	-0.101
	(-1.10)	(-1.24)	(-1.26)
Book Runners	-0.000	-0.001	-0.001
	(-0.01)	(-0.03)	(-0.02)
Fast Anno (D)	0.005	-0.003	-0.001
	(0.07)	(-0.04)	(-0.02)
Board Size	-0.039**	-0.037**	-0.034**
	(-2.52)	(-2.41)	(-2.18)
Target Earnout (D)		-0.118	
		(-1.17)	
Target Earnout (D) * Sponsor Exp (D)		0.223*	
		(1.69)	
Sponsor Earnout (D)		0.013	
		(0.13)	
Sponsor Earnout (D) * Sponsor Exp (D)		0.042	
		(0.32)	
Target Earnout (D) * Large Deal Size (D)		-0.073	
		(-0.60)	
Sponsor Earnout (D) * Large Deal Size (D)		-0.199	
		(-1.60)	
Both Earnout (D)			0.030
			(0.25)
Both Earnout (D) * Sponsor Exp (D)			0.077
			(0.57)
Both Earnout (D) * Large Deal Size (D)			-0.308**
			(-2.13)
Constant	0.578***	0.546***	0.469***
	(3.94)	(3.83)	(3.30)
N	211	211	211
Adj. R-sq	0.08	0.07	0.07
F	2.18	2.60	3.87

t statistics in parentheses

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

Column 1 in *Table 5* illustrates that *General Earnout x Sponsor Exp* shows a positive marginal significance with a coefficient of 27.4%. This entails that *General Earnout* is associated with 27.4% higher announcement returns than non-earnout deals for deals where the sponsor has previous SPAC experience. It indicates that the impact of earnouts on announcement returns depends on sponsor experience. In other words, for an experienced sponsor, an earnout is a way to improve the SPAC deal. This is consistent with the M&A literature where Barbopoulos and Danbolt (2021) document that mature acquirers see higher gains with earnouts.

The positive effect that earnouts have on deals with an experienced sponsor, might be because an experienced sponsor can signal credibility (Fede, Getten, Mehta, & Wofford, personal communication, 2021) and might aid in reducing the negative associations with earnouts. For example, an experienced sponsor can increase the credibility among investors that stock price milestones are more likely to be met or that the deals are value-creating. A similar interpretation goes for *Target x Sponsor Exp* with a marginal significance and a coefficient of 22.3%. As the interaction terms of *Sponsor x Sponsor Exp* and *Both x Sponsor Exp* do not show any significance, one might conclude that the effect for *General x Sponsor Exp* is attributed mainly to earnouts for target shareholders.

We observe a significant coefficient of -30.8% between *Both Earnout x Large Deal Size.* This indicates that contracts with both sponsor and target earnouts have a more positive effect in smaller deals, perhaps because smaller deals might be more efficient due to management's role in subsequent performance. Based on Bruner and Stiegler (2001), we presume that target management has a higher likelihood of owning a larger equity stake in smaller deals, which then might create enough incentives for the target to perform well post-merger. For sponsor earnouts, it might be easier to negotiate a value-creating deal with a smaller target. This is because a large deal assumingly requires more negotiations with more stakeholders.

We also considered adding an interaction term with the dummy for PIPE, but this canceled out other significant interaction terms due to correlation. Since *PIPE/Proceeds* is significant in *Table 5* and correlated with PIPE, excluding *PIPE/Proceeds* would lead to an omitted variable bias. The PIPE interaction terms were not significant and were therefore not included. We have also tested earnouts interacted with other variables such as *Board Size* and *Additional At-Risk Capital* but with no significant results. These interaction terms are therefore not included under *6. Variables* nor with explaining tables.

8.2.4 Sub Conclusion Announcement Returns

To sum up, *General Earnout, Sponsor Earnout,* and *Both Earnout* are related to lower announcement return for stock when not controlling for other variables. It loses its significance when adding control variables. *General Earnout, Target Earnout,* and *Both Earnout* are associated with lower CAR for warrants also when adding control variables.

Based on the M&A literature on target earnouts (Barbopoulos & Wilson, 2013), it is surprising that we find negative effects. For SPACs, it may therefore be that investors fear dilution connected to earnouts (Matican, 2020). Moreover, it can be a negative signaling effect from sponsors that earnouts are needed to reduce the misaligned incentives, disagreement with the pricing, or signaling that there is a small chance of meeting the suggested thresholds. Another potential reason might be that investors do not like the complicated earnout structure (Fede, Getten, Mehta, & Wofford, personal communication, 2021). However, if the sponsor brings a load of experience, this is a factor sweetening the deal for *General Earnout* and *Target Earnout*. Moreover, we observe that earnouts may perform better in small deals.

8.3 Redemption Rate

We also want to investigate if earnouts impact redemption rates. We include interaction terms between earnouts and *Sponsor Exp* and earnouts and *Large Deal Size,* in addition to including several control variables.

We have added interaction terms because we believe that earnouts vary with *Sponsor Exp* and *Large Deal Size* and that this impacts redemption rates. Particularly, we presume to see the interaction between earnouts and *Sponsor Exp* being associated with lower redemption rates. This builds on the CAR analysis, where earnouts have a more positive effect for experienced sponsors, which we presume will translate into lower redemption rates. Since we observed that *Both Earnout* has a more positive effect in small deals, we project to discover a lower redemption ratio for small deals as opposed to large ones. *Table 6* below presents the results.

