SPACs: Post-merger survival

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Abstract

This paper studies how institutional characteristics of Specified Purpose Acquisition Companies (SPACs) are related to their post-merger survival. SPACs are unique financial firms that conduct the IPO with the solely purpose to use the proceeds to acquire another private company. Paper finds that institutional characteristics of SPACs are important in determining post-merger outcomes of new company, specifically when it comes to their suvival/failure. Namely, increases in pre-merger commitment by SPAC stakeholders and initial positive market performance increase post-merger survival likelihood. On the contrary, mergers with higher transaction costs and focused on foreign companies exhibit increased failure likelihood.

Keywords: Blank checks, Initial public offering, IPO survival, M&A, SPACs, Specified purpose acquisition companies

JEL Codes: G12, G14, G24, G30, G32, G34

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1. Introduction

Going public is one of the most important strategic and financing decision of private companies. While theoretical underpinnings for the motives of the initial public offering (IPO) are well developed, the empirical literature is inconclusive both on the motives to go public and on the further investment decisions of these companies. Fairly unexplored motive to go public is providing financing for future acquisitions. Röell (1996) reports that the access to new finance, together with improved prospects for growth via new acquisitions, is the most important motive for going public. Pagano at al. (1995) finds that new companies use equity capital for financial acquisitions. Fama and French (2004) state that the market for new listed firms is a bellwether for the public equity market, but the frictions can cause some projects to be financed privately. They also argue that IPOs in their sample are more likely to be acquired than are seasoned firms.

Using unique sample of companies conducting an IPO, namely specified purpose acquisition companies (SPACs), with solely purpose to execute an acquisition in the future date within limited time, this paper presents additional evidence on the survival and acquisition frequency of IPOs, and determinants of these choices. Structurally, the merger of original SPAC is a dual event. It is an IPO event for some previously private domestic or foreign company while at the same time it represents an exit for original cash shell, and that is unique characteristics of these companies.

Strictly speaking this paper follows more closely on a string of unit IPO and IPO literature as Schultz (1993), Hensler, Rutherford and Springer (1997), Jain and Kini (1999), Bharba and Pettway (2003), Fama and French (2004), Carpentier and Suret (2011) and Chancharat,

Krishnamurti, and Tian (2012) that examine how initial IPO characteristics determine survival of companies post-IPO.

Espenlaub, Khurshed and Mohamed (2012) posit that the length and likelihood of survival have important implications for firm's stakeholders. In addition, the length of survival can help markets to efficiently price the company and to measure market performance. Finally, regulators can use survival statistics as a benchmark to assess their policies and listing rules. Schultz (1993) reports that after three years, 88.9% of firms that had share IPOs are still around, but only 58.8% unit IPOs. Hensler et al. (1997) find that the survival time for IPOs increases with size, the initial return, IPO activity level in the market, and the percentage of insider ownership. They report failure rate of 55.10% for their sample. Jain and Kini (1999) report that the size of the IPO offering reduces the probability of the firm being acquired relatively to remain listed. They find the evidence that higher quality investment banks acting as underwriters increase likelihood of survival. In overall, 14.25% of the companies in their sample fail, and 17.00% are acquired.

Bharba and Pettway (2003) find that initial prospectus information has higher predictive power to explain future survival/failure of companies than subsequent equity offerings and acquisitions. They report that 16.9% of the firms fail in five year period. Carpentier and Suret (2011) suggest that the size at the IPO and investment bank quality increase probability of survival. Fama and French (2004) report that 26.25% of companies delist and 15.92% of companies merge five years post IPO.

This study extends the literature on post-IPO survival in following ways. First, the paper documents survival rates for unique set of companies organized with solely purpose to acquire another company. Second, paper presents the evidence how institutional characteristics of SPAC determine their post-merged outcomes, specifically when it comes to their failures. Finally, paper

contributes to the scant literature on SPACs providing new evidence on their post-merger outcomes and performance.

Modern specified purpose acquisition companies (SPACs) entered the U.S. capital markets in August 2003 when Millstream Acquisition Corporation successfully refurbished an old concept of blank checks and raised approximately $24 million to be used in financing of potential merger with at the time unknown company.[1] In finance literature, Jog and Sun (2007) conducted first study and adopted the definition of SPACs by the Security and Exchange Commission (SEC) according to which "a SPAC is created specifically to pool funds in order to finance a merger or acquisition opportunity within a set timeframe. The opportunity usually has yet to be identified." SPACs are also often structured to avoid being legally subject to the additional requirements prescribed by the SEC to blank check companies. However, SPACs voluntarily incorporate many of regulatory requirements or some derivation of the requirements in order to attract investors.[2] Berger (2008) reports that SPACs can provide companies with access to the public markets in ways that traditional IPO cannot. SPACs are better solution than traditional IPO for transactions with complicated circumstances, where companies need immediate rebalancing of capital structure, for companies missing research coverage and companies with the lack of exit opportunities.

Following reinvention the SPAC concept proved resilient and at the peak of its activity in 2008, Ritter (2008) reports that SPACs were representing 34% of IPO market. Lewellen (2009)

[1] David M. Nusbaum and EarlyBirdCapital are the pioneers of modern SPACs. They refurbished failed concept of blank check companies from 90'is in which Nusbaum and his company GKN Securities was one of the major underwriters and market makers. https://www.finra.org/newsroom/1997/nasd-regulation-fines-gkn-securities-and-29-brokers-725000-firm-must-also-pay-14

[2] https://www.sec.gov/answers/blankcheck.htm

suggest that SPACs due to their unique structure and wide market acceptance should be treated as a separate asset class.

While SPACs experienced structural changes, since 2003, as reported Rodrigues and Stegemoller (2012) and Lakicevic et al. (2014) today they are recognized asset class worldwide and listed aside of the U.S. financial markets at Stock Exchanges in Australia, Austria, Brazil, Canada, Germany, Italy, Malaysia, Netherlands, New Zealand, South Africa, South Korea, and the United Kingdom.

Jog and Sun (2007) and Boyer and Baigent (2008) were the first papers in finance literature to examine SPACs, to explain their institutional characteristics and to assess the performance of its securities. Hence, SPACs conduct its IPO by issuing units, a composite security consisted of a share and certain number of warrants.[3] Jog and Sun (2007) and Boyer and Baigent (2008) are reporting that SPAC units do not exhibit any significant underpricing at the IPO date. Their finding is opposite to reporting in literature on standard IPO's. In addition, Jog and Sun (2007) reports 2400.00 % annual returns to managers of SPACs and negative 4.6% annual returns to shareholders.

Following Jog and Sun (2007) and Boyer and Baigent (2008) SPAC literature extended into the analysis of pricing and performance of their securities around important corporate events and over time, returns to stakeholders, changes of institutional characteristics and merger determinants.[4] Common to most of these studies is that they examine SPACs in the period 2003-2008 and focus on pre-merger period in the life of SPACs.[5] Dimitrova (2012) and Kolb and

[3] Shultz (1993), Jain (1994) and Chemmanur and Fulghieri (1997) outline theoretical reasons why companies use units to conduct the IPO.
[4] Lewellen(2009), Thompson (2010) confirm the lack of underpricing for SPACs entering financial markets in the U.S. Ignatyeva, Rauch, and Wahrenburg (2012) find no underpricing in the sample of European SPACs. Jenkinson and Sousa (2011) report that half of the SPACs are value destroying.
[5] Notable exception is Rodrigues and Stegemoller (2012) where the observation period is 2003-2011.

Tykvová (2014) are the only two comprehensive studies examining post-merger performance of SPACs or relative attractiveness of SPAC concept to standard IPO. Dimitrova (2012) observes sample of 73 post-merger SPACs in period 2003-2010 and Kolb and Tykvova (2014) a sample of 114 SPACs.

Observing unique set of specified purpose companies this paper documents that SPACs' failure rate is at the level of 58.09%, higher than any previously reported failure rate in the post-IPO survival literature, and comparable only to Hensler et al. (1997) failure rates of 55.10% for general companies. In addition, the paper documents similarly to findings in Bharba and Pettway (2003) that prospectus and market characteristics of original companies have predictive power in respect to survival. That is especially valid for characteristics that are proxies for lowering of asymmetric information and moral hazard on behalf of managerial team, and for variables that are proxies for investment banking characteristics and post-merger performance. Paper does not confirm that IPO-size has predictive power on the post-merger survival. Finally, post-merger buy and hold returns of -40.00% are in level to reported returns of -42.90% in Dimitrova (2012) and shed an additional light on SPAC as an asset class.

Following introduction the paper is structured as follows: part two elaborates on data used in the paper; part three describes sample and empirical approach; part four discusses results and part five presents the conclusion.

2. Data

Data are obtained from various sources. As SPACs are in compliance with Securities Act of 1933 they timely file all security issuance forms, quarterly and annual financial statements and

corporate changes with the Security and Exchange Commission (SEC).[6] Therefore, the data on all institutional characteristics of SPACs, both at the IPO date and around the acquisition event, are extracted from its The Electronic Data Gathering Analysis and Retrieval (EDGAR) database. Institutional information describing IPO event is first collected from S-1 forms and then updated when changes happen with information provided in final prospectuses and 8-K forms following the IPO. The institutional information on a number of IPO characteristics is cross checked with publicly provided statistics on SPACs maintained by investment bank Morgan Joseph, one of the major promoters and underwriters in this markets.[7]

Institutional data describing merger are collected using DEFM filing of SPACs around merger date and the updates in EDGAR filed by new corporate entities after the merger. Institutional information describing merger is cross checked with data from Thompson One database with Thompson Reuters. Merger announcement dates and merger dates are extracted from corporate filings with the SEC, and cross checked using Factiva and web search.

