A Story on Spacs

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Abstract:

We study characteristics of Specified Purpose Acquisition Companies (SPACs) and examine the performance of their securities over time. We find that SPACs represent a fairly unique way to raise capital. The incentives of their founders, underwriters, and investors are interdependent and successful business combinations generally result in significant returns to founders. We also show that different SPAC securities generate different reactions in response to the announcement news regarding their corporate status. While holders of all three securities realize abnormal returns on the announcement day, the strongest reaction is observed among the investors holding warrants, while common stock holders tend to react very mildly.

1. Introduction

In the year 2007, 67 initial public offerings, or 23% of total IPO's in United States, went to the little known Specified Purpose Acquisition Companies (hereafter SPAC). In 2008, 17 out of 50, or 34%, of IPO deals were SPACs.[1] In contrast, in the period between 1998 and 2002 there were no SPAC related IPOs; in 2003, there was only one. Interestingly, in the first half of 2009, there was no SPAC activity in the equity issuance markets at all.

This recent development in capital markets demands a closer examination of SPACs, their characteristics and performance of its securities for at least three reasons. First, very few studies are written and published on SPACs, Boyer and Baigent (2008) being the rare one published in academic finance literature. Second, our sample of SPACs is extended in comparison to Boyer and Baigent (2008) for an additional three years. This enables us to capture institutional changes in SPAC structure in that period arising mainly as the reaction to the entrance of largest underwriters such as Citigroup in SPAC market. Finally and most importantly we analyze SPAC performance examining trading data on all three types of SPAC securities, namely on: units, common stocks and warrants. None of the previous studies examining the performance of SPACs treated all three types of securities.

A SPAC is a clean shell company that acquires public status through the IPO process and is specifically formed to purchase one or more operating businesses over a certain amount of time, usually two years. Proceeds raised through the IPO are placed in escrow accounts and are kept there until SPAC founders are able to close the deal with

[1] Ritter (2009) " Some Factoids About the 2008 IPO Market "

potential targets. If an appropriate target is not found within the two-year period after the IPO, the SPAC is liquidated and funds from the escrow accounts are returned to investors.

The Securities and Exchange Commission (SEC) classifies SPACs as blank check companies under the 6770 SIC code, and technically defines them as "very small companies" typically involving speculative investments that fall within the SEC's definition of "penny stocks" or "microcap stocks." At the same time, the SEC's rule 3a-51-1 excludes from the formal definition of "penny stocks" any stock issuer with total net assets valued higher than $5 million after the IPO. Since all SPACs entering capital markets after 2003 raised more than $5 million through their IPO, they are not classified as penny stock blank checks, and they consequently avoid the scrutiny of the SEC rules that apply to penny stocks.[2]

There is no general agreement on the performance of SPAC securities, their characteristics, the best data source being used, or the proper underlying indexes. We provide additional evidence on SPAC activity in the period from 2003 until July 2009. First we document the abnormal returns for all three SPAC securities around important days in their life, with owners of SPAC warrants experiencing the strongest one day abnormal return. Second we do not find that SPAC mergers were value destroying as reported in Jenkinson and Sousa (2009). We confirm findings in previous studies and show that SPACs do not experience underpricing at the day of the IPO opposite to the findings in the IPO literature. This is the expected outcome since almost all uncertainty about price movement is taken away constructing the SPACs as an entity that deposits all its cash proceeds in the escrow accounts. Our analysis shows that securities issued by SPACs react differently when the intention to change their corporate status is announced. Our results regarding the

[2] As the response to speculative activities in blank check markets during the 1980s, the SEC introduced rule 419-a in 1992 to regulate offerings of blank check companies. Within that legislation, rule 3a-51-1 defines what is considered a blank check and penny stock issuer.

cumulative abnormal performance of the SPACs after the merger announcement are similar to Tran (2009) and we report three day cumulative return of 1.23% which is higher than returns to public acquirers of 0.33% reported in the literature.

This paper continues with literature review in Part 2. The full description of modern SPACs, their sample and characteristics, and important stages in their limited corporate life is explained in Part 3. In Part 4 we explain the DATA. Part 5 provides summary statistics and examines the characteristics of SPAC stakeholders, namely SPAC founders, SPAC underwriters, and SPAC investors, and sketches their incentives. In Part 6 we examine performance of SPACs' securities around two important dates in their corporate life and calculate overall buy and hold returns for subsets of SPACs based on their corporate status at the time. Part 7 offers a conclusion and proposes some further research questions on SPACs.

2. Literature Review

2.1. Literature Review

The academic finance literature on SPACs is still in the very early stages of development. Jog and Sun (2007) is one of the first paper that both explains some of the characteristics of SPACs and examines the realized returns to original founders and investors. Their sample includes 62 SPACs over the 2003-2006 time period, and is based on a subsample of 24 companies with available data on SPAC founders with annualized returns of 1900% to them. In a similar subsample that includes 42 SPACs with complete data on SPAC investors, the authors report a negative annual return of 3%. Boyer and Baigent (2008) examine characteristics of 87 SPACs that went public from June 2003 until December 2006 and report that SPACs exhibit less underpricing than regular IPOs. They also report a significant positive relationship between the share price at the issuance and the

size of the offering. Flores (2008) also mentions SPACS, comparing reverse mergers with penny stock issuances as an alternative way to go public. He includes 12 SPACS in his sample of 408 reverse mergers. Recently, Lawellen (2008) made an argument that SPACs represent an important entity in the capital markets and that they should be considered a separate asset class. Tran (2009) examine SPACs over 2003 – 2008 period and reports that SPACs that announced merger exhibit positive abnormal returns. He reports 1.7% cumulative abnormal return on SPACs common equity and while comparing that with returns from other acquirers of 0.33% concludes that SPACs outperform the markets. Finally, Jenkinson and Sousa (2009) analyze 58 SPACs that completed mergers showing that half of the deals were value destroying.

Beyond the academic finance literature, the redevelopment of SPACs in the capital markets has also received much attention in law related literature. Reimer (2007) concludes that SPACs can be considered a beneficial financial innovation, especially due to the constraints that the 2002 Sarbanes-Oxley Act imposed on small firms attempting to raise funds in the public markets. He considers SPACs a substitute to private equity firms. Sjostrom (2008) compares different ways to go public, and finds SPACs to be a viable alternative to traditional IPOs from the perspective of an acquired company because they bring in a cash infusion, share liquidity, and vested-in underwriters. Potentially the literature on SPACs could be related to the broad IPO literature or reverse merger literature, but we believe that SPACs are the entity standing on its own as proposed by Lawellen (2009) and increased interest in capital markets warrant for their examination. Additionally, the IPO literature and major papers such as Ritter (2009), Xiaoding and Ritter (2010a) and Xiaoding and Ritter (2010b) while constructing their IPO sample always exclude SPAC IPO's .