Table 6: Redemption Rate

	(1) Redemption	(2) Redemption	(3) Redemption
General Earnout (D)	-0.028		
	(-0.36)		
Sponsor Exp (D)	0.076	0.018	-0.060
	(0.79)	(0.21)	(-0.97)
General Earnout (D) * Sponsor Exp (D)	-0.234**		
	(-2.08)		
Large Deal Size (D)	-0.155**	-0.146**	-0.064
	(-2.13)	(-2.08)	(-1.11)
General Earnout (D) * Large Deal Size (D)	0.226**		
	(2.33)		
Warrant	0.200*	0.218**	0.196*
	(1.88)	(2.08)	(1.84)
PIPE/Proceeds	-0.070***	-0.068**	-0.070***
	(-2.60)	(-2.41)	(-2.63)
Additional At-Risk Capital (D)	-0.063	-0.057	-0.040
	(-0.86)	(-0.80)	(-0.54)
Book Runners	-0.027	-0.031	-0.029
	(-0.92)	(-1.00)	(-0.96)
Fast Anno (D)	0.047	0.061	0.046
	(0.70)	(0.85)	(0.65)
Board Size	0.021	0.021	0.024
	(1.45)	(1.39)	(1.62)
Target Earnout (D)		-0.086	
		(-1.10)	
Target Earnout (D) * Sponsor Exp (D)		-0.034	
		(-0.33)	
Sponsor Earnout (D)		0.000	
		(0.00)	
Sponsor Earnout (D) * Sponsor Exp (D)		-0.177	
		(-1.63)	
Target Earnout (D) * Large Deal Size (D)		0.110	
		(1.07)	
Sponsor Earnout (D) * Large Deal Size (D)		0.189*	
		(1.77)	
Both Earnout (D)			-0.126
			(-1.34)
Both Earnout (D) * Sponsor Exp (D)			-0.019
			(-0.15)
Both Earnout (D) * Large Deal Size (D)			0.199*
			(1.70)
Constant	0.292**	0.303**	0.275*
	(2.10)	(2.12)	(1.96)
N	209	209	209
Adj. R-sq	0.09	0.07	0.05
F	3.40	2.49	2.46

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The coefficient of -23.4% for *General Earnout x Sponsor Exp* indicates that deals where experienced sponsors include *General Earnout* have, on average, 23.4% lower redemption rates than non-earnout deals. An earnout is hence a way that an experienced sponsor might bring down the redemption rates. *General Earnout x Large Deal Size* is associated with a 22.6% higher redemption rate. We also see marginal significant results for the coefficients for *Sponsor Earnout x Large Deal Size* and *Both Earnout x Large Deal Size* of 18.9% and 19.9%, respectively. This indicates that earnouts have less redemption in smaller deals.

When observing *Large Deal Size* alone, this variable is associated with 15.5% and 14.6% lower redemption rates in columns 1 and 2, respectively. This might suggest that investors are fond of larger deals, maybe because larger deals have a greater reputation. The *Warrant variable* is, as expected from extant studies (Gahng, Ritter, & Zhang, 2021), associated with an about 20% higher redemption rate. A higher ratio of *PIPE/Proceeds* is associated with around 7% lower redemption rate, which is consistent with Klausner et al.'s (2021) notion that PIPE provides validation on the deal.

8.3.1 Sub Conclusion Redemption Rate

To sum up our redemption rate regression results, *General Earnout* is associated with a lower redemption rate on deals with experienced sponsors. Moreover, our results suggest that *General Earnout, Sponsor Earnout,* and *Both Earnout* are associated with higher redemption in larger deals. Gahng et. al (2021) found that increased redemption rate has a significant negative relationship on one- and three-year deSPAC returns.

It is also worth noting that since earnouts agreements are usually announced months before the redemption decision, there may be several other effects that impact the redemption rate.

9. Robustness and Limitations

In this chapter, we will discuss how we have ensured the robustness, followed by the potential limitations of our study. We also include a discussion on the earnout length.

Robustness

To ensure robustness, we have focused on three measures: i) add control variables, ii) conduct an OLS regression over a two-day event window (t=0, t+1), and iii) apply a new index.

Ensuring that the analysis and results are robust is important for all empirical studies. We argue that this is particularly relevant for us given the approach we have chosen with the market-adjusted model. The market-adjusted model has, as mentioned, several limitations and should be applied carefully (MacKinlay, 1997). We believe it was a necessary and applicable method to utilize given the limited pre-announcement data we worked with.

Firstly, to ensure robustness, we have done regressions with just our main earnout variables and then added control variables gradually to guarantee that the significance does not change. This is in line with Lu and White (2014). Including control variables are good to avoid omitted variable bias if the statistical inference is maintained (Bütikofer, 2021). Even though some of the explanatory variables correlate to a certain degree, the significance is maintained for most variables. The ones that have lost if significance has been elaborated on throughout the thesis.