Pricing information and returns for all SPACs are extracted from Datastream and Wharton Research Data Services (WRDS). Fama and French industry classification is taken from their website.[8]

Final sample consists of 105 SPACs that entered the U.S. capital markets since its emergence in August 2003 and which successfully merged before the end of calendar year 2013. The final sample is observed in June 2016 which gives enough time for all of these merged SPACs but one to be observed for at least full three years after their merger. The observed sample is

[6] Although SPACs technically fall within SEC definition of penny stocks, SPAC managers and underwriters avoid most of the scrutiny guided to penny stocks by structuring SPAC IPOs where the unit issuing price is well above $5 benchmark.
[7] http://mjta.com/i/SPACMarketUpdate.pdf
[8] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_48_ind_port.html

derived from the population of 204 SPACs that entered the U.S capital market in that period and from 114 SPACs that merged as of the end of calendar year 2013. This final sample excludes data for remaining nine SPACs that merged over the observation period as the statistics on their institutional characteristics or pricing was not entirely available. Table 2 reports descriptive statistics for all variables.

3. Sample description and empirical approach

SPACs start their corporate life as shells.[9] SPAC founders purchase all of shares issued by the shell at the price of approximately $0.05 and use the shell to conduct unit IPO.[10] Proceeds collected in the IPO are deposited in the escrow account and used solely to finance future merger transaction. If the SPAC is unable to execute merger within at the time of IPO determined period, usually two years, the SPAC liquidates and the funds from the escrow accounts are returned to security holders. This part of the paper elaborates on the nuisances of SPAC structure, temporal and industrial distribution of the sample and the empirical procedure.

3.1 *SPAC Market Overview*

This part presents sample temporal distribution, major characteristics of SPACs at the IPO, at the merger and industrial distribution of SPACs. Panel A in Table 1 reports that 204 SPACs successfully conducted the IPO in period 2003-2013 with approximately 75% of these IPO's being

[9] A shell company is a company that now or at any previous time been an issuer that has: (A) No or nominal operations; and (B) Either: (1) No or nominal assets; (2) Assets consisting solely of cash and cash equivalents; or (3) Assets consisting of any amount of cash and cash equivalents and nominal other assets.
[10] Lakicevic and Vulanovic (2013) reports that the mean share price is $0.047.

realized before the end of 2008.[11] Final sample for this study includes 105 out of 114 SPACs that successfully merged over the observation period. The last two columns in Panel A report the current status of SPACs that successfully completed merger. In overall, only 41.91% of them are still trading on any U.S. Exchange. The reported survival rate of 41.90% is lower than any documented in previous studies including Hensler et al. (1997) that reports 44.90% survival rate.

Panel B of Table 1 reports that the total size of SPAC merger market during the observation period was $24.50 billion, where the period 2007-2009 had the highest volume of mergers. Around 30% of mergers volume is recorded in 2007. Out of 105 SPACs that executed merger 38 of them merged with company that previously operated in foreign country. SPACs are an attractive mechanism for foreign companies to enter the U.S public financial markets while at the same time skipping lengthy and potentially expensive IPO process. Panel B also shows temporal distribution of major SPAC characteristics such as: the percentage of IPO proceeds that was deposited in the escrow accounts after the IPO; the threshold that could disapprove merger; financing sources and main underwriting features. Few regularities are observed. The percentage of IPO proceeds committed to the escrow account increases every year and ends up being approximately 100.01% in 2013 from 85% in 2003. This increase in the amount of proceeds committed to the escrow accounts corresponds with the lower compensation to underwriters, from 10% of total proceeds in 2003 to 4.75% in 2013. Finally, the threshold level increases significantly from 20% in 2003 up to 81.52% in 2013.

Panel C of Table 1 reports industrial distribution of mergers following two types of Fama and French industry classifications. Both classifications show that SPACs were targeting

[11] Figure 1 also presents temporal statistics of SPAC market

companies across the board while most frequently acquisition targets were in financial services, telecommunications and transportation industry.

3.2 *Descriptive statistics of the sample*

Major characteristics of the sample are reported in Table 2. The characteristics are divided into four groups based on the period in lifecycle of SPAC. First two groups: SPAC structure at IPO and stakeholder involvement are in Bhabra and Pettway (2003) sense typical IPO prospectus information. The third group explains merger characteristics and the fourth post-merger returns and payout policy.

The first group of institutional characteristics explains the structure of IPO as reported in final pre-IPO prospectuses and adjusted with the information from 8-K forms following IPO event. Typically, units are priced at $6, $8 or $10 which enables SPAC managers and underwriters to avoid rules governing blank check companies regarding the issuance of securities.[12] On average, SPACs raised $119.19 million at IPO issuing units which consist of one share and 1.33 warrants. Approximately 96% of IPO proceeds are placed in escrow account with credible financial institution where they are earning T-bill interest rate. The establishment of an escrow account is one of innovative features of modern SPACs that helps them to positively distinguish from other shell companies, reverse mergers and structures similar to SPACs that existed in 90s.[13] Funds in escrow could only be released when the corporate outcome of the SPAC is known; being either merger or liquidation. If the SPAC is successful in finding company to merge the funds are used as the cash injection into the new company. When the SPAC is unable to find a company to merge

[12] As unit offer price is not variable used in empirical procedure it is not reported in Table 2 descriptive statistics. For observed sample the mean unit price at the IPO is $7.96 and median price is $8.00.
[13] http://finra.complinet.com/en/display/display_main.html?rbid=2403&element_id=7197&print=1

the original SPAC is liquidated and the funds from escrow accounts are released to the current shareholders at pro-rata basis.

An important structural feature of SPACs in the merger approval process is qualified majority to approve merger. Lakicevic et al. (2013) reports that in period 2003-2006 at most 20% of shareholders could vote against the merger. If more than 20% shareholders vote against proposed merger and decide to redeem their shares for cash the merger could not proceed. Cumming et al. (2014) reports that redemption threshold represents significant obstacle to secure positive vote on acquisition. Table 2 reports that, on average, the threshold in the sample is 32.25 % with median being 20%.

Approximately 79% SPACs in the sample had defined focus at the IPO date either targeting on particular industry from where their acquisition target would be or on particular country. Kim (2009) and Lakicevic et al. (2013) are reporting that focused SPACs have higher probability to successfully execute merger than SPACs which are not reporting acquisition focus. Tran (2010) finds that SPACs benefit from their acquisition focus which enables them to pay less for target than comparable acquirers. Table 2 reports that on average outside SPAC investor in the sample experiences initial share dilution at the IPO of 35.31%.[14] The crucial reasons for dilution are the issuance of in-the-money warrants at the IPO and the fact that SPAC managers maintain at least 20% of equity in SPAC after the IPO. Berger (2008) reports that many merger negotiations between SPAC management and target break down over dilution. The more critical are negotiations for mergers of smaller size as SPAC management has lower shareholders base to spread dilution.

[14] This is in line with statistics reported previously in Lakicevic and Vulanovic (2013)

The second group of institutional characteristics reports involvement of major stakeholders in SPACs. The literature recognizes three classes of SPAC stakeholders with interdependent incentives, namely: SPAC founders, underwriters and outside investors. Most SPACs are organized and promoted by six member team. Most of them have extensive experience in financial industry, specifically private equity and some of them are well known public figures.[15] Chancharat et al. (2012) suggests that board structure impacts survival likelihood. The average age of the team is 50.69 years. SPAC founders have strong financial incentives for success of merger and in addition to the purchase of pre-IPO shares they commit additional funds to the SPAC by purchasing warrants.[16] In 69% of SPACs in the sample founders purchased warrants at full price and deposited all the proceeds from these warrants in the escrow accounts.

For 21% of SPACs in the sample founders are institution that is either connected with private equity fund or one of the managers is in parallel running private equity portfolio. This is an important feature as literature may recognize SPACs as private equity exit strategies or as an entrance into private equity to small investors.[17] Dimitrova (2012) hypothesize that targets choose

[15] SPAC prospectuses reveal as founders among the others : Gilbert Amelio, Roland Berger, Tom Hicks, Joseph Perella, Ronald Perelman, Dan Quayle, George Tenet, Bruce Wasserstein, and Steve Wozniak

[16] An excerpt from typical SPAC prospectus explains warrant purchases by stakeholders:" our sponsor and the underwriters will purchase an aggregate of 3,700,000 insider warrants (3,500,000 by our sponsor and 200,000 by the underwriters) from us at a price of $0.50 per warrant in a private placement pursuant. The insider warrants will be identical to the warrants sold in this offering except that if held by the original holders or their permitted assigns, they (i) may be exercised for cash or on a cashless basis; (ii) are not subject to being called for redemption so long as they are held by the initial holders; and will expire five years from the effective date of the registration statement, or earlier upon redemption or liquidation. In addition, the insider warrants will be held in escrow until 30 days following the consummation of our initial business transaction.