3. SPAC description

3.1 Modern SPACs

A. Formation

SPACs are formed by their sponsors with the unique purpose to acquire or merge with other companies using the cash previously raised through the IPO. The formation of a SPAC is announced by filing an S-1 registration statement form with the SEC. The S-1 form consists of all the important information regarding the SPAC's organization and intentions. The form provides details about sponsors' professional and academic backgrounds and disclosures to potential public investors regarding the risks involved in the process from the moment of the IPO until the merger. It also informs investors about corporate governance and compliance with the Sarbanes-Oxley Act. In the S-1 form, SPAC sponsors state their compensation levels at all stages of the life of the company.

Once the SEC verifies the S-1 form, the focus of SPAC sponsors or managers turns toward the IPO process. [3] All the important information governing the IPO is recorded in the final prospectus Form B423.

B. IPO event

Typical SPACs conduct an IPO by selling units. Usually, each unit consists of one common share and one warrant to buy a share in the future at a discounted price. [4] The use of cash proceeds raised through the IPO is determined in the registration statements and their amendments. Typically, about 5% of raised cash is used to pay upfront for underwriters' fees, regular administrative and legal expenses, the cost of office space, the cost of registering securities, and employees' monthly salaries. The remaining 95% of the

[3] On the average it takes 221 calendar days from the filing of the intention to raise funds until the IPO.
[4] The structure of Units changed over time, and while in the first few years the Unit would usually consist of 1 share and 1 warrant to buy 2 common shares, lately a Unit more often consists of 1 share and 1 warrant to buy 1 share, and sometimes even 3/4 or 1/2 of the warrant.

funds are placed in an escrow account opened with an insured depositary institution, where the funds earn a T-bill rate until they are used in an acquisition. [5]

The establishment of an escrow account is very important in this process. First, it demonstrates to potential investors the SPAC's voluntary compliance with SEC rule 419-a, which requires blank check companies to establish an escrow account. Second, an escrow account provides assurance to public investors that a majority of their funds is going to be preserved independently of the success of the business combination.

SPAC underwriters offer immediate trading in units after the IPO. The units are, on average, dissolved 45 days after the IPO. The commencement of separate trading in shares and warrants is conditional on the approval of the underwriter and the filing of the proper 8-K form with the SEC. While warrants are tradable immediately after the approval of the underwriter, they cannot be exercised until the completion of a business combination.

The units of SPACs, along with their shares and warrants, are traded on OTC markets, AMEX/NYSE and NASDAQ.[6]At first, SPAC units, shares, and warrants were listed and traded on illiquid OTC markets. In 2005, AMEX allowed the listing of SPACs, while regulating the minimal capital requirements, governance, compliance with Sarbanes Oxley, and the minimum price share. In 2008, both NASDAQ and NYSE filed with the SEC to allow SPACs to list their securities.

C. Exit: Merger or Liquidation

The IPO date represents the first day of the public life of the SPAC. But, unlike for the majority of other existing public corporations, it also determines the last day of the SPAC's life. If SPAC managers are unable to find a business combination in given time

[5] Federal Deposit Insurance Act defines what represents "insured depositary institution " in section 3 (c)
[6] On May 23, 2008, NYSE listed Heckman Corporation as its first SPAC.

frame, the SPAC is dissolved and existing public investors are entitled to distribute funds from the escrow account proportionate to their share holdings.

The two years provided to SPAC promoters to find a proper business combination could be extended for an extra six months by filing proper letter to the SEC. Few with a focus on Asia have extended the allowed time due to expected regulatory delays in China. The time limit for liquidation is also affected by stock exchange listing rules. In the early years, SPAC securities were traded at OTC markets, but the strict set of rules governing the time limit to liquidate SPAC was not established at that time. In most cases, a limit of 24 months was self-imposed by founders and underwriters. In 2008, the NASDAQ and the NYSE, announced plans to list SPACs and extended the time for finding a target to 36 months.

In prospectus forms filed with the SEC, SPAC founders usually specify the industry or country target for their acquisition. They are required to file regular quarterly and annual financial statement forms with the SEC and to report any potential changes in their corporate status. Usually SPACs use the 8-K form or the 425 form to announce a business combination. In the announcement filing, SPAC management explains the structure of the proposed business combination, and specifies the name of the target.

As a disclaimer to the announcement form, SPACs inform the shareholders that more details will be provided in the SEC-required joint proxy prospectus. They also state that the consummation of the deal is subject to the approval of the minimum percentage of public shareholders, as predetermined in the IPO prospectus forms filed by the SPAC.

After the announcement of the merger combination and the approval by the SEC of the definitive proxy statement, the major task for SPAC managers is to obtain the support of shareholders for the proposed business combination on the actual date of the vote. All

shareholders are entitled to vote on the business combination. In order for the deal to be approved, it cannot be rejected by more than a certain percentage of its investors as determined at the time of the IPO.

In the period between 2003 and 2006, typically the no-vote threshold was set at 20% of shareholders votes. After 2006, that threshold was set on average at 30%. In reality, that means that if more than 20% of shareholders voted against the proposed business combination, the merger process would be suspended and the SPAC liquidated. If the SPAC announces its liquidation, all shareholders are entitled to divide the funds kept in the escrow accounts based on the number of shares they own.

If SPAC shareholders approve a business combination, SPAC managers together with their underwriters and legal counselors file new forms and notify the SEC of the issuance of securities related to the business combination. Finally, the 8-K form demonstrates that the remaining shareholders of the SPAC approved the transaction. That means that all of the funds held in the escrow accounts are released to the SPAC management and become available for use by the newly created company.

4. Data

After the first modern SPAC completed an IPO in August 2003, 263 SPACS registered to issue securities in the U.S capital markets, and until July 1, 2009, 161 of them successfully conducted an IPO raising close to $23 billion in total proceeds. The focus of our study is on 161 SPACs that conducted an IPO. The data for the study is derived from various sources.

The Edgar database is used to collect all relevant institutional statistics on SPACs--from the initial filing of the preliminary prospectus S-1 forms, through the final prospectus 424-B forms and additional 8-K forms, to the 10Q statements filed immediately after the

IPO. In this paper, all of our reported statistics are derived from the aggregation of collected information in those forms and we have all the relevant data for the 161 SPACs that we analyzed.

The data on daily stock returns for 99 companies in the sample was extracted from the CRSP database. For the additional 50 companies, we collected daily prices using Bloomberg and Reuters platforms. We found data on SPAC unit prices and warrant prices from Bloomberg and Reuters, where we collected unit daily data for 111 companies and warrant daily data for 80 companies.[7] Table I shows that out of 161 SPACs, 71 completed a merger by July 2009, 41 are still looking for an appropriate target or have announced a potential business combination, and 49 have been liquidated or have announced liquidation.