Second, we conduct the OLS regression using a two-day event window. The event window spans from the day of the announcement to one-day post-announcement, which is the bare minimum as outlined by MacKinlay (1997). Appendix *A.5 Robustness* illustrates the results. Over the two-day event window, the significance for stocks is maintained overall. For warrants, the significance is also maintained for all earnout variables without control variables. When adding control variables, *General Earnout* and *Both Earnout* maintained their significance, whereas *Sponsor Earnout* has become significant, and *Target Earnout* has lost its marginal significance. This might suggest that there are several terms that slightly correlate and impacts the results.

Third, we apply the S&P Global BMI index to estimate the normal return over the main event window of three days. Both Brown and Warner (1985) and MacKinlay (1997) recommend using a broad stock index. The S&P Global BMI index covers 25 developed and 25 emerging markets and represents around 99% of the market capitalization in each country (S&P Dow

Jones Indices, 2021b). We, therefore, believe this index is a good robustness check. The significance levels for stocks and warrants are identical with the two indices, and the coefficients are quite similar. See Appendix *A.5 Robustness* for results. This shows that the choice of an index does not change the results, and the robustness is sustained.

Lastly, it is helpful to add a discussion surrounding the earnout length. The average earnout period is about 5.1 years for sponsor earnouts and 4 years for target earnouts. The negative effect earnouts have on CAR may be explained by the long duration of the contracts. Over a long period, several events in the stock market are unconnected to the target-specific performance. Furthermore, the investor may want the earnout participants to have a stricter contract which incentivizes a more rapid share-price growth.

We have hence added regressions on CARS3 and CARW3 in Appendix *A.7 Earnout Length*. Dummy variables for *Long Target Earnout, Short Target Earnout, Long Sponsor Earnout,* and *Short Sponsor Earnout* are added. The long dummy variables are equal to 1 if the earnout period is 5 years or longer, and 0 otherwise. The short variables equal 1 if the period is less than 5 years, and 0 otherwise. *Long Target Earnout* and *Short Target Earnout* are included together in the regressions (column 5) while *Long Sponsor Earnout* and *Short Sponsor Earnout* are included together (column 6). That means that the baseline is deals without earnouts. We include the same control variables as in the initial CAR analysis. Due to correlation, sponsor and target length are not included together in the regression.

From the earnout length regression, we observe that a long sponsor earnout period is associated with around a 5.4% lower CAR for stocks, which is significant at the 5% level. The same conclusion can be drawn from the warrant analysis, where the coefficient is -15%. Furthermore, a long target earnout period is associated with about 12.6% lower CARW3, which is significant at the 5% level. These findings might suggest that the negative earnout effect can somewhat be attributed to the length of the earnout agreement.

Limitations

We want to elaborate on potential weaknesses with this thesis and how we have addressed this. As mentioned, we believe that one reason why earnouts without interactions are consistently associated with lower CAR than non-earnout deals is the potential signaling effect. One signaling effect can be self-selection, namely that bad deals include earnouts because it is necessary for deal approval. If the deal is indeed value-destroying, the earnout

threshold might not be met, which amplifies the misaligned incentives between sponsors and investors. We have, however, not examined if the thresholds are met due to data limitations.

We also acknowledge that a correction could be applicable to mitigate any bias stemming from the choice of using an earnout. The logit regression that regressed earnouts on various variables, allows us to understand the determinants for choosing an earnout. A Heckman self-selection correction could be applied to mitigate potential bias stemming from the choice of earnouts, but due to time constraints, such a correction has not been applied. This is thus a weakness with this thesis, but we are nonetheless aware of the possible bias in the CAR regressions (Heckman, 1979).

Our results are also focused on SPACs listed in the US, and the results might differ for European SPACs. Particularly the latter as UK SPACs do not contain redemption rights (Amiss, 2018).

Moreover, a weakness with this study is the data collection process. There is not one SPAC database that contains all the necessary information, and we have consequently sourced information from different databases. One example is that we have obtained stock and warrant prices from both WRDS and SPAC Research in case information was missing on WRDS. This breaks with consistency in the data collection. We have also manually obtained data from the SEC filings, and there is, therefore, a risk of wrong entry or wrong interpretation. Additionally, earnouts are sometimes announced later than the deal announcement day. Hence, our study therefore only captures those deals that included earnouts at the announcement, and the actual earnout percentage might be a bit higher.

Lastly, there can be weaknesses with our definitions of the variables. Ideally, we would like to include the variable for sponsor experience to include all previous relevant experience. Such experience could be M&A, expertise to acquire capital, or SPAC experience (Fede, Getten, Mehta, & Wofford, personal communication, 2021). However, due to time constraints, we have defined sponsor experience as having experience in closing one SPAC merger.

10. Recommendations for Further Studies

SPACs are continuously progressing and developing new features and structural alterations. We believe that the narrow literature that we have seen on SPACs up until now is because of the rapid changes to the SPAC structure, as well as its recent popularity. Earnouts are one such recent popularity feature. Because of continuous developments, media attention, and attractiveness, this makes this a field worth studying.

Firstly, we recommend future research to explore the direct effect of earnouts on deSPAC returns. In this thesis, we have taken an indirect approach by regressing redemption on earnouts, since we know from previous research that redemption affects deSPAC returns (Gahng, Ritter, & Zhang, 2021; Moffatt, 2021). Given the recent spike in earnout popularity, this limited our research to examine announcement returns. Moreover, further research should consider if earnout thresholds are indeed met, and the potential negative signaling effect it provides. Earnout effects might differ in the UK as they do not have redemption rights (Amiss, 2018), which is a possible angle for upcoming studies.