[17] These are the excerpts from 424 forms filled by Aldabra Acquisition with the SEC regarding the private equity exit: "Private equity firms have an ongoing need for investment realizations because most private equity funds are limited life investment vehicles that are continually seeking liquidity events for many of their portfolio companies. Accordingly, our principal strategy in sourcing our business combination will be to search for an attractive company held by such an investment fund. We believe that many private equity firms may find an acquisition by us to be an easier and less risky route to liquidity for their portfolio companies than going through an initial public offering. We believe many private equity firms will view the consummation of that merger (and the fact that the securities of Aldabra Acquisition Corporation have appreciated markedly since then) as a positive factor in considering whether or not to sell a portfolio company to us.

to be acquired by a SPAC because they need the financial resources but do not want to give up control to the private equity firm. Finally, for 33% of SPACs founders have previous experience in SPAC market.

Literature recognizes underwriters as the most important stakeholders in the SPAC market. They act as advisers and market makers for securities throughout the entire lifecycle of the SPACs. On average the size of underwriting syndicate is 3.46 members. Corwin and Schultz (2005) suggest that issuers benefit from including more underwriters in syndicate. At first underwriting of SPAC securities was a niche of small and middle size investment banks as EarlyBirdCapital and Morgan Joseph. Once the market picked up large investment banks such as Citibank and Deutsche Bank joined the market. Table 2 reports that EarlyBirdCapital is involved as an underwriter in 28 deals and 70% of the SPACs are underwritten by these midsize investment banks. Following Lakicevic et al (2014) these midsize investment banks that started SPAC market are classified as high quality underwriters. Total reported underwriter's fee is 6.92 % and that is similar to findings in Chen and Ritter (2000) who report that significant majority of small IPO's in the U.S capital markets have spread of 7%. What is peculiar in the case of SPACs is that the total underwriter's fee is conditional on the success of the merger. On average 30% of the total underwriter's fee or 2.08% of total IPO proceeds are deferred until the merger outcome is known. In five SPACs underwriters also purchases warrants pre-IPO betting on the success of future merger. For 56% of SPACs the IPO is oversubscribed and shows the investors interest in the product.

The third group of characteristics describes pre-merger pricing of SPAC securities and merger institutional and financing characteristics. At the date of merger announcement an average market price of SPAC common share is $7.72 and the average warrant price is $0.95. Given previously reported statistics that SPAC issues unit at an average price of $7.96 and that unit has

1.33 warrants, simple calculation shows that an average SPAC investor holding one unit from the IPO date until the announcement of merger date experiences return of 12.85%. Once announcement takes place on average 204 calendar days are needed to complete the merger. Following Jenkinson and Sousa (2011) GoodSPAC is defined as one priced in the market at the level above trust value of share at the merger date and 54% of SPACs in the sample satisfy that requirement.

The average size of merger is $233.83 million and it is 1.96 times higher than the original amount of money raised during the SPAC IPO and 2.08 times higher than the amount of cash available for merger after all SPAC administrative costs and deferred underwriters fees are paid.[18] This is in line with Dimitrova (2012) who reports relative merger ratio of 1.91. To fully finance merger SPAC managers, who on average remain majority shareholders in 13% of deals and remain owners of 8% of new companies, use both equity and credit markets along direct bank financing. Similarly to findings in Tran (2010) statistics show that SPACs rarely do tender offers especially in the earlier years. All SPACs in the sample issue some additional shares post-merger, most of them being used to redeem warrants exercised by investors and managerial teams. Bank financing is used by 21% of SPACs and debt financing is used by 25% of SPACs. In 8.00% of SPAC mergers managers pay finder fee to another institution that was crucial in finding acquisition target to them.

Table 2 also reports performance of SPAC shares after the merger. Average buy and hold return one month after the merger is -3.00%, average return three months after the merger is -19.00% and average return one year after the merger is -40.00%. One year buy and hold return is similar to -42.90% reported in Dimitrova (2012) while observing 71 post-merger SPAC. Her paper reports one year buy and hold return Figure 3 reports performance of equally weighted

[18] This calculation does not take in an account the cash spent to redeem shareholders when they vote against the merger.

index of all SPACs where merger date has value of zero on x-axis. The figure shows that index initially grows up and experiences a peak around acquisition date. Following acquisition date the index declines and reaches the bottom around 750 trading days after the merger. Lewellen (2009) believes that the initial decline is due to dilution and initial inability of investors to properly perceive shareholders structure post-merger. These results are similar to the findings of Ritter (1991) and Eckbo and Norli (2005) who examine large sample of IPO firms and report their underperformance in respect to matched sample three years after the IPO. This comparison is relevant for SPACs as their merger is in the same time an IPO for some previously private domestic or foreign company.

Finally, Table 2 reports whether post-merger SPACs provide dividend payments to shareholders and shows that on average 26.00% of these companies do pay dividends at least at one point of their corporate life.

3.3 *Descriptive statistics of subsamples*

Table 3 reports descriptive statistics for subsamples. The first subsample consists of 44 SPACs that are publicly traded as of June 2016. They would be referred to as Surviving SPACs in the remainder of paper. The second subsample consists of 61 SPAC that failed for various reasons. Similarly to Bhabra and Pettway (2003), in their study on IPOs survival, SPAC is classified as failed if it is not publicly traded irrespectively if reason for delisting is bankruptcy, new acquisition or something else. The cutoff date for the sample classification is June, 1st, 2016. Later in empirical analysis, following classification from Jain and Kini (1999) the subsample of failed SPACs is divided into SPACs that delisted due to financial problems and SPACs that were acquired by other

public companies. Below is the discussion on variables that are statistically different at the mean between Surviving SPACs and Failed SPACs.

Surviving SPACs deposit larger amount of cash into the escrow accounts than Failed SPACs, 97.00 % vs. 95.00%. These Surviving SPACs have also higher strike price for warrants and higher level of threshold needed to disapprove the merger. Surviving SPACs experience higher initial dilution, 39.58% vs 32.23%.

Comparing stakeholders' involvement founders of Surviving SPACs purchase on average warrants more frequently than founders of failed SPACs, 80.00% vs. 61.00%. Table 3 reports statistically significant difference in the quality of underwriters among subsamples. Surviving SPACs are less frequently underwritten by investment banks that established SPAC market, 57.00% vs. 80.00% respectively. Finally, Surviving SPACs more frequently have backing of private equity firms 30.00% vs. 15.00%.

Comparing merger characteristics two variables emerge as statistically different. Surviving SPACs have higher share price at the announcement $8.00 vs. $7.51 and are more frequently classified as Good SPACs, 66.00 % vs. 46.00%.

Finally, two post-merger characteristics: one year post merger return and dividend are statistically different. Although both subsamples exhibit significant negative return one year after the merger event Surviving SPACs fare better -26.00% vs. -50.00%. Similarly Surviving SPACs are more likely to pay dividend over their lifecycle with 39.00% of them paying them vs. 16.00% for failed SPACs.

3.4 *Hypothesis and empirical procedures*

First, this part discusses the hypothesis on how SPAC characteristics and IPO prospectus variables that were identified as relevant in prior literature would impact survival likelihood of SPACs after their merger. Later the empirical procedures are elaborated on.

Out of the first group of institutional characteristics that explain the structure of the IPO as reported in final pre-IPO prospectuses prior literature isolate four variables as important: threshold, foreign target, focus of merger and dilution. Cumming at al. (2014) reason that threshold is an indirect measure of the quality of management board and suggest that the lower threshold means more risk for future merger outcome. Rodrigues and Stegemoller (2012) and Lakicevic et al. (2014) report significant changes in the level of threshold through time and attribute these changes as managerial response to institutional investors with short term objectives. The threshold level could impact the likelihood of the post-merger survival both ways. First, SPACs with higher threshold levels had easier merger approval process and managers could more focus on future oriented goals. On the other hand the vetting process was not as strong, and possibly less cash is available to finance merger as more shareholders could redeem their shares.

SPACs are getaway for foreign private companies to access the U.S public markets and to obtain listing on major exchanges while avoiding the IPO. The hypothesis is that SPACs merging with foreign companies would have higher survival likelihood as these foreign private companies should naturally have incentive to benefit from the listing and access to the U.S financial markets.

Kim (2009), Tran (2012) and Lakicevic at al. (2014) report that focused acquisition have higher likelihood to be approved. Managers with clear industry or country focus likely have higher experience and reputation in that industry which could benefit new company after the merger in the long term. Therefore the hypothesis is that the managerial focus on merger would mean the higher likelihood of the post-merger survival.

Initial investors experience dilution of 35.31% primarily because SPAC managers purchase equity at approximately $0.05 and maintain at least 20% of the entire SPAC equity after the IPO. It is expected that the higher initial share dilution may have negative impact on post-merger survival because.

Stakeholders' involvement is fundamental for the success of the mergers in the first place and for the establishment of the modern SPAC market since 2003. The hypothesis here is that all variables that measure increased stakeholder's commitment to the SPAC have a positive impact on the post-merger survival. Higher level of commitment means lower moral hazard. Kim (2009) and Dimitrova (2012) are reporting that incentives of SPAC founders are aligned in a way to encourage them to execute merger.[19] Chancharat et al. (2012) find that the management team has positive role on the survival likelihood. Lakicevic et al. (2014) confirms that the increase in the number of members in SPAC team means higher merger likelihood. Similarly, the higher the purchase of warrants by SPAC managers, the higher is the managerial commitment to merger execution and post-merger survival likelihood.