5. Descriptive Statistics for Stakeholders and Analysis of Their Incentives

5.1. Founders

The original SPAC founders are usually former or current executives who come from a variety of industries. In the financial press they are called SPAC sponsors, SPAC managers, or SPAC promoters. The filing forms reveal that SPAC sponsors come from all spheres of life, as well as from different areas across the globe. In some SPACs, managers disclose their involvement in blank check markets before 2003. Recently, some of the SPAC founders are investment companies, hedge funds, and private equity funds, where private equity managers see SPACs as a path to access public capital markets. Very often SPAC founders have previous experience in merger and acquisition activities. In most cases, five individuals are founders of a SPAC.

A. Typical investment

[7] Daily prices on SPAC securities are becoming more readily available , but the major obstacle is the fact that vendors do not maintain historical unit and warrant data after SPACs either conduct a merger or liquidate

SPAC founders usually contribute $25,000 at the moment the shell is formed. In our sample, as shown in Table II, on average their initial investment is $57,000 representing 100% of the SPAC equity. This equity stake represents, on average, 4.16 million shares, costing each SPAC founder approximately $0.0137 per share. A typical SPAC founder discloses in the S-1 form the intention to devote a few hours of work per week to the SPAC and warns future investors of possible conflicts of interest due to involvement in similar competing companies. SPAC founders also inform investors about the high uncertainty of the merger's success. If compensated, the average annual salary of a SPAC founder is $75.000.

B. Typical payoffs for SPAC founders

SPAC founders raise funds by selling 80% of their equity stake through the IPO. The remaining 20% of equity remains with them and becomes more or less a finder's fee in the case of a successful business combination. Besides the initial equity investment, founders commit to buy upfront, on average, 3.75 million warrants at an average price of $0.95. Based on a founder's initial investment, as disclosed in the forms registered with the SEC, we can analyze their potential gains conditional on the successful merger, as shown in Figure I.

Assuming that the share-conversion ratio during the merger is one, we calculate potential gains for SPAC founders in absolute dollar value, depending on changes in the stock price and assuming a post-merger warrants' exercise. On average, SPAC managers contribute $3.619 million to the company, either through initial investment or warrant purchases.

The founders' contribution represents 2.76% of total funds that a SPAC keeps in its escrow accounts. Assuming that the SPAC founders would not buy any additional shares

later in the process, a simple calculation shows that any post-merger stock price higher than $1 means a positive return to the SPAC founders.[8] Therefore, the way for managers to achieve a positive return is to find an appropriate target and to successfully close the merger transaction.

In the case where the merger does not materialize for any reason and the SPAC is liquidated, promoters lose all of their initial investment. The failure to find the proper target could impair the reputation of the SPAC promoters and vice versa. For example, managers of Chardan China, who successfully executed a merger in November 2005, were later able to raise funds for four additional SPACs of which three already found proper business combinations.

5.2 Underwriters

The first modern-era SPAC, which completed an IPO in August 2003, created the underwriter EarlyBirdCapital.[9] The role of the underwriters in the life of SPACs is manifold.

First, underwriters carefully structure offerings of SPAC securities in order to make the SPAC interesting for potential investors. Second, underwriters serve as market-makers for SPAC units, shares and warrants and determine when they can be traded. Finally, underwriters provide their proprietary knowledge and serve as advisors to the parties involved.

Out of 161 SPACS that conducted an IPO, all but five followed the same format in structuring their offerings by issuing only one class of units. This remaining five SPACs,

[8] The assumption that SPAC founders are not going to buy any additional shares during the process could be questionable due to the so called "yield game" where for some investors it may be rational to opt for SPAC liquidation instead of approving the business combination

[9] The Millstream Acquisition Corporation is the first SPAC that did an IPO in August 2003, and the first one that successfully completed a merger in 2004.

having HFCP/Brenner Securities as their lead underwriter, issued two types of units, with two classes of shares and two classes of warrants.[10]

A typical SPAC, as shown in Table II, raises $126.4 million in gross proceeds in its IPO.[11] On average, the underwriter's fee is 7% of the gross proceeds. The fee is divided into 3.94%, which is paid to the underwriters at the moment of the IPO, and 3.06%, which is deferred and paid conditionally on the successful merger. The deferred part of the underwriter's compensation has a motivational role for underwriters, and at the same time, serves as a positive signal to investors. This deferred part of compensation aligns the incentives of the underwriters with the incentives of the SPAC founders, with respect to the final outcome.

5.3. Investors

A. Overall characteristics of investors in SPACs

On average, investors are, as presented in Table II, buyers of a 78.2% equity stake in a SPAC during the IPO. By purchasing SPAC units they provide 97.24% of cash to the SPAC. The remaining 2.76% comes from SPAC sponsors through warrant purchases and initial investments.

Both in registration statements and in the final prospectus, SPAC investors are informed about the management of cash proceeds before the IPO. Around 96% of funds raised through the IPO are placed in an escrow account with a well-established financial institution.

The funds in escrow serve as a downside benchmark for all potential public investors in the SPAC and assure them if a proper merger is not found, then about 96% of

[10] In the deals underwritten by HCFP, the insiders on average buy only 100 common shares at a total cost of $500. They have also purchased a large number of warrants prior to the completion of the IPO

[11] The amount of 126.4 million represents the proceeds raised in the case the underwriter does not exercise an over-allotment option. Full exercises of an over-allotment option would increase the amount of gross proceeds by 19.9 million on average.

the invested funds would be returned. Depending on the SPAC's management decision, the interest earned on the funds in an escrow account can be used as the working capital for the acquisition of related expenses.

The establishment of the escrow account is not the only way for public investors to protect themselves against the failure to find a merger target. Investors can get back, on average, 96% of their investment, even if a merger is announced and agreed upon, just by opting for cash conversion of their shares. Between 2003 and 2006, if more than 20% of public investors opted for share conversion, the merger would be terminated and SPAC dissolved, with all funds from the escrow accounts returned to public investors. In recent prospectuses, the upper limit on the fraction of converted shares that trigger termination of the merger and dissolution of the SPAC is usually 30-35%, and, in some cases, even 40%. This increase in the percentage of investors necessary to stop a proposed merger is most likely a response by founders of SPACs and underwriters to shareholders' activism.

Investors in a SPAC who own 78.2% of shares while contributing 97.24% of the capital experience share dilution. In addition to dilution due to the discounted price that SPAC founders pay for equity, public investors also might experience dilution due to possible cash conversion by investors who disagree with a proposed merger and want to opt out of the SPAC.

In Figure II, the share dilution is calculated for a typical SPAC in our sample, assuming that warrants have no value and that the underwriter did not exercise over-allotment shares.