Another interesting trend is contingent warrants where non-redeeming investors are granted additional warrants after the completion of a business combination. Whereas earnouts are contingent shares granted to sponsors or target shareholders, contingent warrants are attributed to investors (Gahng, Ritter, & Zhang, 2021). We recommend further studies to investigate the isolated effect that contingent warrants have on SPAC returns. Moreover, it can be interesting to see the joint effect of contingent warrants, sponsor earnouts, and target earnouts.

Lastly, the SPAC popularity among celebrities is increasing. An example is the SPAC named Digital World Acquisition Corp. that announced the merger of a newly established Trump media company. At one point following within two-days post announcement, the SPAC was up as high as 1,657%. The company had not provided any earning projections at the time of the announcement, which substantiates that this is an unusual case. This could be attributed to the meme stock phenomenon (Egan, 2021). This illustrates the power that famous people can have in the SPAC sphere and is something we urge people to look more into. It can both include famous SPAC sponsors and famous people behind SPAC targets. We could also not avoid noticing that the Trump SPAC added target earnouts to the contract (EDGAR, 2021d).

11. Forecasts for SPAC 4.0, the Next Generation

Given the recent SPAC wave, it is reasonable to think that this will not uphold forever. The SPAC movement has started to slow down. As of October 24th, 2021, there are 493 SPACs in the pre-deal phase. This constitutes 81% of active SPACs (SPAC Research, 2021c). Due to the high number of SPACs searching for a target, it is anticipated that we will see a lot more liquidations in the time ahead. Alternatively, this may go at the expense of target quality (Naumovska, 2021). The number of lawsuits towards SPACs has increased in 2021 as well, with the quality of the target as the main cause (Li, 2021).

The SEC is closely monitoring the SPAC market and has in the recent year introduced several recommendations and regulations (Williams & Rasay, 2021). This can impact the future of SPACs and increase disclosure. For example, in December 2020 the SEC published a list with guidance questions to improve disclosure for SPACs. Among other things, disclosure of conflict of interest stemming from sponsors and other actors was part of the guidance, as well as the choice of the target company (U.S. SECURITIES AND EXCHANGE COMMISSION, 2020).

There is currently an interesting SPAC trend in the UK, which can have an impact on SPAC 4.0. The UK market has lagged the US when it comes to SPAC activity. The major difference between the two markets is redemption rights. In the UK, shareholders are not able to redeem their shares. This can be viewed as both advantageous and disadvantageous depending on the participant in question. Particularly, sponsors may favor the non-redemption option as it provides more certainty over the IPO proceeds. On the other hand, this can be a drawback to the capital-raising process as it may be viewed as less attractive for investors that favor the extra certainty linked to redemption (Amiss, 2018).

If the non-redemption characteristic gains a greater foothold by becoming more attractive to investors, sponsors, and targets, we believe this will impact the future of SPACs. It will not necessarily eliminate the misaligned incentives from the sponsors as their promote remains, so the effect of earnouts will nonetheless be something others are recommended to investigate. However, we believe that non-redemption rights in the UK have an impact on several areas of SPACs from earnouts, warrants, returns, PIPE, and so forth.

12. Conclusion

In this thesis, we have studied the effect of earnouts on US-listed SPAC's announcement returns. SPAC is a way for companies to become listed and has gained a greater foothold in the market in the last couple of years. At the same time, the interest for sweetening the deal through contractual earnouts agreements has spiked. Earnouts can both be used towards target shareholders to bridge a valuation gap and towards sponsors to reduce the inducement to go for value-destroying deals for their own gain, if the alternative is to lose their at-risk capital (Klausner, Ohlrogge, & Ruan, 2021).

Despite the ongoing SPAC trend, there is a lack of literature that explores its various contractual features and how investors perceive such characteristics. Our thesis aims to fill this gap by looking at one such contractual agreement, namely earnouts.

We have applied an event study methodology and investigated the effect of earnouts on cumulative abnormal returns around the announcement day for both stock and warrant securities. With the market-adjusted model as the basis for computing the normal return and the S&P SmallCap 600 index as a benchmark, we found that *General Earnout, Sponsor Earnout,* and *Both Earnout* are related to lower announcement return for stock when not controlling for other variables. *General Earnout, Target Earnout,* and *Both Earnout* are associated with lower CAR for warrants also when adding control variables. For warrants, we can therefore reject our main hypothesis that earnouts have no effect on announcement returns for three of the earnout classifications.

Given the negative association of earnouts, it is quite surprising that around 42% of SPAC deals applied target earnouts and around 30% applied sponsor earnouts. Moreover, we found that *General Earnout* and *Target Earnout* in combination with a sponsor who has previously closed a SPAC deal have a higher announcement return than non-earnout deals. This suggests that sponsor experience is an important characteristic for investors' view of an earnout. Moreover, we observe that earnouts may perform better in small deals. Whether we can reject our main hypothesis that earnouts do not affect announcement returns, therefore, depends on the earnout type, deal characteristics, and the security in question.