Modern SPAC is an invention of underwriters. Their commitment to the success of the merger is crucial. Therefore the expectation is that the more costly are the fees charged by underwriters the lower is the level of their commitment and respectively the post-merger survival. When it comes to the impact of the underwriting quality the hypothesis is that the involvement of high quality investment banks in the process would mean the higher likelihood of survival post-merger. The underwriting quality is determined following the approach in Lakicevic et al. (2014) where the variable is binary and coded as one if the lead underwriter belongs to the group of

[19] Dimitrova (2012) reports that she finds some evidence that SPAC transactions are one of those financial innovations that Van Horne(1985) describes as "ideas that have a substance, but the promoters have eaten not only the icing of the cake but also the cake itself"

underwriters that reinvented SPAC market in years 2003-2006 such as : EarlyBirdCapital, Morgan Joseph, Ladenburg Thalmann, Chardan Markets or similar . The variable is coded as zero if the underwriter is a large investment bank as Citibank, Deutsche Bank, Meryl Lynch, Bank of America, Lazard or similar. Jain and Kini (1999) suggest at least three reasons why firms taken public by more prestigious underwriters have higher probability of survival. First, prestigious underwriters provide valuable post-issue monitoring. Second, they are good in selecting quality IPO prospects. Finally, they have good network of clients to support the IPO.

The higher the degree of the investors' involvement the higher is the likelihood of post-merger survival. The oversubscription at the IPO can serve as a proxy of investor sentiment and the higher is the level of oversubscription the higher should be likelihood of survival. Also if one of the crucial SPAC investors is private equity firm or the founder has previous experience in developing SPACs the hypothesis is that this would positively impact post-merger survival. Founders of Columbus Acquisition SPAC, in their final prospectus, state that as most private equity funds must distribute the fund assets following a fixed term of years, they would typically seek transactions for their portfolio companies that result in the receipt of cash or marketable securities. Similarly, Jain and Kini (1999) states that companies backed by venture capitalist or institution are more likely to survive and also more likely to be acquired later primarily due to the use of extensive network of these backers.

The institutional and market conditions surrounding the merger should impact the survival likelihood in the future. It is unclear in which direction the announcement prices and returns would impact post-merger likelihood survival. Lakicevic et al. (2014) find that the time of the announcement matters, given that SPACs have limited time allowed to execute merger. The hypothesis here is that the earlier announcement would positively impact post-merger survival

likelihood. Earlier announcement gives more time to straighten out all potential obstacles in the process such as to prepare the proxy statement, address SEC comments, clear regulatory issues in countries of target if foreign and mail the final proxy to shareholders.

Jenkinson and Sousa (2011) report that shareholders approve SPAC mergers even for the deals that are value destroying at the point of acquisition. Using their definition, variable GoodSPAC is taking value of one if the SPAC was value creating at the moment of merger and zero otherwise. The hypothesis here is that being GoodSPAC at the date of merger would increase likelihood of survival.

It is unclear how the level of involvement of SPAC management and the level of ownership after the merger would impact long term survival. The usual pattern is that post-merger at least two of original SPAC directors remain on the board of new company. In 13.00% of SPACs they represent the majority of directors on the board. It is possible that for mergers where previous SPAC managers are majority on the board post-merger that they would be continuously shopping on the markets, as likely their acquisition target was one of the companies from private equity portfolio. Jain and Kini (1999) suggest that higher ownership should be associated with higher probability of survival. Dimitrova (2012) finds that that increasing sponsor ownership has positive impact on performance because sponsors have higher incentives to maximize firm value rather than expropriating shareholders wealth. She also reports that this positive impact cease to exist for post-merger SPACs where SPAC management ownership is higher than 13.20%.

One of the important factors impacting merger approval is behavior of SPAC management in respect to the warrants they are holding at the moment of merger and which would be exercised in the future. Schultz (1993) suggests that by issuing units and warrants firm precommit to a seasoned offering at the exercise price of money. Most of these warrants are in-the money

especially for SPACs that went public before 2008. Dimitrova (2012) reports that extremely high levels of sponsor ownership are found to be detrimental for performance. The hypothesis here is that any SPAC management forfeiting warrants contributes to the success of the future company by lowering the costs and dilution, as new company would not need to issue new shares at low price to redeem these warrants.

There is no prediction how the sources of financing of merger would determine the likelihood of survival, but there is a clear negative prediction in the case that management pays finder fee to another institution to locate acquisition target for two reasons. First, by paying finder fee SPAC management shows inability to locate acquisition target by itself and increases moral hazard. Second, finder fee is paid using the funds from escrow account which leaves less funds to finance merger.

Three post-merger variables measuring returns and payout policy are all predicted to have positive impact on the likelihood of survival. Fama and French (2015) provides explanation that returns are capturing important corporate characteristics such as: size, value, profitability and investment. It is hypothesized here that the higher returns and positive returns would increase survival likelihood.

To empirically test what are the determinants of survival for post-merger SPACs standard logistic procedure is used in the first place. Paper here follows Bharba and Pettway (2003) approach and classifies SPAC as Failed if it is not publicly traded in June 2016 irrespectively what are the reasons for delisting or surviving. The dependent variable for regression is coded as one for Surviving SPACs and zero for SPACs that failed. The set of institutional characteristics of SPACs is used as independent variable. In addition as robustness checks, standard survival analysis regression and probit regressions tests are conducted. Similarly to Cumming et al. (2014) Cox

proportional hazard model is used to analyze the influence of SPAC institutional and market characteristics on the expected time to fail. The results of these empirical procedures are reported in Table 4.[20]

As results from the first set of empirical tests may be inconclusive, or original classification may not adequately segment companies selection of SPAC subsamples is changed and adjusted to the approach used in Jain and Kini (1999). That classification selects post-merger SPACs into three groups: surviving SPACs, failed SPACs and acquired SPACs. SPAC is classified as failed due to delistment from public exchanges because negative reasons. Acquired SPAC is a firm acquired by existing public firm, private firm or taken private again. According to this segmentation 41.90% (44) post-merger SPACs are still trading, 36.20% (38) failed and 21.90% (23) are acquired. Standard multinomial logistic regression is used to examine the impact of SPAC institutional and market characteristics on post-merger choices and results are reported in Table 5.

4. Empirical Results and Analysis

This section discusses results of empirical tests conducted to determine the impact of the set of institutional and market characteristics of SPACs on their post-merger survival likelihood.

4.1 Logistic regression results

Logistic regression is used to determine the impact of a set of institutional and market characteristics on survival likelihood of post-merger SPACs. Similar empirical approach is used previously in Kim (2009), Thompson (2010), Cumming et al. (2014) and Lakicevic et al. (2014)

[20] Figure 4a reports Kaplan-Meier estimation survival graph for the sample

to explain how institutional characteristics and investors' behavior impact the likelihood of SPAC mergers. Final observed sample consists of 105 SPACs that conducted IPO in the period 2003 until 2013, successfully executed acquisition and on which data is available on all characteristics. Out of these 105 post-merger SPACs, 44 of them were still trading as of June 1st, 2016 and they are classified as Surviving SPACs, the remaining 61 SPACs not traded are classified as Failed SPACs. This classification follows Bhabra and Pettway (2003) approach for post-IPO companies. The observed status variable is coded as one for Surviving SPACs and zero for failed SPACs.

The results of logistic regression are reported in Table 4. Reported Mc Fadden R square is 42.50% which is at the similar level to reported levels in Thompson (2010), Cumming et al (2014) and Lakicevic et al. (2014). Below is the discussion of results that are shown to have statistically significant impact on post-merger survival.

Survival likelihood of post-merger SPACs is positively dependent on managerial warrant purchases at IPO. This could be explained as stakeholders' commitment is seen as a tool to lower asymmetric information and moral hazard and that involvement increases the quality of initial acquisition. This is in agreement with findings at Chancharat et al. (2012) who report higher survival rates for companies with higher level of managerial involvement. Similarly, higher involvement of underwriters and the size of underwriters syndicate positively impacts the survival likelihood as the larger network of investment banks means potentially more resources committed to the merger.

Bank financing shows as statistically significant variable and suggests that SPACs which are bank financing merger have the higher probability to fail. It is possible that bank financing is the financing of the last resort and SPACs are only reaching for this source when they are unable to finance acquisition either in equity or debt market.

Interestingly, market performance characteristics suggest different impact on post-merger choices. While one month post-merger returns negatively impact survival likelihood, one year post-merger return strongly suggests that SPACs with higher returns one year after merger have higher likelihood of survival. Possible economic explanation of these prediction could be that markets are still figuring out the value of new company a month after the merger and overvaluation would suggest higher failure likelihood. Finally, payout policy matters results suggest that dividend payment increase the likelihood of survival post-merger.

In addition to the results of logistics regression Table 4 reports coefficients from standard survival Cox proportional hazard model. Finally the last three columns in Table 4 report coefficients from probit regression.

4.2 Multinomial logistic regression results

To take into account that prior SPACs classification that follows Bhabra and Pettway (2003) may not adequately recognize differences between companies that failed due to financial reasons and companies that were acquired the classification is adjusted as in Jain and Kini (1999). Therefore the subsample of failed SPACs is divided into ones that failed due to their operating and financial troubles and ones that were acquired in the market. This division is more proper for the post-merger SPACs as it seems that acquired SPACs may share much more characteristics with Surviving SPACs than with Failed SPACs. To examine post-merger choices multinomial logistic regression is applied where base group is a subsample of post-merger SPACs still trading. Regression results are presented in Table 5 and further will be discussed statistically significant variables.

