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SPAC Success Factors: Determinants of Post-Acquisition Share Price Growth

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Abstract

This paper examines characteristics of Special Purpose Acquisition Companies (SPACs) as determinants of post-acquisition success. I collected data on all SPACs which merged with a target firm between 2016 and the start of 2021. The data set controls for a host of variables including the contractual design of the SPAC, management team characteristics, founder compensation structure, key underwriter data, and performance metrics measured throughout the SPAC's lifecycle. Using a multivariable regression, I find new and robust insights into the SPAC market. Contrary to current literature, I conclude that the misaligned incentives caused by the initial at-risk capital supplied by founders are overstated. Additionally, I find evidence that underwriter characteristics are declining in importance as more institutional investors enter the SPAC market. Finally, I find that redemption rates have a key significant effect on post-acquisition share price growth.
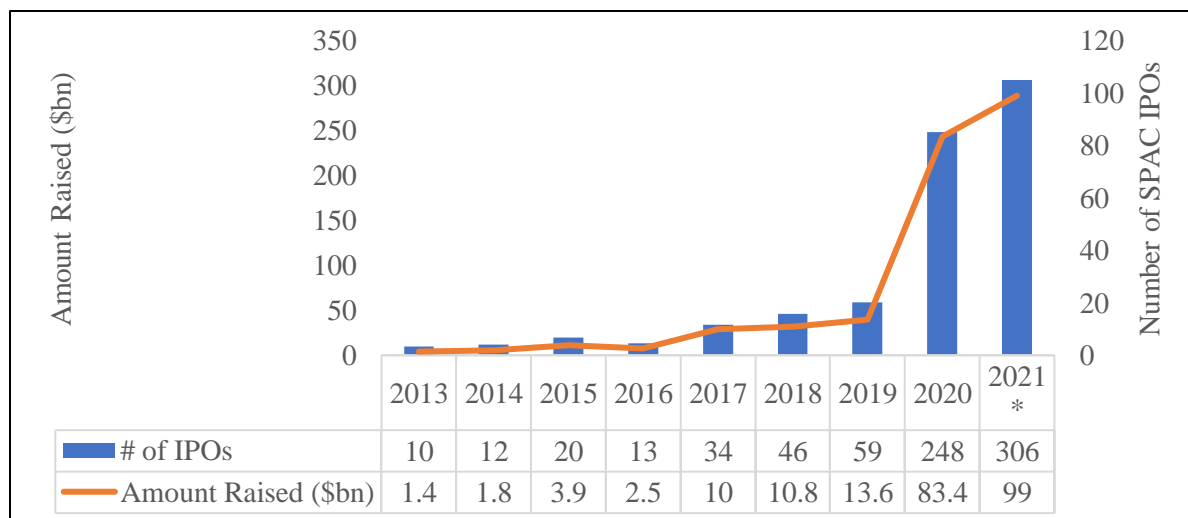
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I. Introduction

Special Purpose Acquisition Companies, or SPACs, have experienced tremendous growth over the past year, transitioning from a niche financial instrument into the hottest commodity on Wall Street. Simply put, SPACs are blank check companies which exist as an alternative to the traditional IPO process. They raise capital through an IPO which is then used to merge with a private company, thereby taking it public. Shareholders who do not approve of a proposed merger can choose to redeem their shares in exchange for their full investment plus interest. If a SPAC fails to merge with a target company within two years, it liquidates and returns capital to shareholders. Once considered a "back-door" to public markets, the spotlight has suddenly been shone on SPACs. Success stories of firms like Draft Kings (DKNG) providing shareholders with impressive returns after going public via SPAC in 2020 created a favorable shift in market sentiment, resulting in an extraordinary volume of new entrants into public markets. As seen in Figure I.1, 2020 SPAC IPO proceeds were nearly double the entire

Figure I.1 - SPAC IPO Data from 2013 to April 10th, 2021. Source: (SPAC Research)

	2013	2014	2015	2016	2017	2018	2019	2020	2021*
# of IPOs	10	12	20	13	34	46	59	248	306
Amount Raised ($bn)	1.4	1.8	3.9	2.5	10	10.8	13.6	83.4	99

seven preceding years combined. Only four months into 2021, SPAC IPO proceeds have already surpassed those record setting figures and outpaced traditional IPOs by a wide margin.

Despite the media hype, research on the determinants of post-acquisition performance remains sparse. Unlike traditional firms, SPACs do not have operations or a business model which can be used to predict success. Instead, a SPAC's only assets are the human capital of its management team and the capital raised through the IPO. Investors are therefore faced with high levels of uncertainty when projecting the prospects of a SPAC. Cummings (2014) compared this process to "betting on a jockey." This paper attempts to reduce the uncertainty by examining success factors of post-acquisition SPACs using a host of variables regressed against post-acquisition share price growth.

Past research has criticized SPACs for their structure which creates misaligned incentives and substantial costs (Klausner, 2020); however, an empirical study focused on post-acquisition performance has not been undertaken. The lack of research combined with the continued flood of SPACs into public equity markets makes it increasingly important to analyze the structure, history, and drivers behind SPAC success. While my study provided many insights, three standout: first, contrasting previous research on perverse incentives, at-risk capital supplied by founders was shown to have a positive and significant effect on share price growth; second, there is new evidence suggesting that characteristics of SPAC underwriters are declining in importance as more underwriters enter the SPAC market; finally, share redemption rates were found to be highly variable across the SPAC sample and had a negative, significant effect on post-merger SPAC performance. In my

thesis, I will first provide insight into the structure and history of the blank check firms. I will then discuss the existing literature before showcasing my methodology and results.

II. SPAC Background

II.1 SPAC Structure

At their core, Special Purpose Acquisition Companies are an investment vehicle which provide private firms an alternative route to public markets. Founders, or sponsors, pool capital together for the sole purpose of taking a private firm public. At this point, they have no business operations and do not have an acquisition target. The SPAC then raises additional capital from institutional investors through an IPO. Typically, 85% to 100% of IPO proceeds enter a trust which can only be used for an acquisition (Jenkinson and Sousa, 2009). During the SPAC's life, the trust earns interest by investing in short term US government securities. The remaining IPO proceeds and startup capital from founders are used to cover the underwriter fees, IPO expenses, and working capital.