We further find that *General Earnout, Sponsor Earnout,* and *Both Earnout* are associated with higher redemption in larger deals, which may translate into lower deSPAC returns (Moffatt,

2021; Gahng, Ritter, & Zhang, 2021). The latter finding is what we expected, and consequently, allows us to reject our sub-hypothesis of no effect for the three earnout categorizations above conditional on deal size.

Earnouts are often portrayed as something positive, but as we have shown the opposite is found. This may suggest that earnouts are associated with expected dilution (Matican, 2020), negative signaling due to self-selection, and historically poor performance (Klausner, Ohlrogge, & Ruan, 2021). Some of these factors may be reduced when the sponsor has prior SPAC experience. More importantly, in an already complicated SPAC structure, it may be as straightforward as "simplicity wins" (Fede, Getten, Mehta, & Wofford, personal communication, 2021).

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Appendix

A.1 Terminology

Expression	Definition
Contingent warrant	Contingent warrants offer extra shares to non-redeeming investors (Gahng, Ritter, & Zhang, 2021).
deSPAC period	The period after the merger/liquidation of the SPAC (Gahng, Ritter, & Zhang, 2021).
Earnout	Earnout is a contingent consideration which provide equity stake contingent on post-merger performance (Klausner, Ohlrogge, & Ruan, 2021).
Investor	Also referred to as the SPAC shareholder who buys units in the SPAC.
Redemption	Redeeming investors receive back their full investment plus interest, and they hence do not take part as shareholder in the merged company (Gahng, Ritter, & Zhang, 2021).
Right	A right typically enables investors to receive one-tenth of a share in the combined firm for free (Klausner, Ohlrogge, & Ruan, 2021).
SPAC	A Special Purpose Acquisition Company is a shell company with no operating business that is created to take a private company public through a reverse merger (U.S. SECURITIES AND EXCHANGE COMMISSION, 2021).
SPAC 1.0	The first SPAC period which extends from 1993 to 1999 (Gahng, Ritter, & Zhang, 2021).
SPAC 2.0	The period which extends from 2000 to 2009 (Gahng, Ritter, & Zhang, 2021).
SPAC 3.0	The SPAC era that we are currently in, which started in 2010. It is characterized by a separation between redemption and voting rights, lower underwriter fees, higher IPO proceeds deposited into a trust account, and a lower ratio of warrants in a unit (Gahng, Ritter, & Zhang, 2021).
SPAC IPO	The process where the SPAC goes through an initial public offering and becomes listed. In connection with the SPAC IPO, the SPAC raises money from investors, usually at $10 per unit. The proceeds are placed in a trust account (U.S. SECURITIES AND EXCHANGE COMMISSION, 2021).
SPAC Mafia	The SPAC Mafia is a term used to describe hedge funds who are known to trade shares in the SPAC period but then redeem prior to the merger (Klausner, Ohlrogge, & Ruan, 2021).
SPAC Period	The SPAC period is the period between the SPAC IPO and the completion of a business combination or liquidation of the SPAC (Gahng, Ritter, & Zhang, 2021).
Sponsor	Also referred to as the founder. The sponsor team found the SPAC. After the SPAC IPO, the sponsor has approximately two years to find a target company to take public through a reverse merger (U.S. SECURITIES AND EXCHANGE COMMISSION, 2021).
Unit	One unit comprises a stock, a fraction of a warrant, and sometimes also a right (Klausner, Ohlrogge, & Ruan, 2021). The unit might later be separated into stocks and warrants, in addition to being traded as a unit separately (U.S. SECURITIES AND EXCHANGE COMMISSION, 2021).
Warrant	A warrant is an out-of-the-money call option with an exercise price of $11.5, that gives the holder the option to buy one stock after the merger (Klausner, Ohlrogge, & Ruan, 2021).

A.2 Data Selection

We gathered live and closed deals from SPAC Research. Our criteria were SPACs that had announced a target firm between January 2020 and May 2021. If a SPAC went from live to pre-deal after we gathered data (the data selection process was mainly done in September and October 2021. The redemption rates were last updated in December 2021), meaning that they have first announced a target but then reversed it and are now still searching, we have not deleted the original data point. This is because we are interested in the announcement returns. However, if the SPAC had announced a deal between January 2020 and May 2021 but then withdrawn before our data work started in September 2021, this will not be included in our dataset. This data is not easily available. It is only the live and closed deals as of September/October 2021 on SPAC Research that were included.

The distinction between live and pre-deals might therefore create a potential bias. If there is a significant difference between earnout versus non-earnout in withdrawn deals, this can be a problem of bias. However, there is not a guarantee that the live deals in our data set will continue the negotiations with their target company. They might instead withdraw the offer and start searching again (and hence obtain pre-deal status). Due to this, we weigh up the potential bias effects. In our dataset, 171 have closed at the time of the data collection. When we checked the status of the SPACs in our dataset on December 11th, 209 of the SPACs were closed, 12 were still live deals, and 5 were back to searching for a target. If we only do the regressions on the closed deals, the results are still consistent with our findings.