In overall, the results suggest that important institutional and market characteristics explain post-merger outcomes analyzing Failed SPAC in respect to Surviving SPACs. Results do not report that any statistically significant difference exists between Surviving SPACs and Acquired SPACs. The likely explanation for the later finding is that acquirers in the market pick post-merger SPACs who are already established and not exhibiting visible signs of financial trouble or delisting. This explanation is along the line of Bhabra and Pettway (2003) that better performing IPO firms get acquired whereas the ones with poor performance fail to survive. Along the similar lines De and Jindra (2012) report that firms which do relatively well in terms of operating as well as stock performance and attract institutional investor interest are more likely to draw the attention of acquirers than firms thinking to delist.

The relative probability of SPAC failure relative to survival is higher for those SPACs that merged with foreign private company. One of the possible reasons for this is that more than half foreign SPACs were acquiring companies from China, and actions of the SEC in 2011 resulted in a number of them delisting from the U.S exchanges.[21]

Regression results suggest that stakeholder involvement is very important in determining survival likelihood of post-merger SPACs. The relative probability of SPAC failure rather than survival is lower for companies with higher number of executives in the team, for companies where managerial team purchase upfront warrants and companies with the larger number of underwriters in syndicate. This is in agreement with Hensler et al. (1997) who report that the level of insider ownership is positively related to probability of survival and with Chancharat et al. (2012) who report that the quality and independence of the board increases survival likelihood. Corwin and Schultz (2005) also document that issuers benefit from including more underwriters in syndicate.

[21] See Beatty, Lu and Luo (2014) and Shachmurove and Vulanovic (2014)

On the contrary, variables that increase the cost of initial merger and likely increase the degree of information asymmetry such as the level of underwriter fee and the level of deferred fee are suggested to increase the likelihood of failure. This is along the line with findings in Dimitrova (2012) that the short-term performance of SPAC acquirers is worse if a portion of the underwriting fees of the IPO underwriters is deferred and paid only upon the merger completion.

Interestingly, the quality of underwriters matters. Having high quality underwriter as defined in this paper does not increase the likelihood of survival. That means that post-merger SPACs promoted by investment banks which were the pioneers of SPAC market such as: EarlyBirdCapital, Morgan Joseph, Ladenburg Thalmann, Chardan Markets, Maxim Group, Gun Allen Financial are lacking the breadth of network, an access to institutional investors with long term interests that high quality investment banks as Citigroup and Deutsche Bank could offer to companies they sponsor. In that sense, the finding is in agreement with Jain and Kini (1999) and Carpentier and Suret (2011) who suggest that relationship with high quality banks increases survival likelihood.

Merger characteristics matter. Fining merger target earlier and announcing acquisition increases the likelihood of survival. Similarly it pays off to be GoodSPAC and have positive return around the acquisition. SPAC mergers that tend to be bank financed are less likely to survive post-merger. The relative probability of failure is also higher for SPACs that pay finder fee for the services of identifying acquisition target.

Finally, market performance one year after merger suggests that the probability of survival is higher for SPACs with higher returns. Also, post-merger SPACs that at least once payed dividend to shareholders are more likely to survive.

5. Conclusions

This paper documents how institutional characteristics of SPACs and their market performance determines their post-merger choices. Results suggest that prospectus characteristics that define SPACs predict their post-merger survival when these companies are classified following Jain and Kini (1999) where acquired SPACs are separated from the subsample of failed SPACs.

In overall, SPACs failure rate is at the level of 58.09%, which is higher than any previously reported failure rate in the post-IPO survival literature, and comparable only to Hensler et al. (1997) failure rates of 55.10% for general companies. In addition, paper finds that prospectus and market characteristics of pre-merger SPACs have predictive power in respect to their post-merger survival especially: proxies for lowering of asymmetric information and moral hazard on behalf of managerial team, and proxies for investment banking characteristics and post-merger performance.

Finally, SPACs' portfolio exhibit significant negative post-merger buy and hold performance of -40.00% which put an additional light on valuation of post-merger SPACs and could suggest, similarly to findings in Dimitrova (2012), that for some SPACs the incentives of stakeholders to collect their equity compensation and underwriting fees are prevailing motives in approving otherwise bad acquisitions.

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Table 1: SPACs' institutional and mergers characteristics

This table decribes the sample which consists of 105 SPACs that sucessfuly merged in period 2003-2013 and have available data covering all important institutional characteristics. Panel A reports temporal distribution of SPAC IPO's and mergers. Panel B reports the most important characteristics of mergers following the literature on SPACs. Panel C reports industrial distribution of SPAC targets based on Fama&French industry definition.

Panel A : Sample temporal distribution

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
SPAC IPO count	1	12	28	37	66	17	1	7	16	9	10	204
Percent	0.49	5.88	13.73	18.14	32.35	8.33	0.49	3.43	7.84	4.41	4.90	100.00
SPAC merged count	1	10	24	16	30	10	0	3	9	2		105
Percent	100.00	83.33	85.71	43.24	45.45	58.82	0.00	42.85	56.25	22.22		100.00
SPAC merged still trading	0	4	8	5	12	5	0	2	6	2		44
Percent	0	40.00	33.33	31.25	40.00	50.00	0.00	66.67	66.67	100.00		41.90

Panel B : SPACs' IPO and merger deal characteristics

Merger volume $million	0	98.50	662.07	1062.58	7437.42	4892.09	6385.67	1370.10	18.00	748.31	1834.06	24508.80
Foreign merger target	0	0	3	4	5	8	12	4	0	0	2	38
Proceeds in escrow percent		85.00	85.00	90.47	92.36	96.37	98.60	99.17	100.00	100.02	101.01	
Threshold in percent		20.00	20.00	20.00	20.00	22.77	29.93	35.00	88.00	84.50	81.52	
Bank financing merger (%)		0.00	0.00	27.27	29.62	22.22	8.00	28.51	0.00	20.00	25.00	
Debt financing merger (%)		0.00	0.00	27.27	48.14	11.11	12.00	0.00	0.00	40.00	50.00	
Cash Merger (%)		0.00	66.67	45.45	74.07	77.77	28.00	28.57	100.00	60.00	62.50	
# Underwriters in syndicate		7.00	4.33	3.90	3.37	3.38	3.48	3.28	5.00	3.60	2.00	
Total underwriter fee in percent		10.00	10.00	8.54	7.12	6.76	7.08	6.85	3.00	4.55	4.75	

Panel C : Industrial distribution of mergers

12 Fama&French Industries	Count	Percent	12 Fama&French Industries	Count	Percent
Consumer NonDurables	10	9.52	Telecommunications	8	7.62
Consumer Durables	2	1.90	Shops	9	8.57
Manufacturing	10	9.52	Health Care	6	5.71
Energy	6	5.71	Money & Finance	13	12.38
Business Equipment	8	7.62	Other	33	31.43
			Total	105	100

48 Fama&French Industries	Count	Percent	48 Fama&French Industries	Count	Percent
Agriculture	3	2.86	Business services	17	16.19
Food Food Products	3	2.86	Software	4	3.81
Entertainment	2	1.90	Chips Electronic Equipment	4	3.81
Books Printing and Publishing	2	1.90	Measuring and Control Equipment	2	1.90
Apparel	1	0.95	Paper Business Supplies	2	1.90
Medical Equipment	2	1.90	Boxes Shipping Containers	1	0.95
Drugs Pharmaceutical Products	3	2.86	Trans Transportation	9	8.57
Construction Materials	1	0.95	Wholesale	1	0.95
Construction	4	3.81	Retail	7	6.67
Steel Steel Works Etc	3	2.86	Meals Restaurants, Hotels, Motels	1	0.95
Mach Machinery	1	0.95	Banks , banking	2	1.90
Electrical Equipment	2	1.90	Insurance	2	1.90
Autos Automobiles and Trucks	2	1.90	Real Estate	1	0.95
Oil Petroleum and Natural Gas	7	6.67	Finance trading	8	7.62
Telecom communications	8	7.62			
			Total	105	100

Table 2: Descriptive statistics

This table describes the mean, median, standard deviation, minimum value, and maximum values for all variables used in the study and described in Appendix 1. The sample covers 105 SPACs that sucessfully merged in period 2003-2013. The description statistics on the SPAC structure at the IPO and stakeholders involvment is collected from individual company reportings with the Security and Exchange Commission. The statistics on merger characteristics is collected from Thompson Reuters.