Instead of receiving a salary, SPAC founders are compensated with a significant equity stake purchased at a nominal price prior to the IPO. This block of shares is commonly called the "promote" and typically equates to 25% of IPO proceeds or 20% of shares outstanding. These shares are placed into an escrow account and are subject to transfer restrictions and anti-dilution mechanisms. Restrictions often include a lock-up period of up to one year after the business combination with exceptions if shares break a specified price threshold.

The SPAC founders have a two-year window after the IPO to complete an acquisition. If this deadline is not met, the trust account is liquidated and returned to public

shareholders. Assuming a firm is identified, an announcement is made and shareholders vote to approve the deal. If shareholders do not approve of the acquisition, they can redeem their shares in exchange for their initial investment plus interest. Founders, however, are unable to participate in any liquidation meaning that they end up with nothing if they fail to complete a deal. Oftentimes, liquidated shares are replaced through a private investment in public equity, or PIPE, to ensure a deal is completed. Once a deal is completed, SPAC shares are converted into shares of the new combined firm. Figure II.1 illustrates the SPAC lifecycle.

Figure II.1 - The SPAC Lifecycle
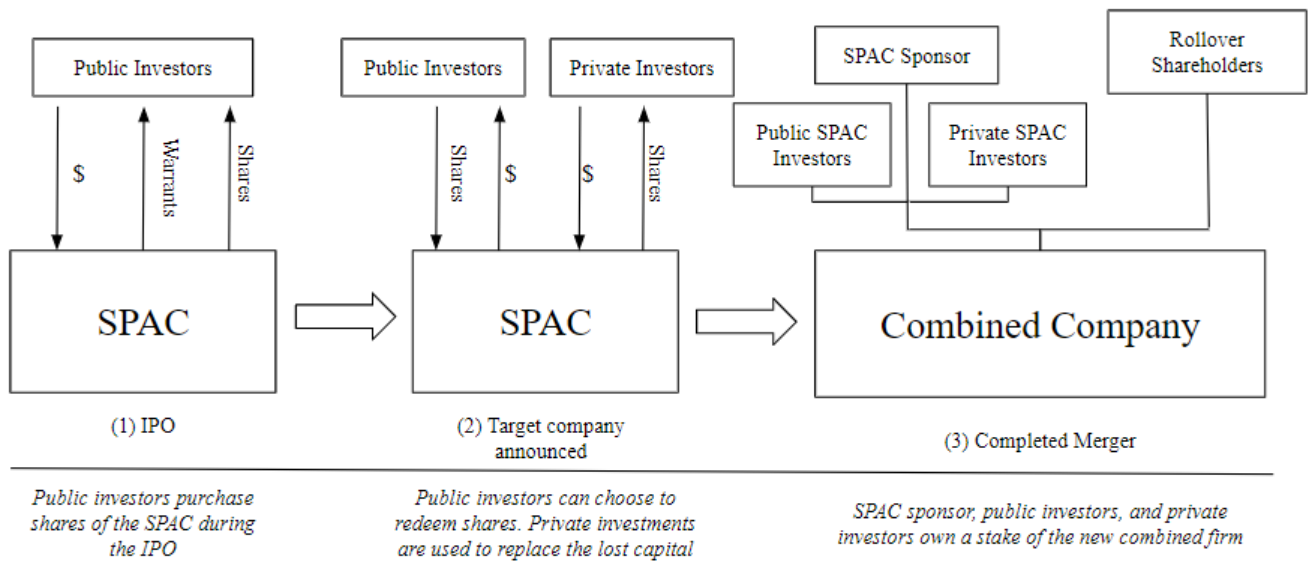
II.2 History

SPACs have only recently entered the mainstream, but the earliest iteration in the United States can be traced back to 1993. Following the 1987 stock market crash, the SEC implemented Rule 419 which was designed to give additional protection to public investors

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from blank-check penny stock companies. SPACs soon followed to circumvent the new restrictions put in place. Since SPACs operated outside of the SEC's new regulation, Murray (2017) argues that they have been able to undergo change and evolution more swiftly, leading to an investment vehicle that can quickly adapt to volatile market conditions. Recent changes include removing share redemption thresholds and allowing for share trading after the merger vote, which essentially provides investors with 100% downside protection. These changes have played a vital role in making SPACs an attractive option for both founders and institutional investors. In the following section, I discuss the SPAC literature and theory which shaped my empirical model.

III. Literature Review

III.1 SPAC Sponsor Incentives

A criticism consistently leveled against SPACs is the misaligned sponsor incentives influenced by the current deal structuring. As mentioned in the previous section, founders are compensated with the promote which typically equates to 20% of the outstanding shares. This has made SPAC management a highly lucrative and attractive position. In a 2007 study performed by Jog and Son, the median return for the founders of a successfully merged SPAC equated to 1,900%. If a merger does not occur, however, the SPAC is liquidated, and the founders lose their entire investment. Therefore, SPAC sponsors are heavily incentivized to complete a deal regardless of the underlying quality of the target firm (Jog and Son 2007). Later studies by Berger (2008) and Jenkinson et al (2011) solidified the validity of Jog & Son's findings. These incentive issues are thought to be made worse by the start-up capital supplied by founders. This investment is devoid of

redemption rights and is therefore referred to as "at-risk". Klausner (2020) argues that higher levels of at-risk capital will widen the gap between founder and shareholder motivations.

In addition to being the root of unbalanced incentives, the promote paid to sponsors causes significant share dilution and decreases shareholder value. In effect, the promote acts as a tax on a SPAC's merger. Klausner (2020) concluded that, of the SPACs which successfully merged between 2019-2020, the median net promote as a percentage of post-merger equity was 7.7%. In order for the acquisition to be a value increasing transaction, the merger must generate a surplus greater than the inherent dilution within the SPAC's structure.