We collected 228 SPACs within our time range. We removed two, Fellazo INC and Regalwood Global Energy Ltd. Both did not manage to find a target within the set time frame (EDGAR, 2020; EDGAR, 2019). After removing these two SPACs, we were left with our final sample of 226 SPACs. Out of these, 223 contained stock price data and 211 warrant price data for our main event window. Moreover, 209 of the SPACs have available redemption data.

If the first 8-K filing after the announcement contained earnouts, we have included this. However, if the SPAC announced earnouts some days after, in other words not on the first 8-K after the announcement, then we do not include the earnout consideration. This is also why we have decided to keep the event window as narrow as possible to avoid any confounding effects (McWilliams & Siegel, 1997).

A.3 Variables

Variable	Description	Announced	Regression
CAR	Cumulative abnormal return over a three-day event window (t-1, t+1) using the market-adjusted model and S&P SmallCap 600 for the normal return.	(t-1, t+1) plus a robustness of (t=0, t+1)	Main hypothesis
Redemption	The redemption rate as a percentage	Between announcement and merger	Sub-hypothesis
General Earnout	A dummy variable taking the value 1 if the deal at least includes sponsor or target earnouts, 0 otherwise	Announcement	Both hypotheses
Target Earnout	A dummy variable taking the value 1 if the deal includes target earnouts, 0 otherwise	Announcement	Both hypotheses
Sponsor Earnout	A dummy variable taking the value 1 if the deal includes sponsor earnouts, 0 otherwise	Announcement	Both hypotheses
Both Earnout	A dummy variable taking the value 1 if both target and sponsor earnouts are present, 0 otherwise	Announcement	Both hypotheses
Sponsor Exp	A dummy variable taking the value 1 if sponsor has previously completed at least one SPAC business combination	Between IPO and announcement	Both hypotheses
PIPE/Proceeds	A ratio of PIPE to IPO proceeds	PIPE is announced at target announcement	Both hypotheses
Large Deal Size	A dummy that equals 1 for deals that are larger than the median of $1.307 Bn, and 0 otherwise.	Announcement	Both hypotheses
Additional At-Risk Capital	A dummy variable taking the value 1 if the deal has additional at-risk capital, 0 otherwise	Announcement	Both hypotheses
Book Runners	The number of main underwriters	IPO	Both hypotheses
Fast Anno	A dummy variable equal to 1 if the deal is announced less than 110 days after the IPO, 0 otherwise	Announcement	Both hypotheses
Board Size	The number of directors and officers	IPO	Both hypotheses
Warrant	The fraction of warrant one unit consists of	IPO	Sub-hypothesis
Earnout x Sponsor Exp	The various earnout types interacted with sponsor experience	Announcement	Both hypotheses
Earnout x Large Deal Size	The various earnout types interacted with large deal size	Announcement	Both hypotheses

A.4. Correlation Table

Pairwise correlations

Variables	GeneralEarnoutD	TargetEarnoutD	SponsorEarnoutD	BothEarnoutD	SponsorExpD	PIPEProceeds	AdditionalAt-RiskCapitalD	BookRunners	FastAnnoD	BoardSize	Warrant	LargeDealSizeD	LongTargetEarnoutD	ShortTargetEarnoutD	LongSponsorEarnoutD	ShortSponsorEarnoutD
GeneralEarnoutD	1.000															
TargetEarnoutD	0.766***	1.000														
SponsorEarnoutD	0.573***	0.161**	1.000													
BothEarnoutD	0.391***	0.510***	0.682***	1.000												
SponsorExpD	0.090	0.145**	0.018	0.096	1.000											
PIPEProceeds	-0.117*	-0.101	-0.091	-0.091	-0.052	1.000										
AdditionalAtRiskCapitalD	0.004	0.030	0.032	0.074	0.337***	0.098	1.000									
BookRunners	0.018	0.007	0.074	0.077	0.173***	-0.005	0.032	1.000								
FastAnnoD	-0.061	-0.065	0.023	0.024	0.172***	0.117*	0.203***	0.087	1.000							
BoardSize	-0.020	-0.024	0.078	0.091	0.061	0.036	-0.038	0.119*	0.017	1.000						
Warrant	0.078	0.068	-0.058	-0.085	-0.201***	-0.134**	-0.199***	-0.248***	-0.315***	-0.008	1.000					
LargeDealSizeD	-0.009	-0.080	0.184***	0.132**	0.081	0.182***	0.104	0.193***	0.156**	0.020	-0.294***	1.000				
LongTargetEarnoutD	0.525***	0.685***	0.210***	0.472***	0.181***	-0.027	0.094	0.098	-0.012	0.048	-0.123*	0.191***	1.000			
ShortTargetEarnoutD	0.397***	0.518***	-0.033	0.121*	-0.020	-0.102	-0.071	-0.105	-0.072	-0.088	0.234***	-0.331***	-0.267***	1.000		
LongSponsorEarnoutD	0.458***	0.140**	0.800***	0.560***	0.042	-0.055	-0.012	0.080	0.018	0.091	-0.136**	0.195***	0.356***	-0.233***	1.000	
ShortSponsorEarnoutD	0.267***	0.059	0.467***	0.297***	-0.032	-0.069	0.069	0.003	0.012	-0.006	0.105	0.016	-0.180***	0.290***	-0.157**	1.000