	Mean	Median	Std	Min	Max
SPAC Structure at IPO					
Gross Proceeds at IPO million	119.19	60.00	126.05	7.88	552.00
Proceeds in escrow percent	0.96	0.97	0.05	0.85	1.03
Warrants per unit	1.33	1.00	0.47	1.00	2.00
Warrant strike price	6.26	5.50	1.95	3.00	12.00
Threshold in percent	32.25	20.00	21.85	20.00	94.40
Foreign target	0.36	0.00	0.48	0.00	1.00
Focus of merger	0.79	1.00	0.41	0.00	1.00
Dilution	35.31	30.40	15.73	19.00	89.70
Stakeholders involvment					
Number of SPAC founders	5.96	6.00	1.91	2.00	13.00
Average age of founders	50.69	50.30	5.76	38.50	63.75
Warrant purchases by founder (Y/N)	0.69	1.00	0.47	0.00	1.00
# Underwriters in syndicate	3.46	3.00	1.81	1.00	10.00
Total underwriter fee in percent	6.92	7.00	1.57	2.25	10.00
Deffered underwriter fee in percent	2.08	2.00	1.67	0.00	5.40
Warrant purchases by underwriter (Y/N)	0.05	0.00	0.21	0.00	1.00
Overallotment exercised percent	0.56	0.67	0.44	0.00	1.00
Underwriter Quality	0.70	1.00	0.46	0.00	1.00
EarlyBirdCapital	0.27	0.00	0.44	0.00	1.00
Founder Private Equity Fund(Y/N)	0.21	0.00	0.41	0.00	1.00
Founder has previous SPACs experience	0.33	0.00	0.47	0.00	1.00
IPO Hot year (Y/N)	0.78	1.00	0.42	0.00	1.00
Merger Characteristics					
Merger announcement share price	7.72	7.60	2.05	4.50	14.60
Announcement to merger days	204.11	182.00	129.27	0.00	644.00
GoodSPAC (Y/N)	0.54	1.00	0.50	0.00	1.00
Merger size $million	233.83	142.24	379.89	7.00	3300.00
SPAC Management after merger (Y/N)	0.13	0.00	0.34	0.00	1.00
SPAC founders after merger ownership	0.08	0.07	0.06	0.01	0.47
Warrants forfeited (Y/N)	0.20	0.00	0.40	0.00	1.00
Announcement price of warrant	0.95	0.75	0.98	0.09	6.11
Bank financing of merger (Y/N)	0.21	0.00	0.41	0.00	1.00
Debt financing of merger (Y/N)	0.25	0.00	0.43	0.00	1.00
Cash Merger (Y/N)	0.55	1.00	0.50	0.00	1.00
Finder fee (Y/N)	0.08	0.00	0.27	0.00	1.00
Post Merger Characteristics					
One month after merger return	-0.03	-0.05	0.41	-0.66	3.59
Three month after merger return	-0.19	-0.11	0.50	-0.89	3.06
One year after merger return	-0.40	-0.16	0.48	-1.00	1.31
Didivend payment	0.26	0.00	0.44	0.00	1.00

Table 3: Descriptive statistics for SPAC subsamples

This table describes the mean, median, standard deviation, minimum value, and maximum values for all variables used in the study for SPAC subsamples in period 2003-2013. The first subsample consists of 44 SPACs that merged and are still trading. The second subsample consists of 61 SPACs that ceased existence for various reasons.The description statistics on the SPAC structure at the IPO and stakeholders involvment is collected from individual company reportings with the Security and Exchange Commission. The statistics on merger characteristics is collected from Thompson Reuters. The last three columns test statistical difference of the means of variables in subsamples, and symbols *, **, and *** represent statistical significance at the 10%, 5% and 1% level.

	SPACs still trading				SPACs that failed						
	Mean	Std	Min	Max	Mean	Std	Min	Max	T stat	Sig.	P-value
SPAC Structure at IPO											
Gross Proceeds at IPO million	140.21	127.59	24.15	552.00	104.02	123.75	7.88	552.00	-1.459		0.148
Proceeds in escrow percent	0.97	0.05	0.85	1.03	0.95	0.05	0.85	1.03	-2.054	**	0.043
Warrants per unit	1.25	0.44	1.00	2.00	1.39	0.49	1.00	2.00	1.541		0.013
Warrant strike price	6.91	2.21	5.00	12.00	5.79	1.60	3.00	12.00	-3.019	***	0.003
Threshold in percent	38.50	26.22	20.00	94.40	27.74	16.90	20.00	92.00	-2.556	**	0.012
Foreign target	0.32	0.47	0.00	1.00	0.39	0.49	0.00	1.00	0.787		0.433
Focus of merger	0.80	0.41	0.00	1.00	0.79	0.41	0.00	1.00	-0.105		0.916
Dilution	39.58	20.35	19.00	89.70	32.23	10.43	24.75	84.90	-2.416	**	0.017
Stakeholders involvment											
Number of SPAC founders	6.18	1.98	3.00	13.00	5.80	1.87	2.00	11.00	-0.999		0.320
Average age of founders	50.81	5.27	41.50	63.50	50.61	6.13	38.50	63.75	-0.175		0.862
Warrant purchases by founder (Y/N)	0.80	0.41	0.00	1.00	0.61	0.49	0.00	1.00	-2.080	**	0.040
# Underwriters in syndicate	3.66	1.92	1.00	10.00	3.31	1.73	1.00	8.00	-0.972		0.334
Total underwriter fee in percent	6.71	1.49	2.25	10.00	7.07	1.61	3.00	10.00	1.189		0.241
Deffered underwriter fee in percent	2.14	1.67	0.00	5.40	2.03	1.67	0.00	4.50	-0.348		0.783
Warrant purchases underwriter (Y/N)	0.05	0.21	0.00	1.00	0.05	0.22	0.00	1.00	0.088		0.934
Overallotment exercised percent	0.52	0.44	0.00	1.00	0.59	0.44	0.00	1.00	0.834		0.406
Underwriter Quality	0.57	0.50	0.00	1.00	0.80	0.40	0.00	1.00	2.668	***	0.009
EarlyBirdCapital	0.23	0.42	0.00	1.00	0.30	0.46	0.00	1.00	0.770		0.443
Founder Private Equity Fund(Y/N)	0.30	0.46	0.00	1.00	0.15	0.36	0.00	1.00	-1.850	*	0.067
Founder previous SPACs experience	0.30	0.46	0.00	1.00	0.36	0.48	0.00	1.00	0.694		0.489
IPO Hot year (Y/N)	0.70	0.46	0.00	1.00	0.84	0.37	0.00	1.00	1.612		0.111
Merger Characteristics											
Merger announcement share price	8.00	2.09	4.50	14.60	7.51	2.02	5.00	13.15	-1.194	**	0.235
Announcement to merger days	189.43	133.39	4.00	582.00	214.70	126.25	0.00	644.00	0.988		0.325
GoodSPAC (Y/N)	0.66	0.48	0.00	1.00	0.46	0.50	0.00	1.00	-2.052	**	0.043
Merger size $million	233.90	215.72	19.20	1026.89	233.77	465.62	7.00	3300.00	0.000		0.998
SPAC Management after merger (Y/N)	0.16	0.37	0.00	1.00	0.11	0.32	0.00	1.00	-0.655		0.514
SPAC founders after merger ownership	8.18	6.70	0.21	36.90	7.53	6.19	0.12	47.60	-0.506		0.614
Warrants forfeited (Y/N)	0.27	0.45	0.00	1.00	0.15	0.36	0.00	1.00	-1.586		0.116
Announcement price of warrant	0.88	1.00	0.16	6.01	1.00	0.97	0.09	6.11	0.598		0.553
Bank financing of merger (Y/N)	0.14	0.35	0.00	1.00	0.26	0.44	0.00	1.00	1.568		0.602
Debt financing of merger (Y/N)	0.25	0.44	0.00	1.00	0.25	0.43	0.00	1.00	-0.050		0.962
Cash Merger (Y/N)	0.52	0.51	0.00	1.00	0.57	0.50	0.00	1.00	0.518		0.608
Finder fee (Y/N)	0.02	0.15	0.00	1.00	0.11	0.32	0.00	1.00	0.056		0.955
Post Merger Characteristics											
One month after merger return	-0.05	0.19	-0.55	0.49	0.00	0.51	-0.66	3.59	0.624		0.537
Three month after merger return	-0.15	0.38	-0.86	0.63	-0.22	0.57	-0.89	3.06	-0.229		0.818
One year after merger return	-0.26	0.46	-1.00	1.31	-0.50	0.46	-1.00	1.08	-2.677	***	0.008
Didivend payment	0.39	0.49	0.00	1.00	0.16	0.37	0.00	1.00	-2.633	***	0.009

Table 4: Logit regression analysis of SPACs' outcomes

This table reports results from logit regression analysis. The sample consists of 105 SPACs that merged in period 2003-2013. The dependent variable for regression equals 1 if the merged SPAC is still trading, and 0 if the merged SPAC ceased existence. The statistics on merger characteristics is collected from Thompson Reuters. The symbols *, **, and *** represent statistical significance of coefficients at the 10%, 5% and 1% level. The remaining columns present results of survival and probit regression run as a robustness checks.