On average, across the sample new investors realize a share dilution close to 29.30% if a possible conversion of shares is not accounted for. In the majority of prospectuses, SPAC underwriters and sponsors calculate the maximum share dilution that could be

realized if 20% of investors convert their shares. Considering that a conversion of shares would decrease the net tangible book value of the SPAC for 20%, while keeping the number of remaining shares constant, our dilution (2) measure shows that a maximum share dilution of 43.40% for remaining investors is theoretically possible.

After the trading of SPAC securities is established, the primary market investors are able to adjust their holdings in secondary markets based on the expectations of future payoffs. Given that investors purchase units that are later disbundled into shares and options to buy additional shares if a merger occurs, there are many possible strategies for investors during the two-year period before a final decision on a merger is made. For example, investors who believe in the vision of SPAC founders and are committed for a long term, can simply keep their shares and warrants in their portfolios as they anticipate post-merger gains.

6. Performance of SPAC securities

In this section, we describe important events in the life of SPACs, such as the IPO, the merger announcement, and the merger itself. In addition, we analyze the performance of the SPAC securities.

6.1 The IPO

A. Filing statistics

In Table II, the characteristics of 161 SPACS that conducted an IPO are presented as they are in the final prospectus forms. On average, at the IPO, SPACs issue 14.85 million units at an average price of $7.84.[12] The average gross proceeds before the underwriter's decision to exercise an overallotment option are $126.40 million, out of which $119 million

[12] The majority of the units are structured as one share plus one warrant. To buy one additional share, the average unit has one share and one warrant which provides an option to buy 1.28 shares. There are 10 unit offerings in which a warrant is buying less than 1 share in the future date.

is placed in an escrow account. This represents about 95% of the gross proceeds on average, and does not show any change with respect to the preliminary prospectus. On average, the underwriter's fee is 7% of the gross proceeds; the fee is divided into 3.94% paid at the moment of IPO, and the rest of the 3.06% is deferred and paid conditionally on a successful merger. On average, SPAC managers purchase 3.75 million warrants at a price of $0.95, and place them into an escrow account.

Table II also presents the summary statistics based on information presented in the 423B-3 forms of all 161 SPACs, with the sample divided into two sub-samples. The first sub-sample covers time the period between January 2003 and April 2006, and the second sub-sample covers the period between April 2006 and July 2009. There are two reasons for doing this. First, it allows us to see the changes in the SPAC structure over time, such as the increase in the average IPO size, the decrease in the number of shares that warrants can buy, and the increase in the deferred compensation to underwriters. Second, it divides the sample at the point where Jog and Sun (2007) completed their observation of the process.

Comparing the two periods, SPAC founders on average offered 106.00% (18.34 vs. 8.90) more units in the later period, and sold units at 22% higher a price (8.40 vs. 6.89), which typically led to a 147% increase in gross proceeds from the first to the second period, and implies an overall stronger interest in the investment community for SPACs. The increase in gross proceeds is accompanied by an increase in the ratio of the proceeds being placed in the escrow accounts from 91.20% in the first period to 98.00% in the second period. This can be explained by the increased amount of commission that underwriters deferred (0.03% of gross proceeds in the first period versus 3.20% in the second period), as well as an increase in the amount of funds that the original SPAC founders invested by buying warrants.

While underwriters' total commission was around 7% in both periods, we can see a decrease in the percentage that underwriters charged immediately after the IPO, from 7.37% of gross proceeds in the first period to 3.20% in the second period, with the remaining compensation being tied to the success of the proposed merger. By comparing two periods, we can see an increased commitment on the side of the SPAC sponsors through the purchase of warrants. On average, in the first period they purchased 1.85 million warrants and in the second period they purchased 4.19 million warrants.

B. IPO day

Academic literature on the pricing of securities around IPO events is abundant. The majority of evidence shows that issued shares exhibit above market returns during their first trading day. Ljungqvist (2007) compiles the literature on underpricing and shows that the phenomena could be explained either by asymmetric information models, institutional theory models, or behavioral theories. We believe that none of those explanations are applicable to SPAC offerings. The firmly set structure of the SPACs substantially before the IPO date, the establishment of the escrow accounts where almost all proceeds are placed, in addition to zero uncertainty about the offered unit price, create no incentives for new investors to enter into significant speculations on the first day of trading.

Sun and Jung (2007) calculate underpricing of SPACs at the moment of the IPO using the following formula:

$$\text{Underpricing} = (P_1 - P_0) / P_0$$

where P_1 represents the closing unit price at the end of the first trading day and P_0 represents the original unit price as announced in the SPACs' prospectuses. In our data consisting of 111 SPACs with information on unit prices, we have first day trading information for 107. We calculate underpricing in the same manner as Sun and Jog (2007).

In Panel A of Table III, we present descriptive statistics of returns. Panel B shows that the overall mean of first-day underpricing is 0.0001%. This is lower than the underpricing reported by Sun and Jog of 0.38%, but the result is highly expected and the relatively high average trading volume of 2.2 million units supports the hypothesis that investors in SPACs have no incentives to diverge from the offering unit price on the first trading day.

6.2 . Performance of SPACs' securities around the announcement of the merger

Previous findings in literature on SPACs' performance around the announcement of merger date are scarce, not uniform, and mostly address the performance of SPACs' common shares. We believe that more insights on merger announcements can be obtained if we simultaneously analyze the performance of all three types of securities that SPACs issue during the IPO, namely units, common stocks, and warrants. In order to examine the behavior of these securities we form three samples with daily returns for three distinguished SPAC securities.

Results are obtained for abnormal returns based on the market model from Brown and Warner (1985),

$$Rjt = \alpha j + \beta j Rmt + \varepsilon jt$$

where Rjt is the rate of return of the jth SPAC security on the merger announcement day *t*, and Rmt is the rate of return of an equally weighted daily market index on day *t* downloaded from CRSP. Then the abnormal return for the SPAC securities on merger announcement day t is

$$ARjt = Rjt - (\alpha_0 j + \beta_0 j Rmt)$$

where α_0 and β_0 are ordinary least squares estimates of α and β. The parameter estimation period is 50 days prior to the first day of the 11-day event period. We believe that 50 day estimation period is long enough for our study, although given that SPAC has limited

corporate life it is natural that investors always have expectations of merger announcement and theoretically the announcement should not be much of surprise. In addition to the calculation of abnormal returns around the announcement day around important corporate events, we calculate cumulative abnormal returns up to seven days after the event.