III.2 The Role of Institutional Investors and Share Redemptions

SPACs have been described by some as a poor man's private equity, allowing average retail investors an opportunity to bet on a sponsors' skills in identifying and merging with a high potential private firm. From this perspective, SPACs can be viewed as a democratizing force within financial markets. Klausner (2020), however, argued that the role of institutional investors is often understated. In his study based on the 46 SPACs which merged from January 1st, 2019 to June 30th, 2020, he revealed that the median ownership by 13F filers during this period is 87% of pre-merger SPAC shares. It can be inferred from this figure that SPACs have not given the average retail investor a seat at the table.

Given that institutional investors hold most of the pre-merger shares, it is important to understand how these firms view their positions. One may be inclined to believe that

institutional investors trust in the ability of the sponsors and plan to hold onto their shares through the merger. Of the 2019-20 cohort of merged SPACs researched by Klausner (2020), however, the mean redemption rate equated to 58%. Despite these high rates of redemption, mergers were still completed due to growth of PIPE financing available to SPACs. In this sample, 77% of SPACs raised additional capital at the time of their mergers.

After share redemptions, there is an average of 42% of the original shares outstanding. At first glance, these unredeemed shares appear to be instances where investors expressed confidence in the proposed deal and held onto their shares. Klausner (2020) attempted to investigate this by analyzing the divestment rate of 13F shareholders. Divestment can be considered either a redemption or sale of shares starting from the merger announcement until just before the merger closes. From their analysis, it was discovered that the mean SPAC divestment rate stood at 90% for SPACs merged in 2019, indicating that IPO investors choose to redeem or divest their shares regardless of the target companies' outlook. Therefore, a high rate of redemption seems to be an industry standard rather than a predictor of a target companies' future success. Questions remain about the long-term validity of these insights and their impact on post-acquisition performance. Klausner's study only observed SPACs which merged in 2019. By observing a longer period, I seek to gain a better understanding of the impact that institutional investors and share redemptions have on SPAC mergers.

III.3 Characteristics of SPAC Success

Research on the underlying drivers of a successful SPAC is quite sparse, however, Cumming's (2014) study successfully laid out an economic model and methodology to

investigate. It applied a logit model to comprehensively analyze the success factors for their dependent variable: acquisition approval. Their sample consisted of all completed SPACs listed on U.S. stock exchanges between 2003 and 2010. This sample included 163 SPACs, ninety-eight of which successfully completed an acquisition. The study utilized twenty-three explanatory variables combined into four separate sections: SPAC Structure, IPO Process, Ownership Structure, and Operations and Performance. Interestingly, the data indicates that more experienced managers and boards do not enhance the probability of deal approval. Additionally, it was found that more prestigious underwriters and large underwriter syndicates adversely affect the chances of an acquisition target being approved (Cummings et al, 2014).

Cumming's research was foundational in understanding the drivers behind SPAC acquisition approval. To be applicable in 2020, however, the methodology must be updated to encompass the drastic variations that the SPAC market has undergone. For instance, acquisition approval is no longer a valid metric for success given the drastic decline in liquidation rates caused by the growth of PIPE investments and the removal of redemption thresholds. Cumming's sample had a liquidation rate of 40% in comparison to a 2% liquidation rate in 2019. Additionally, investors looking to hold their shares through a SPAC merger will be unable to derive insights from Cumming's research. In this paper, I shift my attention towards post-merger stock performance to understand how SPAC success factors impact shareholder value.

IV. Methodology

IV.1 Data

The purpose of my research is to understand success factors determining positive returns following a SPAC acquisition. To do so, I analyze share price growth over a specified trading period. Murray (2017) argues that SPACs have been continuously evolving and adapting to changing market conditions. This suggests that newer SPACs will provide more relevant results. Additionally, SPAC acquisitions showed steady growth starting in 2016 prior to the SPAC boom witnessed in 2020, indicating a favorable swing in market sentiment toward SPACs as a method of reaching public markets. To capture the latest trends in SPACs, I have focused my study on SPACs which completed a deal after January 1st, 2016. My primary sample measures share price growth over a 365-day trading window. SPACs which closed a deal after January 1st, 2016 and prior to April 30th, 2020 were eligible for the sample. To capture price movement as the deal approaches completion, I chose to begin the trading window 30-days prior to the acquisition date.

I utilized the investment database "SPAC Research" to identify all relevant offerings. Results were then confirmed through the investment database "SPAC Track" and the SEC's Electronic Data Gathering and Retrieval (EDGAR) database. There was a total of ninety-one SPACs who completed their life cycle as blank check companies and either liquidated or acquired a company during this time frame. Eleven SPACs failed to combine with a target firm and have thus been excluded from the dataset, leaving eighty SPACs who successfully completed their acquisition. A further five SPACs have been excluded from the sample. The first successfully combined with a target company;

however, the firm waived the closing conditions under the merger agreement which would have required common stocks and warrants to be listed on the NASDAQ. The second was the subject of an additional acquisition nine months after its initial combination. The final three were delisted during the 365-day trading window leaving a sample of 75 SPACs. To ensure my results are robust and valid, I also created samples which measured share price growth over a 180-day and 90-day trading period. This reduced trading window allowed me to include additional SPACs to the sample from the latter stages of 2020 and the start of 2021. The 180-day and 90-day samples contains 101 and 130 total SPACs, respectively. Table IV.1 provides a breakdown of SPACs included in each sample by year. For all three samples, I collected data across three different types: structural SPAC data, IPO process data, and performance data. The following section provides detail on the sources and insights that can be derived from the data. Table IV.2 identifies the variables and their respective definitions.