A.5 Robustness

CARS2

	(1) CARS2	(2) CARS2	(3) CARS2	(4) CARS2	(5) CARS2	(6) CARS2
General Earnout (D)	-0.041*			-0.033		
	(-1.74)			(-1.39)		
Target Earnout (D)		-0.029			-0.022	
		(-1.34)			(-0.97)	
Sponsor Earnout (D)		-0.035*			-0.030	
		(-1.76)			(-1.44)	
Both Earnout (D)			-0.048**			-0.039
			(-2.17)			(-1.61)
Sponsor Exp (D)				-0.005	-0.005	-0.006
				(-0.17)	(-0.19)	(-0.24)
PIPE/Proceeds				0.023	0.022	0.023
				(1.50)	(1.44)	(1.50)
Large Deal Size (D)				-0.015	-0.012	-0.012
				(-0.64)	(-0.47)	(-0.49)
Additional At-Risk Capital (D)				-0.037	-0.035	-0.034
				(-1.12)	(-1.07)	(-1.05)
Book Runners				0.010	0.011	0.011
				(0.68)	(0.71)	(0.72)
Fast Anno (D)				0.054	0.054	0.055
				(1.51)	(1.51)	(1.58)
Board Size				-0.002	-0.001	-0.001
				(-0.32)	(-0.20)	(-0.16)
Constant	0.093***	0.092***	0.077***	0.066	0.060	0.045
	(4.59)	(5.04)	(6.05)	(1.26)	(1.16)	(0.95)
N	224	224	224	224	224	224
Adj. R-sq	0.01	0.01	0.01	0.02	0.02	0.02
F	3.03	2.52	4.70	1.01	1.00	1.11

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

CARW2

	(1) CARW2	(2) CARW2	(3) CARW2	(4) CARW2	(5) CARW2	(6) CARW2
General Earnout (D)	-0.156**			-0.133**		
	(-2.51)			(-2.21)		
Target Earnout (D)		-0.106*			-0.088	
		(-1.81)			(-1.53)	
Sponsor Earnout (D)		-0.154***			-0.118**	
		(-2.74)			(-2.07)	
Both Earnout (D)			-0.209***			-0.148**
			(-3.46)			(-2.47)
Sponsor Exp (D)				-0.062	-0.064	-0.069
				(-0.99)	(-1.04)	(-1.14)
PIPE/Proceeds				0.078**	0.074*	0.079**
				(1.99)	(1.90)	(2.01)
Large Deal Size (D)				-0.070	-0.055	-0.054
				(-1.20)	(-0.90)	(-0.89)
Additional At-Risk Capital (D)				-0.160**	-0.151**	-0.148**
				(-2.25)	(-2.16)	(-2.19)
Book Runners				0.001	0.004	0.004
				(0.03)	(0.10)	(0.10)
Fast Anno (D)				0.023	0.024	0.025
				(0.32)	(0.34)	(0.35)
Board Size				-0.030**	-0.027*	-0.026*
				(-2.00)	(-1.86)	(-1.72)
Constant	0.285***	0.289***	0.229***	0.478***	0.449***	0.383***
	(5.54)	(6.17)	(6.75)	(3.56)	(3.48)	(2.98)
N	212	212	212	212	212	212
Adj. R-sq	0.03	0.04	0.03	0.07	0.07	0.06
F	6.32	6.23	11.95	2.45	2.53	2.63

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

CARS3 S&P Global BMI

	(1) CARS3	(2) CARS3	(3) CARS3	(4) CARS3	(5) CARS3	(6) CARS3
General Earnout (D)	-0.046*			-0.038		
	(-1.87)			(-1.52)		
Target Earnout (D)		-0.032			-0.024	
		(-1.42)			(-1.03)	
Sponsor Earnout (D)		-0.035*			-0.030	
		(-1.70)			(-1.40)	
Both Earnout (D)			-0.046*			-0.035
			(-1.91)			(-1.36)
Sponsor Exp (D)				-0.012	-0.013	-0.015
				(-0.44)	(-0.45)	(-0.54)
PIPE/Proceeds				0.024	0.023	0.024
				(1.50)	(1.45)	(1.52)
Large Deal Size (D)				-0.013	-0.009	-0.009
				(-0.50)	(-0.35)	(-0.37)
Additional At-Risk Capital (D)				-0.030	-0.028	-0.027
				(-0.82)	(-0.77)	(-0.77)
Book Runners				0.011	0.012	0.012
				(0.72)	(0.74)	(0.74)
Fast Anno (D)				0.053	0.053	0.055
				(1.41)	(1.41)	(1.49)
Board Size				-0.005	-0.004	-0.004
				(-0.85)	(-0.72)	(-0.69)
Constant	0.104***	0.102***	0.085***	0.096*	0.087	0.071
	(4.93)	(5.35)	(6.39)	(1.74)	(1.63)	(1.45)
N	223	223	223	223	223	223
Adj. R-sq	0.01	0.01	0.01	0.02	0.02	0.02
F	3.51	2.48	3.66	1.15	1.10	1.14