Out of 161 SPACs that successfully conducted an IPO since 2003, we have complete stock price information around the announcement date for 88. The absence of stock price information on the remaining SPACs occurred for the following reasons. Neither CRSP, Bloomberg nor Reuters provided stock price information for the 12 SPACs around the announcement date. In addition, we excluded from the sample five SPACs that were issuing dual shares and were pricing them differently. The rest of the SPACs are not in the sample because either their merger announcement date is after January 2009 or because they did not announce an intent to conduct a merger at all.

In Table IV, Panel A we report that abnormal returns on SPACs' common stock on the announcement day is 0.85% and statistically significant at one percent. This result finds support in literature on mergers and acquisitions. Travlos (1987) and Andrade at all (2001) report positive returns for acquirers if the merger deals were cash financed. Since SPAC is almost hundred percent cash entity this positive abnormal return is no surprise. If abnormal returns are calculated over the two-day period, which includes the announcement date and the day after, SPAC common shares exhibit positive abnormal return of 1.2%. We calculate cumulative abnormal returns up to seven days after the announcement and report in Panel B that after the first post-announcement day, returns monotonically decline to 0.047% seven days after the announcement. As the period over which cumulative returns are calculated extends the statistical significance of returns drops. As expected, the SPAC common shares do not exhibit abnormal performance in the seven day period after the merger

announcement. This is primarily due to the fact that SPAC common shareholders can redeem their shares at pro rata value of deposited funds in the escrow accounts independently of the merger outcome, and therefore, they do not have much incentive to bid up the price higher at the announcement date.

In Panel A of Table V we report abnormal returns around the merger announcement days to unit holders. The data on the unit daily prices comes from Bloomberg and Reuters, and we have complete information for 48 SPACs around the merger announcement date. Since a unit is composed of SPACs' common shares and additional warrants that are exercisable only after successful merger combination, it is interesting to observe the behavior of unit holders around the announcement of a merger. None of the previous studies on SPACs examined performance of units. We argue that is important since the movement in the price of units synthesize the movement in its composing securities: namely common shares and warrants. For 48 SPACs that have information on unit prices, an average unit consists of one share and 1.134 warrants.

On the day of the announcement, unit holders experience a 2.42% positive abnormal return. When an abnormal return is calculated for the two-day period, which includes the announcement date and the day after, the abnormal return is 3.43%. When we calculate cumulative abnormal returns for up to seven days after the announcement, we see that the total cumulative return for unit holders is 7.88%. This finding is interesting and, based on a reported lack of significant overperformance of SPAC common shares around the merger announcement, leads us to conclude that unit abnormal returns are largely driven by performance of warrants.

Finally, we examine the behavior of SPAC warrants around the merger announcement date. The data on warrant prices is the hardest to obtain primarily because

historical warrant prices are not kept on record once warrants are exercised, and in some cases are not reported at all. Although we have collected data for daily warrant prices on 80 SPACs from the sample, the data needed to thoroughly estimate returns around the merger announcement date is available for only 24.

Warrant holders experience significant abnormal returns on the day of the announcement and these returns are reported as 10.49% in Panel A of Table VI. Similar performance is observed on the first day after the announcement where we see an additional 4.20% abnormal return. Interestingly, this strong positive reaction lasts only for these two days and on the second day after the announcement, abnormal returns became negative, leading to a cumulative abnormal return of 6.6% seven trading days after the announcement. A positive reaction of warrant prices after the merger announcement is expected.

6.3 Performance of SPAC securities around the merger

Mergers are the desired final outcome for SPACs. It should be a natural outcome that mergers create value for all the participants. We test behavior of SPAC securities around the merger date and in Table VII Panel A, we report results for equity performance. We have daily stock returns on and around the merger dates for 48 SPACs that completed mergers. SPAC equity holders experience a negative 3.81% return on the day of merger completion. On any post-merger day, up to seven days after the merger, SPAC equity holders experience a negative abnormal return. Panel A reports the cumulative abnormal return for the seven days after the event as -9.59%. This finding is interesting, but not unexpected since the merger date is determined in advance when the merger is approved by shareholders. It might also be due to premium prices that parties in favor of the merger were paying for shares before the voting day.

In Panel B we present results on abnormal returns for warrants on and around the merger date. Only eight companies have available data. On the merger day, warrant holders earn a 4.76% abnormal return, while the cumulative return for seven days after the merger is 7.36%.

6.4 Overall Performance of SPAC securities

In Table VIII we show the buy and hold performance for three SPAC subsamples based on their merger status. Panel A includes SPAC companies that completed a merger. We calculate the buy and hold return for a hypothetical investor who bought one SPAC unit on the IPO date and was holding that unit until the last week of June 2009. There are 66 companies with available data in the first subsample and the average buy and hold unit return for each is -28.69%. SPACs that successfully completed a merger offered on average 7.33 units for sale at the IPO; their unit consisted of 1.43 warrants and their average size calculated by the dollar amount of IPO proceeds was $98.875 million. This finding is interesting primarily because original SPAC shareholders had the power to veto the merger, and as a result of not exercising this power, they engaged in value-destroying activities.

Panel B, presents the characteristics of the second subsample, which consists of companies that already announced a merger but currently are in the process of approval. There are 16 companies with available data and on average they exhibit a 9.6% positive buy and hold unit return from the IPO date until the last week of June 2009. On average, these SPACs are larger than SPACs that already completed mergers ($177 million vs. $98 million), have fewer warrants per unit (1.25 vs. 1.43) their units are priced higher at the time of IPO (8.5 vs. 7.33), and they have a higher percentage of gross proceeds deposited into the escrow accounts (98.6% vs. 93.3%). Two potential explanations for why unit investors in this subsample experience positive returns are as follows. First, investors are

willing to bid up the price of either shares or warrants, assigning a high probability for value-creating transactions. Second, SPAC founders and underwriters under pressure to complete the merger are buying out original SPAC investors at prices higher than the original value.

In Panel C, we calculate buy and hold unit returns for SPACs that conducted an IPO but are still seeking a merger as of the last week of June 2009. The subsample consists of 23 companies that on average raised $233 million at the IPO and whose warrant consists of 0.97 units. As of the last week of June they experienced -8.22% buy and hold return.

7. Conclusion:

We examine the characteristics of SPACs and the performance of the securities they issue, namely, units, common stocks and warrants, at important dates of their limited corporate life. Our analysis shows that SPACs have a complex corporate structure in which the incentives of the founders, underwriters, and investors are interdependent and where successful mergers result in significant returns to the founders.

We also show that different SPAC securities do not exhibit similar reactions in response to announcements regarding their corporate status. While holders of all three securities realize positive abnormal returns on the merger announcement day, the strongest reaction is observed among the investors holding warrants, while common stock holders react very mildly. This is an expected outcome bearing in mind the way SPACs were originally structured.