Table IV.1 – SPACs Included in Each Sample by Year

	1 Year	180 Day	90 Day
2016	4	4	4
2017	13	13	13
2018	22	22	22
2019	23	23	23
2020	13	39	64
2021	-	-	4
Total	75	101	130

Source: (SPAC Research and SEC EDGAR)

Table IV.2 – Variable Definitions

I. Structural SPAC Data	
Trust Value	Net IPO proceeds put into trust account
Promote Shares/IPO Units	Promote shares normalized by public units outstanding post IPO
Number of Managers	Total number of directors and executives listed on prospectus
Experience	Average age of directors and executives listed on prospectus
Expertise	Dummy Variable indicating if sponsor has closed two or more SPAC mergers
At-Risk Capital	Founder's initial investment void of redemption rights
II. IPO Process Data	
Underwriters	Total number of underwriters
Avg Underwriter Rank	Average underwriter ranking based on SPAC bookrunner volume
Highest Ranked Underwriter	Highest ranked underwriter based on SPAC bookrunner volume
III. Performance Data	
Share Price Growth	Post acquisition share price growth over a specified trading period
Enterprise Value/Trust Value	Interaction term between the implied EV on the acquisition date and TV
Days Searching	Total days between IPO and acquisition
Redemption Rate	Percent of shares redeemed by shareholders

IV.1.1 Structural SPAC Data

Structural SPAC data includes the contractual design of the offering, leadership information, and incentive structure. Most of this information was compiled through the investing databases "SPAC Research" and "SPAC Track" alongside audited filings from SEC EDGAR. All SPACS are required to submit form 424 to the SEC in accordance with the Securities Act of 1933 (Heyman 2007). I leveraged these public filings to obtain reliable information on key components of my SPACs of interest to be used in my analysis. Primarily, these filings were used to gather data on SPAC managers. All managers listed within form 424 were included in the total managers variable and their ages were averaged to create the team age variable. In this study, average team age is used as a proxy for experience.

In addition to pulling data from SEC filings, the vetted forms allowed me to validate information from my investing databases. Trust value, IPO units, at-risk capital, and promote shares were exported from the archived database and at-risk capital database found on SPAC Research. The trust value variable measures the total IPO proceeds placed into the escrow account after the IPO in millions of dollars. The IPO shares variable measures the total public shares outstanding directly after the IPO. At-risk capital measures the initial funds provided by the founders in millions of dollars. If the SPAC were to fail to make a business combination, the at-risk capital would not be returned to the founders as it is devoid of redemption rights. The promote shares variable measures the total shares awarded to founders after the business combination is completed. I divided the promote shares by the total IPO shares to normalize the data across all SPACs. This variable is used to understand the underlying incentive issues derived from the compensation structure for sponsors. For variables not easily exportable, I created a web scraper which was able to automate the data pulling process and eliminate manual errors. Finally, to obtain the expertise dummy variable, I manually cross-referenced manager names from form 424 with the "SPAC Research" directors database. 1 is used to denote SPACs with a manager who had successfully completed two or more business combinations in their history and 0 otherwise. This dummy variable is used as a proxy for management's expertise and understanding of the SPAC industry.

Tables IV.3 and IV.4 contain structural data statistics for the one-year and 90-day samples respectively. The 90-day sample allowed for an additional 55 observations from the latter stages of 2020 and the start of 2021 and will thus provide insight into how SPACs have continued to develop when compared to the 365-day sample. Trust value in the 365-day sample has a mean value of $265 million and a standard deviation of $198.09 million indicating that SPACs continue to be highly differentiated in size. Despite promote shares being negotiable, the promote to IPO shares ratio has a standard deviation of 0.02 indicating that SPAC founders have historically received relatively uniform payouts across all SPACs. This lack of variance may minimize the insights into the misaligned incentives caused by the promote.

Table IV.3 – Structural SPAC Data Summary Statistics – One-Year Sample

	Mean	Median	Standard Deviation	Min	Max	Count
Structural SPAC Data						
Trust Value	262.68	229.22	198.09	40.37	1035.00	75
Number of Managers	6.69	7.00	1.41	4.00	10.00	75
Experience	53.48	53.40	5.46	39.67	64.60	75
Expertise	0.57	1.00	0.50	0.00	1.00	75
Promote/IPO Shares	0.26	0.25	0.02	0.22	0.38	75
At Risk Capital	7.40	6.50	4.02	1.16	22.70	75

Table IV.4 – Structural SPAC Data Summary Statistics – 90-Day Sample

	Mean	Median	Standard Deviation	Min	Max	Count
I. Structural SPAC Data						
Trust Value	266.50	230.00	196.37	40.37	1100.00	130
Number of Managers	6.71	7.00	1.35	4.00	10.00	130
Experience	53.54	53.86	5.52	39.67	64.60	130
Expertise	0.59	1.00	0.49	0.00	1.00	130
Promote/IPO Shares	0.25	0.25	0.02	0.22	0.38	130
At Risk Capital	7.48	6.78	3.94	1.16	23.00	130

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Trust value, number of managers, experience, expertise, and at-risk capital all had relatively small increases after including the additional observations from the 90-day sample (+1.5%, +0.2%, +0.1%, +3.3%, and +1.0% respectively). The promote to IPO shares ratio, however, declined by -1.0%. The lack of significant change between the two samples indicates that as SPAC boom continued through 2020, little evolution occurred in SPAC structure.

IV.1.2 IPO Process Data

IPO process data provides essential descriptive statistics on the SPAC IPO backers. This data was scraped from SPAC Research through a channel of archival data on historic SPAC underwriters. This dataset is given by annual panel data which I then aligned with my structural SPAC data by year and underwriter. I was able to obtain data on the ranking of underwriters based on total bookrunner volume as well as the total number of underwriters backing a given SPAC. Examining the groups underwriting these SPACs will allow my model to make predictions about how SPACs will perform based upon the total volume in millions of dollars underwritten by the backer. Of particular interest in my analysis is the phenomenon of "serial underwriting", a case where one backer is behind an extremely high volume of SPACs. By analyzing this group compared with low volume backers, I can develop insights into underwriter incentives. We might expect that serial underwriters back SPACs for the underwriting commission and fees associated with the IPO rather than their expectations about company potential. Tables IV.5 and IV.6 contain IPO process data summary statistics for the 365-day and 90-day samples.