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

CARW3 S&P Global BMI

	(1) CARW3	(2) CARW3	(3) CARW3	(4) CARW3	(5) CARW3	(6) CARW3
General Earnout (D)	-0.159**			-0.133**		
	(-2.39)			(-2.08)		
Target Earnout (D)		-0.129**			-0.107*	
		(-2.04)			(-1.74)	
Sponsor Earnout (D)		-0.130**			-0.092	
		(-2.20)			(-1.56)	
Both Earnout (D)			-0.206***			-0.141**
			(-3.09)			(-2.11)
Sponsor Exp (D)				-0.116*	-0.114*	-0.125*
				(-1.72)	(-1.67)	(-1.87)
PIPE/Proceeds				0.074*	0.071*	0.075*
				(1.89)	(1.82)	(1.91)
Large Deal Size (D)				-0.057	-0.048	-0.041
				(-0.91)	(-0.74)	(-0.62)
Additional At-Risk Capital (D)				-0.111	-0.103	-0.101
				(-1.27)	(-1.17)	(-1.18)
Book Runners				-0.001	0.001	0.001
				(-0.03)	(0.02)	(0.03)
Fast Anno (D)				0.017	0.016	0.018
				(0.23)	(0.22)	(0.25)
Board Size				-0.038**	-0.036**	-0.034**
				(-2.43)	(-2.35)	(-2.17)
Constant	0.321***	0.325***	0.262***	0.580***	0.559***	0.485***
	(5.85)	(6.55)	(7.23)	(3.99)	(4.01)	(3.43)
N	211	211	211	211	211	211
Adj. R-sq	0.02	0.03	0.02	0.07	0.07	0.06
F	5.71	5.11	9.53	2.60	2.58	2.68

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

A.6 OLS Assumptions

We use an OLS regression as this is a commonly used technique for estimating a linear regression model. There are five assumptions that must hold to be able to apply this method. The first assumption is linearity which is only limited to the parameters. Secondly, the data must be randomly selected. Moreover, the third assumption states that there can not be perfect collinearity among the variables. The fourth assumption is called the zero conditional mean assumption. For this assumption to hold, no variables that both influence the dependent variable and correlate with the independent variable should be left out. This would lead to an omitted variable bias. If these assumptions are satisfied there are unbiased estimates. The last assumption is homoscedasticity which means that the variance in the error term is constant (Bütikofer, 2021).

A.7 Earnout Length

CARS3 Earnout Length

	(1) CARS3	(2) CARS3	(3) CARS3	(4) CARS3	(5) CARS3	(6) CARS3
Long Target Earnout (D)	-0.043*				-0.038	
	(-1.90)				(-1.50)	
Long Sponsor Earnout (D)		-0.059***				-0.054**
		(-2.99)				(-2.45)
Short Target Earnout (D)			-0.001		-0.007	
			(-0.02)		(-0.20)	
Short Sponsor Earnout (D)				0.019		0.017
				(0.48)		(0.43)
Sponsor Exp (D)					-0.008	-0.012
					(-0.27)	(-0.44)
PIPE/Proceeds					0.025	0.024
					(1.61)	(1.57)
Large Deal Size (D)					-0.012	-0.008
					(-0.46)	(-0.31)
Additional At-Risk Capital (D)					-0.028	-0.033
					(-0.81)	(-0.96)
Book Runners					0.011	0.011
					(0.68)	(0.68)
Fast Anno (D)					0.055	0.058
					(1.48)	(1.59)
Board Size					-0.004	-0.003
					(-0.70)	(-0.57)
Constant	0.086***	0.087***	0.075***	0.073***	0.075	0.068
	(5.91)	(6.13)	(5.83)	(5.97)	(1.32)	(1.39)
N	223	223	223	223	223	223
Adj. R-sq	0.01	0.02	-0.00	-0.00	0.01	0.02
F	3.62	8.96	0.00	0.23	1.00	1.59

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

CARW3 Earnout Length

	(1) CARW3	(2) CARW3	(3) CARW3	(4) CARW3	(5) CARW3	(6) CARW3
Long Target Earnout (D)	-0.154**				-0.126**	
	(-2.53)				(-1.99)	
Long Sponsor Earnout (D)		-0.185***				-0.150**
		(-3.12)				(-2.48)
Short Target Earnout (D)			-0.032		-0.105	
			(-0.32)		(-1.05)	
Short Sponsor Earnout (D)				0.008		-0.003
				(0.08)		(-0.03)
Sponsor Exp (D)					-0.106	-0.128*
					(-1.53)	(-1.88)
PIPE/Proceeds					0.077*	0.075*
					(1.96)	(1.90)
Large Deal Size (D)					-0.063	-0.032
					(-0.99)	(-0.48)
Additional At-Risk Capital (D)					-0.107	-0.117
					(-1.24)	(-1.34)
Book Runners					-0.002	-0.000
					(-0.06)	(-0.00)
Fast Anno (D)					0.013	0.026
					(0.18)	(0.35)
Board Size					-0.037**	-0.033**
					(-2.40)	(-2.16)
Constant	0.268***	0.267***	0.231***	0.225***	0.548***	0.487***
	(6.70)	(6.94)	(6.90)	(6.65)	(4.03)	(3.43)
N	211	211	211	211	211	211
Adj. R-sq	0.02	0.02	-0.00	-0.00	0.06	0.06
F	6.39	9.72	0.10	0.01	2.29	2.74

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$