Figure I:The Incentives to SPAC founders

The analysis of potential value attainable to the SPAC founders for the average company in our sample

	Value in $	Value in $ million	Percentage
Offering size (IPO Gross proceeds + over allotment)		131.00	
Sponsors equity investment – (4.16 million shares)		0.057	
Sponsors warrant purchase – 3.75 millions ($0.95)		3.562	
Total capital at risk by managers		3.619	
Managers investment as percentage of offering proceeds			2.76
Warrant exercise price	6.00		
Share conversion ratio	1		

Price of shares ($)	1.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
Number of shares (m)	4.16	4.16	4.16	4.16	4.16	4.16	4.16	4.16
Value of shares ($mil)	4.16	16.64	20.80	24.96	29.02	32.28	37.44	41.60
Num. of warrants(mil)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Value of warrants(mil)	0	0	0	0	3.75	7.50	11.25	15.00
Total value of securit.	4.16	16.64	20.80	24.96	32.77	40.78	48.69	56.60
Total capital at risk	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Total return ($ mil)	0.54	13.02	17.18	21.24	29.15	37.16	45.07	52.98
Return on invest. (%)	14.90	359.00	474.00	586.00	805.00	1026.00	126.03	1463.00

Figure II : The Incentives to SPAC investors

The average investments by founders and investors are calculated, as well as the dilution to investors

	Shares purchased		Total investment		Avg. price per share
	Number(m)	Percentage	Value in $	Percentage	In $
SPAC Promoters	4.16	21.00	0.057	0.05	0.013
New investors	14.85	79.00	109.757	99.05	7.84
Total	19.01	100.00	109.814	100.00	0.159

Dilution Calculations:		
	Value in $	Percentage
Public offering price	7.84	
Amnt. of funds in escrow	105.42(mill)	
Total number of shares	19.01 (mill)	
Escrow/number of shares	5.54	
Dilution (1)		29.30
Amnt. when 20% convert	84.33(mill)	
New Escrow/# of shares	4.43	
Dilution (2)		43.34

Table I:

Chronological overview of SPAC activity in the 2003-2009 period where their corporate status is presented year by year

Year	Number of SPACs that completed IPO's	Number of SPACs that completed merger	Number of SPACs that liquidated	Number of SPACs seeking for merger
2003	1	0	0	0
2004	12	1	0	0
2005	27	3	0	0
2006	38	11	4	0
2007	66	27	21	20
2008	17	21	27	21
2009	0	8	13	0
Total:	161	71	49	41

Table II:
Characteristics of SPACs as on 423B Forms

The table presents the characteristics of 161 SPACs that conducted the IPO as in their final prospectus forms. Where: Units= number of units issued, Price = price of units at IPO, ST=number of shares, SM=management shares, PO=percentage ownership by investors, GP=Gross Proceeds, NP=Net Proceeds, MI=Management investment in SPAC,UDC=Underwriters compensation, UDDC=Underwriters Deferred compensation, Warr=number of warrants bought by insiders, Wp=price of warrants, UUG=over allotment units granted, Unless noted by * next to variable, all values are in $ millions

Variables	Complete sample			Period 2003-April 2006			Period April 2006- Jul 2009		
Year	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
Units (million)	14.85	90.00	0.75	8.90	28.50	0.75	18.34	90.00	2.50
Units price at IPO	7.84	10.00	6.00	6.89	10.00	6.00	8.40	10.00	8.00
ST(total # shares)	19.01	112.50	1.55	11.53	35.62	1.55	23.26	112.5	3.75
SM(# Manag. Sh)	4.16	25.87	0.25	2.62	15.00	0.25	18.20	25.87	0.75
PO(Investor. Sh %)	80.00	81.00	78.70	79.00	82.00	74.00	79.90	81.00	78.90
Gross Proc. ($ mill)	126.40	900.00	9.05	60.46	188.70	6.56	165.90	900.00	16.50
Manag. Investment	0.057	0.005	2.525	0.023	2.00	0.001	0.086	0.02	2.525
UDC (%)	7.00	20.00	1.00	7.40	20.00	4.00	6.40	9.00	1.00
UDDC(%)	3.06	5.40	0.00	0.03	3.00	0.00	3.80	1.00	5.40
Warrants (# mill.)	3.75	16.00	0.00	1.85	5.00	0.00	4.19	16.00	0.90
Warrant price($)	0.95	1.50	0.00	0.87	1.50	0.00	0.97	1.50	0.45
UUG (#units)	2.29	13.50	0.31	1.38	4.27	0.31	2.79	13.50	0.45

TABLE III:

Summary statistics and IPO underpricing

In Panel A daily returns data on SPAC securities is summarized. In Panel B, underpricing of units is calculated on the day of IPO by formula Underpricing = $(P_1 - P_0)/P_0$ where P_1 represents closing unit price at the end of the first trading day and P_0 represents the original unit price as announced in the SPACs' prospectuses.

PANEL A:
Returns statistics:

Variable	Number	Mean	Std. Deviation	Minimum	Maximum
CRSP data stocks price	45197	7.065	2.700	0.02	30.80
Returns	45130	-0.0007	0.04	-0.06	1.33
SP500 RET (from CRSP)	45243	-0.00075	0.02	-0.09	0.11
Bloomberg data stocks pr.	27363	5.67	2.54	0.001	15.20
Original Unit offer price	161	7.87	1.54	6.00	10.10
Trading price for units	31495	7.80	2.87	0.0001	45.80
Warrants per units at IPO	161	1.31	0.47	0.50	2.00
Warrants excer.prc at IPO	161	5.90	0.95	4.50	8.00
Trading price of warrants	31767	0.59	0.67	0.00	6.40

PANEL B:

Underpricing at the IPO	Number	Mean	Std. Deviation	Minimum	Maximum
Unit open price 1st day	107	7.966	1.60	5.60	11.05
Unit close price 1st day	107	7.962	1.58	5.77	10.65
Underpricing 1st day	107	0.0001	0.052	-0.231	0.33
Unit Volume 1st day	90	2208047	3086264.84	200	16813700.0

Table IV:
Returns for SPACs common stock holders around the merger announcement day

Panel A presents abnormal returns on the announcement day calculated by the market model. In Panel B cumulative abnormal returns up to seven days are reported.. Panel C is graphical presentation of the results obtained in Panels A and B. (N= 88 , * represent stat. significance at 10%, ** at 5% and *** at 1%)

Panel A: SPAC Stock Returns around the merger announcement date:

Announcement date stock abnormal returns:

Variable	T stat	Mean	Std.Dev	Min	Max
Return	(3.19)***	0.0105292	0.0309743	-0.0818182	0.1523178
Alpha	(2.78)***	0.0015893	0.0053485	-0.0065305	0.0318480
Beta	(1.01)	0.1491343	1.3783496	-5.5826787	10.8151338
Abnormal return	(2.59)***	0.0085756	0.0310120	-0.0770958	0.1521550