Table IV.5 – IPO Process Data Summary Statistics – One-Year Sample

	Mean	Median	Standard Deviation	Min	Max	Count
II. IPO Process Data						
Number of Underwriters	2.63	3.00	0.98	1.00	5.00	75
Highest Ranked Underwriter	4.52	3.00	3.51	1.00	14.00	75
Avg Underwriter Ranking	9.36	9.67	4.46	2.00	22.00	75

Table IV.6 – IPO Process Data Summary Statistics – 90-Day Sample

	Mean	Median	Standard Deviation	Min	Max	Count
II. IPO Process Data						
Crowded Underwriter Dummy	2.48	2.00	1.03	1.00	5.00	130
Highest Ranked Underwriter	4.90	3.00	4.02	1.00	19.00	130
Avg Underwriter Ranking	9.65	9.67	5.37	1.00	27.67	130

IV.1.3 Performance Data

Performance data includes variables which fluctuate during the SPAC's lifecycle and can be used as a benchmark for manager performance. Primarily, this data was scraped from the archival database found on SPAC Research. The days searching variable was calculated by finding the difference between the IPO date and the date the deal was finalized. This variable allows for an analysis of SPAC managers ability to find a target company quickly and close the deal. I expect that post acquisition performance will fall as days searching approaches the two-year liquidation deadline. To not lose out on the promote, managers will be motivated to push through a deal regardless of the quality of the target firm. Redemption rate measures the percent of shares redeemed for cash from the trust value throughout the SPAC's lifecycle. Despite Klausner's (2020) argument that public investors divest their shares regardless of the potential outlook of the target firm, I expect that redemption rate should give a measure of the shareholder's trust in

management. The implied pro forma enterprise value is calculated at the time of deal close and pulled from the 8-K merger announcement. This value was then divided by trust value to normalize across all observations. Principally, this variable will allow for an analysis of management's ability to find a favorable deal for shareholders. I expect there will be a positive effect on post-acquisition performance the more enterprise value outweighs trust value.

For my dependent variable, I have chosen to analyze the growth rate of share price. Studies in the past have largely focused their attention on the acquisition itself, however, this provides little insight for investors looking for long term returns on their SPAC investment. Using a price growth rate provides a more powerful indicator of a SPAC's success in current analysis, because it can directly chart a firm's performance on public markets. To calculate this value, I pulled daily share price data from the Center for Research in Security Prices' (CRSP) across my periods of interest for all SPACs included in my sample. I used the following equation to calculate share growth:

$$Price\ Growth_i = \ln\left(\frac{Price_1}{Price_0}\right)\ for\ SPAC_i$$

Tables IV.7 and IV.8 contain performance data summary statistics for the 365-day and 90-day samples respectively. The 365-day price growth rate has a mean value of -32% which is far below the S&P 500's growth which had a CAGR of 12.9% between 2016 and 2020 (FRED). This clearly reflects the risky nature of SPACs and should be used to caution investors trying to capitalize on the media hype. It is important to note, however, that SPAC performance has shown strong improvement. The 13 SPACs included in the 365-day sample which closed a deal in 2020 had a mean growth rate of 6.1%, highlighting the

continued validation of SPACs as a method of reaching public markets. Interestingly, the

90-day sample's share price growth has a mean value of -6% up +26 percentage points

from the 365-day sample. This indicates that public equity markets have historically

overvalued SPACs shortly after the deal is completed.

Table IV.7 – Performance Data Summary Statistics – One-Year Sample

	Mean	Median	Standard Deviation	Min	Max	Count
III. Performance Data						
Price Growth	-0.32	-0.24	0.86	-2.37	1.72	75
Enterprise Value/Trust Value	4.12	3.52	2.86	0.21	18.28	75
Days Searching Dummy	601.15	550.00	211.19	222.00	1203.00	75
Redemption Rate	0.55	0.73	0.38	0.00	1.00	75

Table IV.8 – Performance Data Summary Statistics – 90-Day Sample

	Mean	Median	Standard Deviation	Min	Max	Count
III. Performance Data						
Price Growth	-0.06	-0.03	0.56	-1.77	1.30	130
Enterprise Value/Trust Value	4.38	3.54	3.23	0.21	18.28	130
Days Searching Dummy	602.28	577.00	233.28	144.00	1253.00	130
Redemption Rate	0.45	0.49	0.39	0.00	1.00	130

The enterprise value to trust value ratio has a mean of 412%, highlighting the

importance of PIPE financing to meet liquidity requirements. As Klausner (2020)

showcased, 77% of SPACs received a capital infusion through PIPE financing or an

additional investment from founders during their lifecycle. This additional capital provides

management vital flexibility during the acquisition phase. The days spent searching for an

acquisition had a mean value of 602.28 days which satisfies the two-year liquidation

deadline. A considerable portion of the SPACs included in the sample, however, extended

far beyond the deadline. In these cases, shareholders voted to extend the SPAC's charter

allowing it to bypass the liquidation requirements. Redemption rates in the 365-day sample had a mean value of 55% which is consistent with Klausner's (2020) study. After including the additional firms from the 90-day sample, the mean falls by 10 percentage points. This indicates the growing trust in SPACs from investors as more choose to hold their shares throughout the entire SPAC lifecycle. Figure IV.8 shows redemption rates broken down by year.