Variables	Logit regression analysis results				Survival Analysis			Probit analysis results		
	Coef.	Std.	z	Marginal	Coef.	Std.	z	Coef.	Std.	z
SPAC Structure at IPO										
Gross Proceeds at IPO	0.0063	0.0057	1.11	0.001	0.9952	0.0025	-1.90 **	0.0037	0.0031	1.21
Proceeds in escrow percent	15.1981	16.4455	0.92	3.435	0.0247	0.2196	-0.42	9.9454	9.2339	1.08
Warrants per unit	-0.8486	1.3839	-0.61	-0.192	1.8707	1.2230	0.96	-0.2540	0.7491	-0.34
Warrant strike price	0.8740	0.5359	1.63	0.198	0.5123	0.1531	-2.24 ***	0.5005	0.2929	1.71
Threshold in percent	-0.0503	0.0465	-1.08	-0.011	0.9965	0.0225	-0.16	-0.0168	0.0248	-0.68
Foreign target	0.4588	0.8095	0.57	0.104	0.6328	0.2498	-1.16	0.1617	0.4142	0.39
Focus of merger	0.8112	1.0872	0.75	0.183	0.6301	0.3035	-0.96	0.3428	0.5793	0.59
Dilution	0.0253	0.0586	0.43	0.006	1.0509	0.0348	1.50	0.0067	0.0329	0.20
Stakeholders involvment										
Number of SPAC founders	-0.2492	0.2396	-1.04	-0.056	1.0806	0.1450	0.58	-0.1343	0.1336	-1.00
Average age of founders	0.0029	0.0724	0.04	0.001	0.9747	0.0308	-0.81	-0.0032	0.0368	-0.09
Warrant purchases by founder (Y/N)	1.9500	1.1409	1.71 *	0.441	0.6268	0.3322	-0.88	0.8898	0.6034	1.47
# Underwriters in syndicate	0.4761	0.2419	1.97 **	0.108	0.8389	0.0900	-1.64	0.2786	0.1294	2.15 **
Total underwriter fee in percent	-0.3467	0.4096	-0.85	-0.078	1.0561	0.2017	0.29	-0.1101	0.2144	-0.51
Deffered underwriter fee in percent	-0.4918	0.3705	-1.33	-0.111	1.2892	0.2354	1.39	-0.1512	0.1797	-0.84
Warrant purchases by underwriter (Y/N)	-3.0376	2.2645	-1.34	-0.687	1.8773	2.2256	0.53	-1.4243	1.2847	-1.11
Overallotment exercised percent	-0.6644	1.0386	-0.64	-0.150	1.5523	0.8403	0.81	-0.4696	0.5713	-0.82
Underwriter Quality	-0.1092	1.2037	-0.09	-0.025	1.2374	0.8136	0.32	0.0767	0.6737	0.11
EarlyBirdCapital	0.1936	1.0738	0.18	0.044	1.0941	0.5453	0.18	0.1640	0.6092	0.27
Founder Private Equity Fund(Y/N)	0.7332	1.0295	0.71	0.166	0.7660	0.3973	-0.51	0.4780	0.5689	0.84
Founder has previous SPACs experience	-0.1002	0.7507	-0.13	-0.023	1.0392	0.3828	0.10	-0.0699	0.4244	-0.16
IPO Hot year (Y/N)	-1.4174	1.2178	-1.16	-0.320	1.3405	0.9126	0.43	-0.5681	0.6627	-0.86
Merger Characteristics										
Merger announcement share price	-0.5997	0.4639	-1.29	-0.136	1.6771	0.4372	1.98 **	-0.3612	0.2531	-1.43
Announcement to merger days	0.0058	0.0036	1.61	0.001	0.9978	0.0018	-1.20	0.0033	0.0020	1.66 *
GoodSPAC (Y/N)	0.3959	0.7845	0.50	0.089	1.0143	0.3962	0.04	0.1830	0.4341	0.42
Merger size $million	-0.0024	0.0018	-1.37	-0.001	1.0015	0.0005	2.80	-0.0014	0.0010	-1.43
SPAC Management after merger (Y/N)	1.1402	1.2386	0.92	0.258	0.8870	0.5196	-0.20	0.5306	0.6731	0.79
SPAC founders after merger ownership	0.0017	0.0635	0.03	0.000	0.9973	0.0483	-0.06	0.0041	0.0355	0.11
Warrants forfeited (Y/N)	1.3655	1.1412	1.20	0.309	0.7044	0.4194	-0.59	0.7266	0.6254	1.16
Announcement price of warrant	0.2933	0.5385	0.54	0.066	0.6160	0.1875	-1.59	0.1995	0.3087	0.65
Bank financing of merger (Y/N)	-3.2625	1.3353	-2.44 ***	-0.737	1.8915	0.8936	1.35	-1.5333	0.6481	-2.37 **
Debt financing of merger (Y/N)	0.4174	0.9354	0.45	0.094	1.1600	0.5390	0.32	0.2157	0.5224	0.41
Cash Merger (Y/N)	-0.0019	0.7639	0.00	0.000	0.8557	0.3814	-0.35	-0.0057	0.4274	-0.01
Finder fee (Y/N)	-2.1124	1.6499	-1.28	-0.477	1.4960	0.9548	0.63	-1.1732	0.9694	-1.21
Post Merger Characteristics										
One month after merger return	-2.7608	1.4284	-1.93 *	-0.624	3.5041	2.4140	1.82 *	-1.4032	0.7862	-1.78 *
Three month after merger return	1.6595	1.3551	1.22	0.375	0.4088	0.2493	-1.47	0.8027	0.7477	1.07
One year after merger return	2.2221	1.0961	2.03 ***	0.502	0.3145	0.1630	-2.23 **	1.2091	0.5971	2.02 **
Didivend payment	2.3389	0.9469	2.47 ***	0.529	0.2861	0.1512	-2.37 **	1.2133	0.4985	2.43 ***
Constant	-12.6699	18.4690	-0.69		-9.4619	10.4553	-0.90	-9.4619	10.4553	-0.90
Mc Fadden R square	43.50%				0.4115			42.33%		
LR Ratio	62.12				59.08			60.30		
Number of observations	105				105			105		

Table 5: Multinomial logistic regression analysis of SPACs' outcomes

This table reports results from multinomial logit regression analysis. The sample consists of 105 SPACs that merged in period 2003-2013. The base outcome for regression is that SPAC that merged is still trading. The statistics on merger characteristics is collected from Thompson Reuters. The symbols *, **, and *** represent statistical significance of coefficients at the 10%, 5% and 1% level. check.

Variables	New SPAC failed			New SPAC acquired		
	Coef.	Std.	z	Coef.	Std.	z
SPAC Structure at IPO						
Gross Proceeds at IPO	0.0083	0.0133	0.62	-0.0095	0.0108	-0.88
Proceeds in escrow percent	14.0077	51.9377	0.27	-45.6708	45.6442	-1.00
Warrants per unit	3.1120	3.9859	0.78	2.0040	3.5008	0.57
Warrant strike price	0.4666	0.9424	0.50	-2.1566	1.6745	-1.29
Threshold in percent	-0.0929	0.1057	-0.88	0.1419	0.1272	1.12
Foreign target	5.5209	2.6736	2.06 **	-3.9222	2.5167	-1.56
Focus of merger	-2.0049	2.3260	-0.86	-1.3303	2.1895	-0.61
Dilution	0.3439	0.1910	1.80 *	-0.0903	0.1883	-0.48
Stakeholders involvment						
Number of SPAC founders	-1.8011	0.8207	-2.19 **	0.5038	0.6141	0.82
Average age of founders	-0.2811	0.1716	-1.64	0.1161	0.1522	0.76
Warrant purchases by founder (Y/N)	-12.2748	4.9941	-2.46 **	-0.7800	2.5865	-0.30
# Underwriters in syndicate	-2.4558	1.1974	-2.05 **	0.1924	0.4598	0.42
Total underwriter fee in percent	4.7020	1.5069	3.12 ***	0.1323	0.9687	0.14
Deffered underwriter fee in percent	3.6224	1.3691	2.65 ***	0.6990	0.7992	0.87
Warrant purchases by underwriter (Y/N)	31.1198	12.8836	2.42 **	-10.7928	1435.4580	-0.01
Overallotment exercised percent	4.2767	2.9795	1.44	1.1177	2.0433	0.55
Underwriter Quality	12.8110	6.1929	2.07 **	-1.7600	3.4554	-0.51
EarlyBirdCapital	-4.4097	3.2998	-1.34	2.5027	2.6382	0.95
Founder Private Equity Fund(Y/N)	-1.5402	2.7187	-0.57	1.6395	2.0924	0.78
Founder has previous SPACs experience	1.1472	2.4289	0.47	-2.6162	1.8534	-1.41
IPO Hot year (Y/N)	2.4296	2.5171	0.97	2.3911	2.8980	0.83
Merger Characteristics						
Merger announcement share price	-0.0093	1.2032	-0.01	1.8816	1.3325	1.41
Announcement to merger days	-0.0446	0.0188	-2.38 **	0.0036	0.0101	0.36
GoodSPAC (Y/N)	-4.9834	2.7769	-1.79 *	-1.5259	1.6927	-0.90
Merger size $million	0.0037	0.0028	1.30	0.0049	0.0032	1.53
SPAC Management after merger (Y/N)	3.2701	3.3588	0.97	-4.7672	3.8507	-1.24
SPAC founders after merger ownership	-0.2376	0.1882	-1.26	-0.0179	0.2388	-0.07
Warrants forfeited (Y/N)	-3.8742	2.3875	-1.62	-1.7528	2.8095	-0.62
Announcement price of warrant	2.6477	1.7963	1.47	-1.7000	1.2898	-1.32
Bank financing of merger (Y/N)	10.0490	4.1498	2.42 **	6.2985	2.7996	2.25 **
Debt financing of merger (Y/N)	3.9976	2.4817	1.61	-2.3504	2.3054	-1.02
Cash Merger (Y/N)	-3.9072	2.7586	-1.42	0.2598	2.0519	0.13
Finder fee (Y/N)	11.4161	4.7095	2.42 **	1.8183	3.6148	0.50
Post Merger Characteristics						
One month after merger return	8.5307	5.8641	1.45	5.0034	3.5906	1.39
Three month after merger return	-5.3294	5.5934	-0.95	0.4741	3.6124	0.13
One year after merger return	-8.2470	3.5578	-2.32 **	-3.5253	2.1826	-1.62
Didivend payment	-18.6963	6.7145	-2.78 ***	-2.6781	2.7079	-0.99
Constant	-39.7946	55.0345	-0.72	27.4614	55.3388	0.50
Mc Fadden R square	63.31%					
LR Ratio	139.27					
Number of observations	105					

Figure 1. SPAC market outcomes over the period 2003-2013
This figure reports an overview of development of SPAC market over the sample period from August 2003 through December 2013. The information is produced combining relevant information from the SEC Edgar database, Thompson One database from Thompson Reuters and weekly SPAC market updates from Morgan Joseph an investment bank and leading underwriter in SPAC market.