Figure IV.8 – Average Redemption rates from 2017 through January 2021
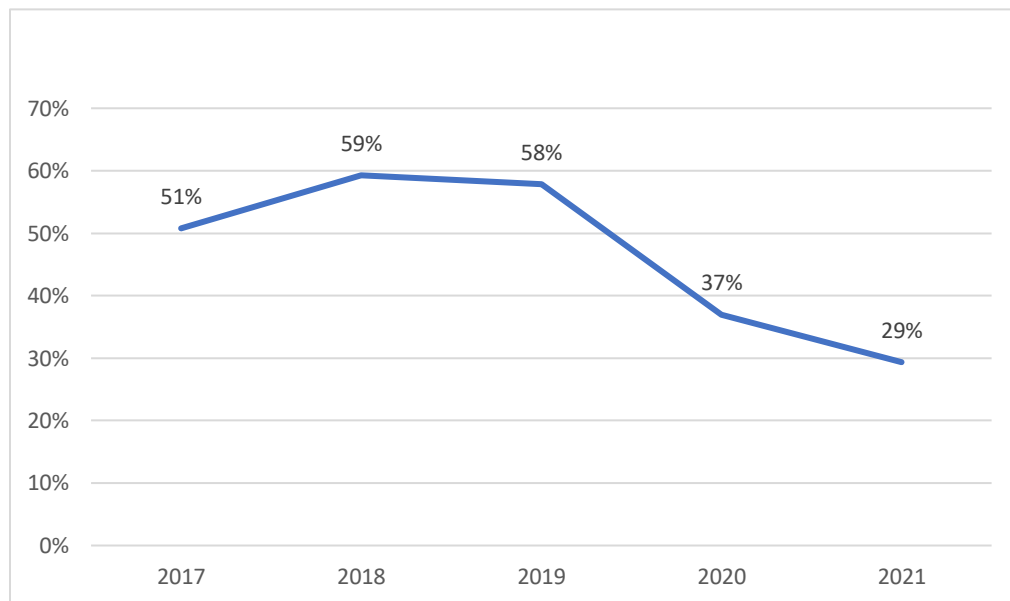
IV.2 Model

To determine whether there is a significant linear relationship between share price growth and the covariates listed above, I ran a multiple variable regression. For each variable, I observe characteristics associated with SPAC "i" in year "t". Prior to running the regression, I transformed several variables to find the model with best fit. First, I

performed a log transformation on *At-Risk Capital* to improve linearity between the dependent and independent variables such that:

$$Log\ At\ Risk\ Capital_i = \ln(At\ Risk\ Capital_i)\ for\ SPAC\ i$$

Additionally, I created dummy variables using the number of managers, average team age, number of underwriters, and days searching variables such that:

$$Large\ Board\ Dummy_i = \begin{cases} 0\ if\ Number\ of\ Managers_i \leq 7 \\ 1\ if\ Number\ of\ Managers_i > 7 \end{cases}$$

$$Experienced\ Dummy_i = \begin{cases} 0\ if\ Avg\ Age_i \leq 53.6 \\ 1\ if\ Avg\ Age_i > 53.6 \end{cases}$$

$$Crowded\ Underwriter\ Dummy_i = \begin{cases} 0\ if\ Underwriters_i \leq 2 \\ 1\ if\ Underwriters_i > 2 \end{cases}$$

$$Days\ Searching\ Dummy_i = \begin{cases} 0\ if\ Days\ Searching_i \leq 730 \\ 1\ if\ Days\ Searching_i > 730 \end{cases}$$

I chose seven directors as the *Large Board Dummy* variable cutoff and 53.6 as the Experienced Dummy variable cutoff as they were the median values. Two was chosen as the Crowded Underwriter Dummy cutoff because it logically allows for one lead underwriter who takes on the most prominent role and a secondary underwriter with less responsibility and less of the share of the profits. Finally, 730 days was chosen as the cutoff point for the Days Searching Dummy as it naturally splits SPACs who completed their deal within the two-year liquidation deadline and those who were forced to extend. To control for the time difference fixed effect, I include a year dummy variable for each year and omit 2016. Running the regression with the four specified dummy variables above results in an

R^2 0.399 for the one-year sample and was thus chosen as the best fit. The adjusted R^2 of 0.2332 is comparable to Kolb's (2016) SPAC model which had an adjusted R^2 of 0.19.

V. Results

Table V.1 outlines the regression results for all three samples. The one-year sample best represented the data, recording an R-squared of .399. Therefore, interpretations of the results are based on the one-year sample with consideration given to the significance and sign of the 180-day and 90-day samples. In the following section, I interpret the results across the three categories: structural SPAC data, IPO process data, and performance data.

Table V.1 - Regression Results

	1 Year	180 Day	90 Day
I. Structural SPAC Data			
Trust Value	-0.002*	-0.0004	-0.0008*
Large Board	-0.172	-0.203	-0.033
Experience	0.090	-0.026	-0.025
Expertise	0.349*	0.219*	0.147
Promote/IPO Shares	1.501	0.289	0.584
LogAtRisk	0.624*	0.364*	0.308*
II. IPO Process Data			
Crowded Underwriter Dummy	-0.41**	-0.180	-0.076
Highest Ranked Underwriter	-0.066*	-0.032	-0.027
Avg Underwriter Ranking	0.066*	0.036*	0.017
III. Performance Data			
Enterprise Value/Trust Value	0.063*	0.04**	0.039**
Days Searching Dummy	0.027	0.162	0.207*
Redemption Rate	-1.007***	-0.36**	-0.595***
Observations	75	101	130
Year Fixed Effect	Yes	Yes	Yes
R-Squared	0.399	0.280	0.276

V.1 Structural SPAC Data

Trust Value is the net IPO proceeds transferred to the SPAC escrow account. This sum along with accrued interest is either used for an acquisition or paid back to investors if the shares are redeemed or in the event of a liquidation. Cummings (2014) argues that given a higher trust value, the value proposition of any acquisition proposal must be even more attractive because the opportunity costs of redeeming shares increases. This implies that shareholders demand a higher return on investment in cases where trust value is high.

Surprisingly, trust value has a significant and negative effect on post-SPAC share price performance for both the one-year and 90-day samples. For a one standard deviation increase in trust value, there is an expected 0.44 standard deviation decrease in share price growth. This reflects Roll's (1964) argument that smaller firms yield larger average returns even after adjusting for risk. Given that trust value is a large determinant of potential target company size, it can be inferred that a larger trust value will have a negative effect on returns.

As stated previously, SPACs have no operations or business model that investors can evaluate to predict success. Instead, investors base their decisions upon the characteristics of the management teams (Cummings 2014). Interestingly, the large board dummy variable produced a negative and insignificant sign across all samples. Yermack (1996) argues that firms with smaller boards of directors have higher market valuations as large boards may struggle with effective communication and decision-making. The insignificant sign for the large board variable can be attributed to the immense structural differences between SPACs and large corporations. The lack of operational responsibilities allows for a far less complex environment where breakdowns in communication can be mitigated.

Similarly, the experienced variable returned a positive and insignificant sign. Experience and institutional knowledge are likely essential to navigate the SPAC market and acquire a successful target company; however, Cumming (2014) argues that younger managers have not yet achieved comparable wealth to older managers and will thus be more motivated to close a deal. These two contrasting effects may explain the lack of

significance. While the experience variable was shown to be insignificant, the expertise variable returned a positive and significant sign for both the one-year and 180-day samples. If a member of a SPAC's management team has completed one or more SPAC acquisitions, there is a resulting 34.9% increase above average returns. The SPAC market is nuanced and constantly changing. Having firsthand experience navigating the SPAC lifecycle is shown to be instrumental in finding and identifying successful target companies.

As stated in the literature review, there has been significant research dedicated to the misaligned incentives and dilution caused by the sponsor promote, implying a negative impact on post-acquisition share price performance (Klausner 2020). Receiving the promote shares is contingent on founders successfully completing a deal. This causes severe incentive issues, wherein the sponsor is motivated to complete an acquisition prior to the expiration date regardless of the quality of the target firm. Interestingly, the promote to IPO shares ratio returned a positive and insignificant sign. The lack of significance can likely be explained by the uniformity within the sample. The mean value of promote shares to total shares outstanding is 20.3% with only a 1.4% standard deviation in the one-year sample. Founders are awarded proportionally similar compensation across most of the SPAC population. Therefore, the SPACs within the sample are similarly impacted by the sponsor promote, causing it to be insignificant.

While the promote was shown to be insignificant, at-risk capital returned a positive and significant sign for all three samples. A 10% increase in at-risk capital results in a 6.2% rise in post-acquisition returns. SPAC founders are heavily incentivized to complete a deal prior to their liquidation date due to the enormous payoff that can be achieved through the

promote (Jog and Son 2007). These incentives grow even stronger when considering the initial at-risk capital supplied by founders to cover overhead and IPO costs (Klausner 2020). Unlike other shares which can be redeemed from the trust value, at-risk capital is void of redemption rights and cannot be recouped in the event of a liquidation. More capital from founders should exacerbate the misaligned incentives between founders and public shareholders. On the other hand, at-risk capital is exchanged for shares and warrants of the SPAC and will thus force additional "skin-in the game" for founders. Founder payoff becomes increasingly tied to post-acquisition performance as pools of at-risk capital grow larger, explaining the positive and significant coefficient.

V.2 IPO Process Data

The crowded underwriter dummy variable returns a negative and significant coefficient for the one-year sample. Wilson (1968) proposes the idea that syndicates are formed in cases where risk-sharing is needed. Instead of taking on the entire risk for a particular SPAC, IPO investors choose to share it and split the subsequent payoff or losses. Therefore, an increase in underwriters can be viewed as a lack of trust in SPAC management from 13F filers. Additionally, SPAC management must balance challenges derived from communicating with multiple stakeholders with differing risk tolerances. This can slow efficiency and cause decision making problems. If a SPAC is underwritten by three or more institutions, it results in a decline of 41% from the average return.

The highest ranked underwriter variable returns a positive and significant coefficient for the one-year sample. Intuitively, underwriters with a higher bookrunner volume are more experienced and knowledgeable of the SPAC market. Additional

expertise from underwriters is proven to be valuable during the searching and acquisition phase of a SPAC's lifecycle. For one increase in rank for a SPAC's highest ranked underwriter, there is an expected 6.6% increase in returns. Surprisingly, average underwriter ranking results in a negative and significant coefficient for the one-year and 180-day samples. Each increase in rank results in an expected 6.6% increase in returns. It appears that SPACs benefits from having a disparity in underwriter ranking. Having a clear underwriting authority may mitigate the negative effects caused by having a crowded underwriting table.

It is important to note that the crowded dummy, highest ranked underwriter, and average underwriter rank covariates all returned significant signs for the one-year sample; however, they all proved insignificant in the 90-day regression. This is likely due to the additional observations added to the sample from the end of 2020 and beginning of 2021. By extending the sample period, the 90-day regression can more closely capture the effect of the explosion in SPAC popularity seen in 2020. As a byproduct of the growth of SPACs, a wave of institutional investors entered the SPAC market for the first time. In 2020, there was a total of 41 active underwriters up 42% from 2019. This growth of institutional investors reflects the continued legitimization of special purpose acquisition companies and can explain the decreased need for risk sharing amongst underwriters. Additionally, increased competition amongst underwriters and the subsequent increase in optionality for SPAC founders likely mitigated the effects of specific underwriter characteristics.

V.3 Performance Data

The enterprise value to trust value interaction term is shown to have a positive and significant sign with a 10-percentage point increase resulting in an expected 0.63% increase in share price. These results can be interpreted in several different ways. First, it can be inferred that the ratio between enterprise value and trust value showcases management's ability to strike a favorable deal for shareholders. It also provides further insight into the effect of capital infusions during the SPAC lifecycle. In cases where trust values fall below the required level of cash to complete a deal, SPACs have relied heavily on PIPE investments to replenish redeemed capital and finalize mergers. These findings demonstrate that PIPE financing affords management the flexibility to find and negotiate more promising deals for shareholders.

Redemption Rate returned a negative and statistically significant sign for all three regressions, contradicting past research. Klausner (2020) argued that institutional investors, who hold most of the public shares throughout a given SPACs life, are motivated to divest their shares regardless of the potential quality of the target firm, minimizing the insights derived from share redemptions. The data, however, shows that share redemptions provide clear insight into post acquisition performance. Klausner focused his research on SPACs which merged from 2019 through mid-2020 cohort, but significant changes have been made since that point in time. As stated in the data section, average redemption rate has fallen considerably since its high in 2018. This highlights the legitimization of the SPAC market and shows that institutional investors are more willing to trust in the SPAC process.