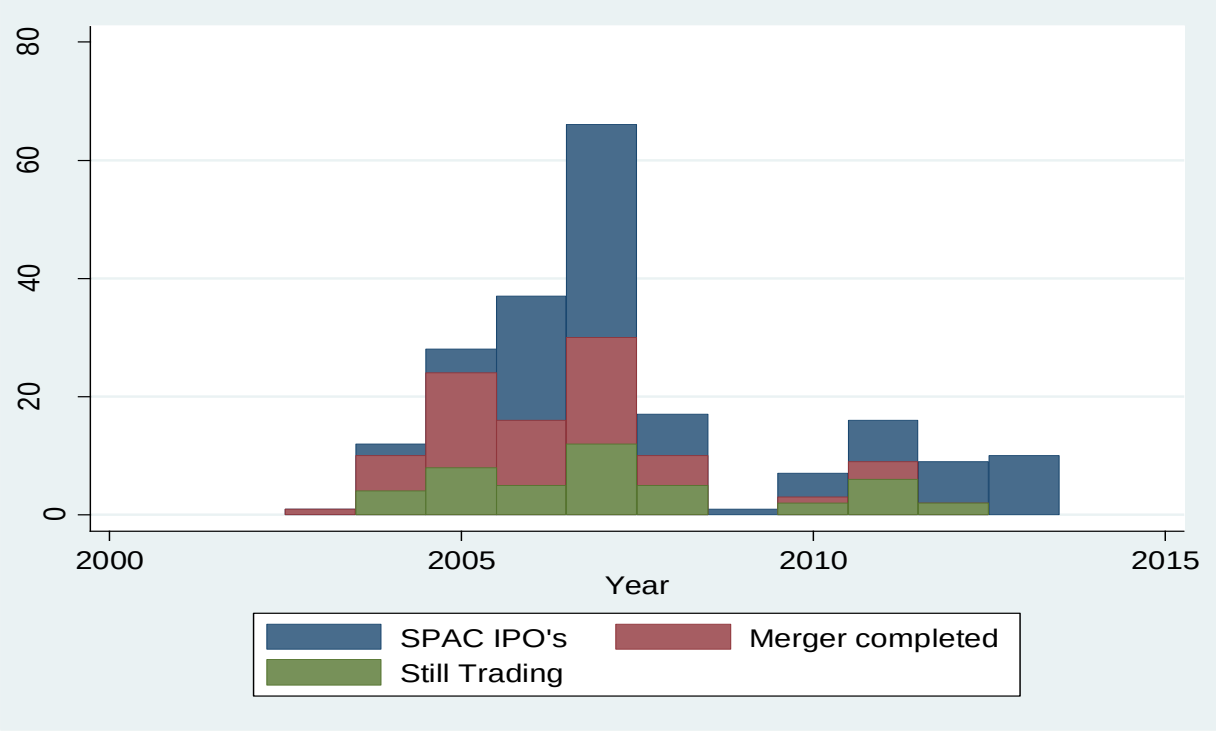
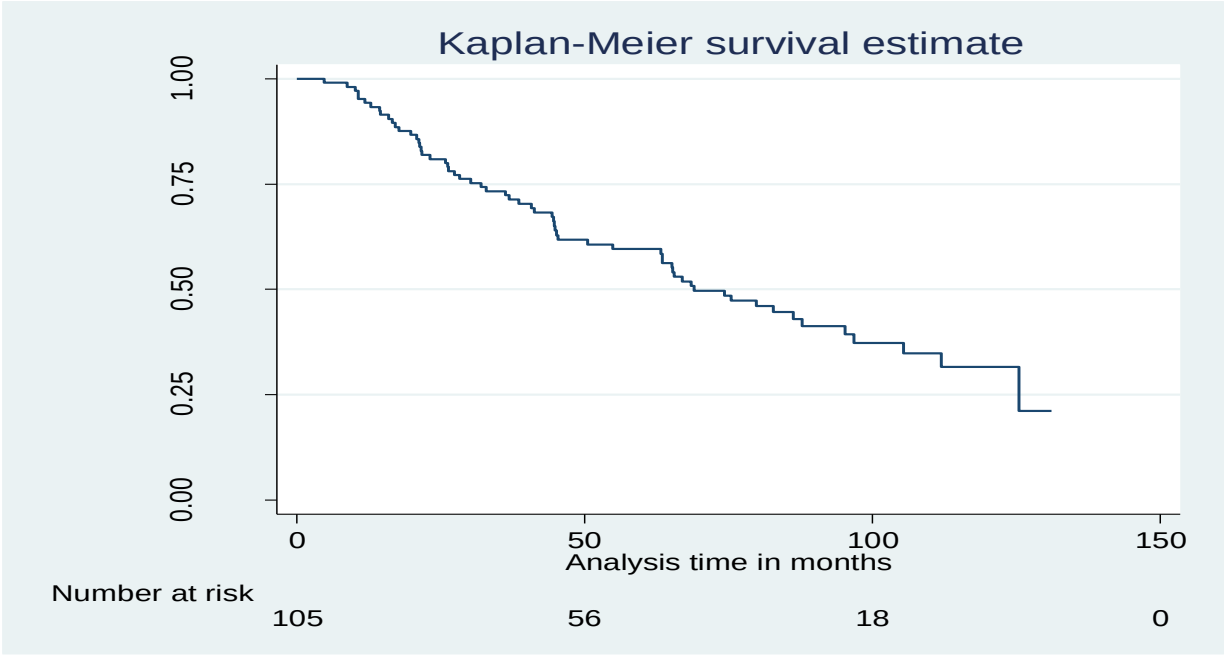


Figure 2a. SPACs survival estimation after merger

This figure reports survival estimation of SPACs after their merger. The estimate is based on standard Kaplan-Meier estimation. The analysis time is in months.



This figure reports temporal corporate outcomes for subsample of SPACs that failed.

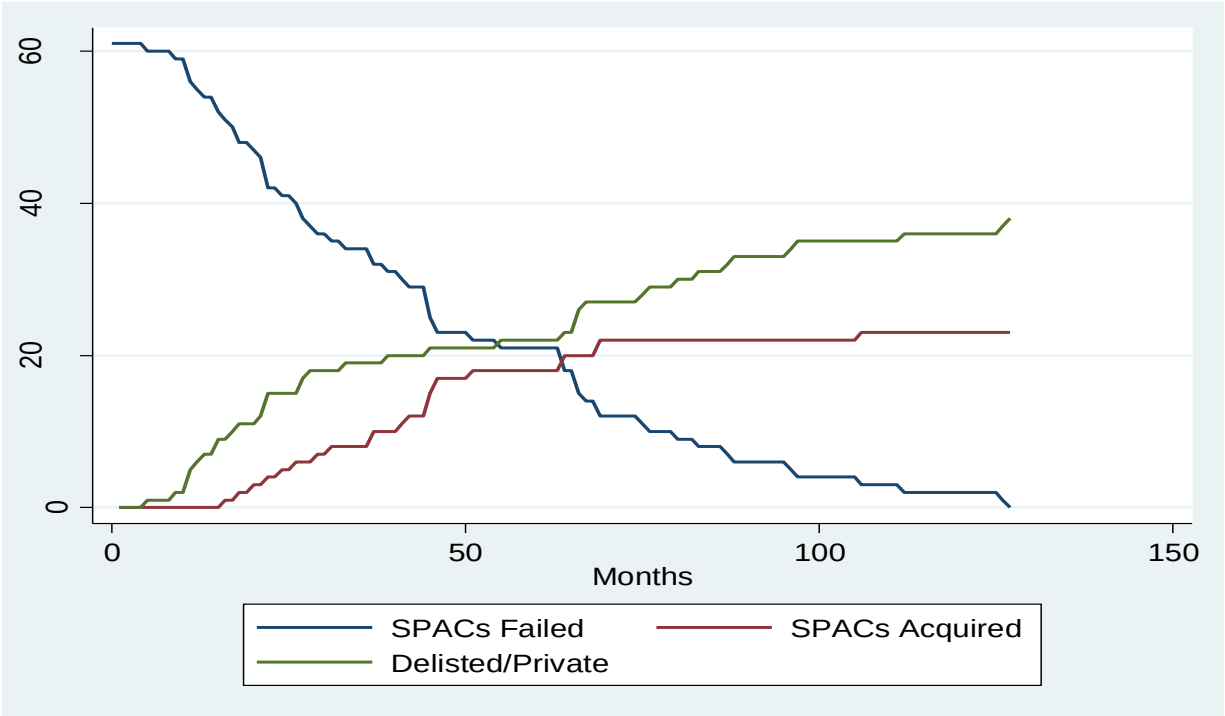


Figure 3. SPAC Index performance

This figure reports overall performance of equaly weighted buy and hold SPAC index. The index is constructed assuming that individual investor purchases one share during SPAC IPO for each SPAC in the sample and holds these shares up to five years after SPAC merger. At first SPAC Index consist of one SPAC and at the moment of 173 trading days before the merger all 105 SPACs in the sample are included in the sample. The number of SPACs included in the index after the merger declines due to various corporate events as delisting, acquisition or going private transaction.