The Days Searching Dummy coefficient proved to be statistically insignificant and positive. As Jog and Son (2007) argued and later research confirmed, SPAC founders are heavily incentivized to complete a deal prior to the liquidation date regardless of the quality of the target firm. As time passes in theory, pressure to acquire a firm quickly continues to mount for management. If a SPAC is unable to find a suitable acquisition target earlier in its lifecycle, it becomes increasing unlikely that one will surface as the deadline looms closer. Therefore, SPAC managers approaching the liquidation date should be incentivized to push through riskier and less profitable acquisitions. Interestingly, the data does not support this theory. The ability to circumvent the liquidation deadline by holding a shareholder vote appears to mitigate the misaligned incentives derived from the SPAC compensation structure.

VI. Conclusion

This paper attempts to identify key SPAC characteristics that translate to post-acquisition share price growth. The data I employ includes structural data, IPO process data, and key performance metrics measured throughout the SPAC's life. My study on the determinants of post-acquisition success provides new and robust results which can be employed by investors evaluating the SPAC market and for future studies.

First, this paper reveals new findings on founder compensation, contradicting past research. As discussed in the results section, at-risk capital was found to have a positive and significant effect on share price growth in all three regressions despite the introduction of potentially misaligned incentives. While there may still be concerns about founders

promoting risky acquisitions to avoid losing their investment, additional at-risk capital increases the tie between founder compensation and post-acquisition performance. Applying this finding, shareholders should view high levels of at-risk capital as an indicator of founder commitment.

Second, I find evidence that underwriter characteristics are declining in importance as a determinant for post-acquisition success. All three underwriter variables proved to be significant in the one-year regression but were insignificant in the 90-day sample which extends through January of 2021. The lack of significance in the 90-day sample reflects rapidly changing market sentiments throughout 2020 which saw a wave of institutional investors entering the SPAC market for the first time. SPAC founders now have unprecedented optionality on who they plan to work with, and the results suggest that there is no clear underwriter archetype which provides the strongest results. Therefore, shareholders should not place excessive weight upon underwriter characteristics when making investment decisions.

Third, share redemption rates are shown to have a key significant effect on post-acquisition share price growth for all three regressions. This result was to be expected but was not certain given the high redemption rates seen across the majority of the SPAC population. Additionally, Klausner's (2020) argument suggested that most shareholders are incentivized to divest their shares regardless of the quality of the target firm. My data, however, confirms the significant association between share redemptions and share price growth which can be applied by investors observing the SPAC market.

This study was undertaken during a period of enormous growth and change for the SPAC market, leaving significant room for future studies to build from as the SPAC market continues to mature. Most notably, exploring the effect of the sponsor promote on share price growth several years from now has the potential for robust and new findings. As mentioned previously, the sponsor promote was largely uniform across the entire population, resulting in a positive and insignificant effect in my regression. This is likely to change, as SPACs continue to saturate the market and compete over the highest potential firms. Successful SPACs will likely reduce the amount of promote shares awarded to founders in exchange for higher potential returns post-acquisition. Some SPAC founders have shown a willingness to adopt this strategy. Hedge fund billionaire, William Ackman, founded Pershing Square Tontine Holdings (PSTH) and raised capital through an IPO in July of 2020. Ackman decided to abandon the industry standard and completely removed the promote from the SPAC structure. As more founders are forced to follow Ackman's lead, empirical analysis on the effect of the sponsor promote could be eye-opening.

The SPAC has dominated headlines throughout 2020 and through the start of 2021; however, a consensus between commentators is seemingly out of reach. Some argue that the SPAC boom is a bubble that is sure to come crashing down while others claim SPACs will never relinquish their crown back to the traditional IPO. Serious question marks remain about their long-term prospects, but it does not appear like there is an end in sight to this new era of SPACs. SPACs have seemingly become entrenched in public equity markets and it is increasingly important for investors to educate themselves. By following and understanding the above results, investors will maximize their preparedness for determining which SPACs have the best chance of identifying a profitable target firm.

Bibliography

Cumming, D., Haß, L. H., & Schweizer, D. (2014). The Fast-Track IPO – Success Factors for Taking Firms Public with SPACs. *Journal of Banking & Finance*, 47, 198-213.

Jenkinson, T., & Sousa, M. (2009). Why SPAC Investors Should Listen to The Market. *SSRN Electronic Journal*. doi:10.2139/ssrn.1341771

Jog, V. M., & Sun, C. (2007). Blank Check IPOs: A Home Run for Management. *SSRN Electronic Journal*. doi:10.2139/ssrn.1018242

Klausner, M. D., & Ohlrogge, M. (2020). A Sober Look at SPACs. *SSRN Electronic Journal*. doi:10.2139/ssrn.3720919

Kolb, J., & Tykvová, T. (2016). Going Public Via Special Purpose Acquisition Companies: Frogs Do Not Turn into Princes. *Journal of Corporate Finance*, 40, 80-96. doi:10.1016/j.jcorpfin.2016.07.006

Murray, J. (2017). Innovation, Imitation and Regulation in Finance: The Evolution of Special Purpose Acquisition Corporations. *Review of Integrative Business & Economics Research*, 6(2), 1-27.

Rodrigues, U., & Stegemoller, M. A. (2011). Special Purpose Acquisition Corporations: A Public View of Private Equity. *SSRN Electronic Journal*. doi:10.2139/ssrn.1948642 6

Roll, R. (1981). A Possible Explanation of the Small Firm Effect. *The Journal of Finance*, 36(4), 879-888. doi:10.1111/j.1540-6261.1981.tb04890.x

Wilson, R. (1968). The Theory of Syndicates. *Econometrica*, 36(1), 119. doi:10.2307/1909607

Yermack, D. (1996). Higher Market Valuation of Companies with a Small Board of Directors. *Journal of Financial Economics*, 40(2), 185-211. doi:10.1016/0304-405x(95)00844-5