Panel B: Cumulative abnormal returns (1, 2, 3,4,5,6 and 7 days after announcement date)

Variable	T stat	Mean	Std.Dev	Min	Max
Car 1	(2.31)**	0.0130111	0.0526251	-0.0872362	0.3570612
Car 2	(1.95)**	0.0127385	0.0609731	-0.2296609	0.3489474
Car 3	(1.70)**	0.0123245	0.0679592	-0.2549082	0.4174220
Car 4	(1.24)	0.0096026	0.0722733	-0.3031013	0.3743839
Car 5	(0.90)	0.0072508	0.0739745	-0.3857526	0.3076525
Car 6	(0.60)	0.0048525	0.0757266	-0.4282087	0.2595993
Car 7	(0.04)	0.0004777	0.0920902	-0.5552372	0.3082256

Panel C: Graphical representation of announcement and cumulative returns:

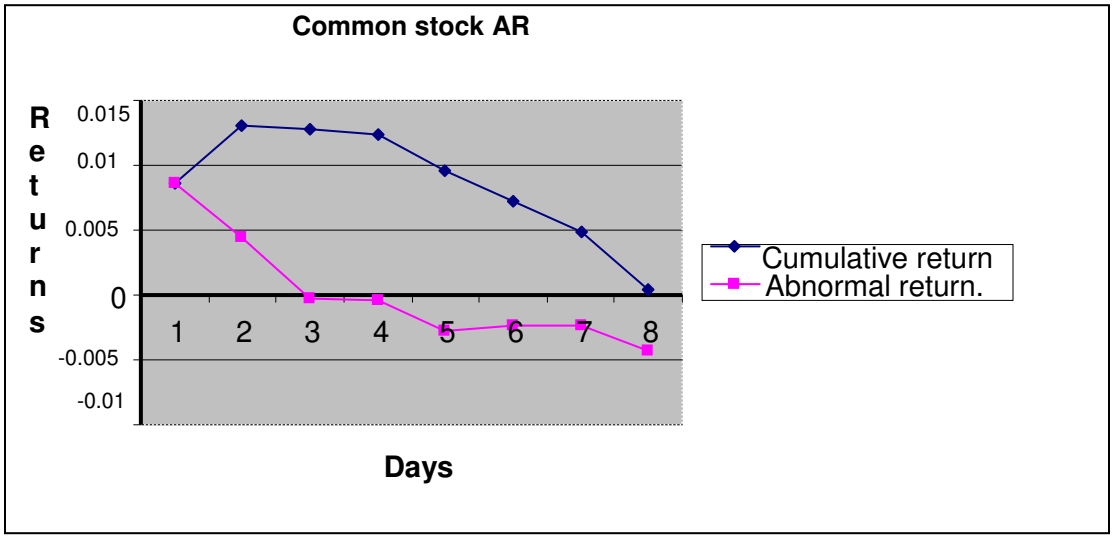

Table V:

Returns for SPAC unit holders around the merger announcement day

Panel A presents abnormal returns on the announcement day calculated by the market model. In Panel B cumulative abnormal returns up to seven days are reported. Panel C is a graphical presentation of results obtained in Panels A and B. (N= 48 , * represent stat. significance at 10%, ** at 5% and *** at 1%)

Panel A: SPAC Units Returns around the merger announcement date:

Announcement date unit abnormal returns:

Variable	T stat	Mean	Std.Dev	Min	Max
Return	(3.77)***	0.0201213	0.0369744	-0.0816062	0.1606154
Alpha	(-0.66)	-0.0061846	0.0646209	-0.4519244	0.0202665
Beta	(1.04)	0.2214427	1.4714179	-5.7847016	7.2536888
Abnormal return	(2.88)***	0.0242951	0.0584504	-0.0730680	0.3506924

Panel B: Cumulative abnormal returns (1, 2, 3, 4, 5, 6 and 7 days after announcement date)

Variable	T stat	Mean	Std.Dev	Min	Max
Car 1	(1.96)**	0.0343930	0.1214649	-0.1104080	0.8063082
Car 2	(1.55)*	0.0456363	0.2035615	-0.1708533	1.3982602
Car 3	(1.24)	0.0472249	0.2629527	-0.2089938	1.8181650
Car 4	(1.18)	0.0544885	0.3196409	-0.2418225	2.2132872
Car 5	(1.04)	0.0589535	0.3926259	-0.1794673	2.7294429
Car 6	(1.00)	0.0658968	0.4531131	-0.2005421	3.1477479
Car 7	(1.05)	0.0788217	0.5188870	-0.1777621	3.6114892

Panel C: Graphical representation of announcement and cumulative returns to unit holders

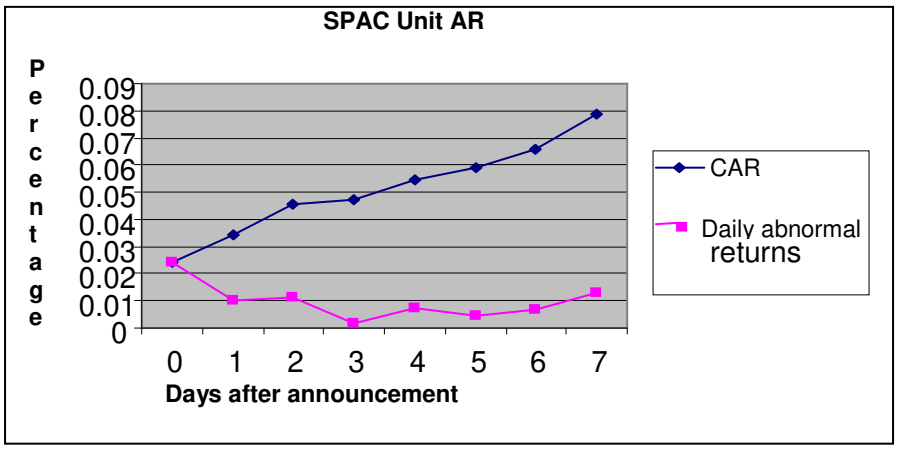

Table VI:
Returns for SPAC warrant holders around the merger announcement

Panel A presents abnormal returns on the announcement day calculated by the market model. In Panel B cumulative abnormal returns up to seven days are reported. Panel C is graphical presentation of the results obtained in Panels A and B. (N= 24 , * represent stat. significance at 10%, ** at 5% and *** at 1%)

Panel A: SPAC Warrants Returns around the merger announcement date:

Announcement date unit abnormal returns:

Variable	T stat	Mean	Std.Dev	Min	Max
Return	(3.04)***	0.1235652	0.1988161	-0.1304348	0.6721311
Alpha	(0.94)	0.0027198	0.0141125	-0.0151523	0.0553368
Beta	(1.81)**	1.5358577	4.1435663	-1.2398772	15.8324139
Abnormal return	(2.54)***	0.1049899	0.2025111	-0.1203337	0.6824944

Panel B: Cumulative abnormal returns (1, 2, 3,4,5,6 and 7 days after announcement date)

Variable	T stat	Mean	Std.Dev	Min	Max
Car 1	(2.11)**	0.1539946	0.3590699	-0.7523790	0.9322721
Car 2	(1.33)*	0.0983182	0.3614209	-0.7523790	0.9258369
Car 3	(1.21)	0.0866005	0.3478715	-0.4115571	0.9321125
Car 4	(1.01)	0.0795737	0.3825961	-0.4882695	0.8281739
Car 5	(0.79)	0.0604376	0.3701326	-0.4652856	0.8281739
Car 6	(0.93)	0.0629939	0.3292217	-0.4698862	0.7278656
Car 7	(0.80)	0.0660083	0.4048455	-0.5371966	0.9335521

Panel C: Graphical representation of returns to warrant holders :

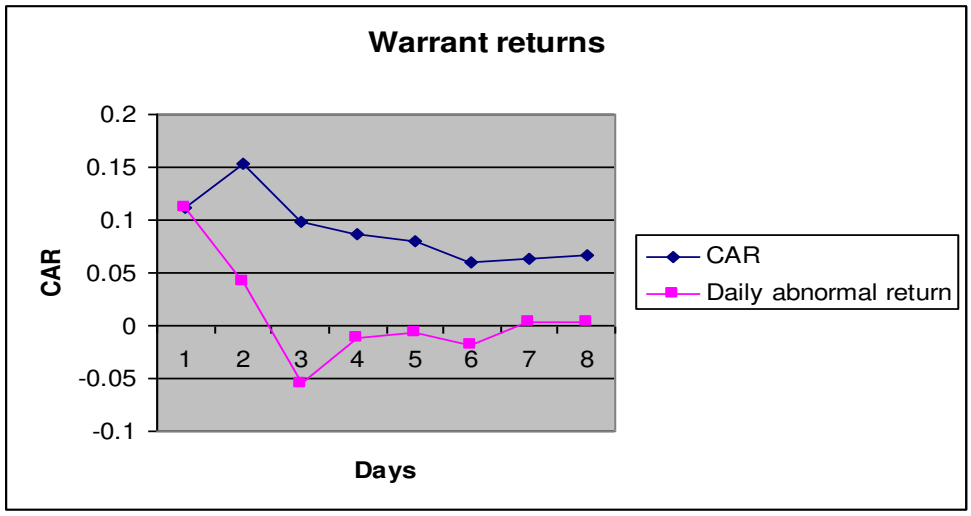

Table VII:

Performance of SPAC securities around merger date

Panel A presents abnormal returns on the merger day calculated by the market model. Panel B presents abnormal returns for warrant holders on the merger date. (N= 48 , * represent stat. significance at 10%, ** at 5% and *** at 1%)

Panel A: SPAC Stock Returns at the date of merger

Merger date stock abnormal returns:

Variable	T stat	Mean	Std.Dev	Min	Max
Return	(-2.19)**	-0.0348308	0.1097691	-0.6919786	0.0603670
Alpha	(2.17)**	0.0015059	0.0047870	-0.0055783	0.0309012
Beta	(4.40)***	0.2217319	0.3483728	-0.4435740	1.1373777
Abnormal return	(-2.34)**	-0.0381030	0.1126252	-0.7141556	0.0593627

Cumulative abnormal returns (1, 2, 3,4,5,6 and 7 days after merger date)

Variable	T stat	Mean	Std.Dev	Min	Max
Car 1	(-2.78)***	-0.0535390	0.1336298	-0.7222378	0.1062514
Car 2	(-3.02)***	-0.0601064	0.1377891	-0.7263495	0.1045851
Car 3	(-2.89)***	-0.0626848	0.1499950	-0.8128626	0.1146014
Car 4	(-3.30)***	-0.0639884	0.1341806	-0.7339440	0.1150086
Car 5	(-3.19)***	-0.0700704	0.1521769	-0.8423757	0.1337219
Car 6	(-3.54)***	-0.0868577	0.1697321	-0.8993613	0.1267303
Car 7	(-3.49)***	-0.0959149	0.1899362	-0.9794888	0.1143827

Panel B: Merger date warrant abnormal returns (N= 8 , * represent stat. significance at 10%, ** at 5% and *** at 1%)

Merger date unit abnormal returns:

Variable	T stat	Mean	Std.Dev	Min	Max
Return	(1.75)*	0.0610620	0.0983477	-0.0655738	0.1941392
Alpha	(0.62)	0.0012992	0.0058442	-0.0064705	0.0103035
Beta	(1.97)**	0.5931283	0.8500657	-0.5900071	2.0736777
Abnormal return	(1.59)*	0.0476056	0.0842983	-0.0601677	0.1413110

Panel C: Cumulative unit abnormal returns (1, 2, 3,4,5,6 and 7 days after merger date) (N= 23 , * represent stat. significance at 10%, ** at 5% and *** at 1%)

Variable	T stat	Mean	Std.Dev	Min	Max
Car 1	(1.63)*	0.0986542	0.1701561	-0.0774148	0.3532671
Car 2	(1.18)	0.0825682	0.1975507	-0.0724781	0.4477721
Car 3	(1.23)	0.0943907	0.2157216	-0.0724667	0.4496380
Car 4	(1.17)	0.1128411	0.2714822	-0.0609575	0.6142525
Car 5	(1.15)	0.1263310	0.3102446	-0.0726088	0.7603781
Car 6	(1.00)	0.1004079	0.2814196	-0.0805649	0.7101556
Car 7	(0.68)	0.0736834	0.3047707	-0.2464669	0.6741769

Table VIII:

Overall performance of SPACs during the 2003-2009 period

Panel A: Buy and hold unit returns for companies that completed merger:

Variable	Number	Mean	Std. Deviation	Minimum	Maximum
Unit Offer Price	66	7.33	1.31	6.00	10.10
Warrants Per Unit	66	1.46	0.50	1.00	2.00
Warrant exerc. price	66	5.48	0.74	5.00	8.00
Gross proceeds in mill	66	98875.63	106313.11	7878.00	528000.00
Original Unit offer price	66	7.7	1.54	6.00	10.10
Percentage in escrow	66	0.93	0.05	0.85	1.00
StockPrice 06_23_2009	66	2.94	2.42	0.00	8.34
Unit price 06_23_2009	66	4.84	5.55	0.00	25.02
WarrantPrice 06_03_2009	66	0.19	0.45	0.00	2.75
Return on Unit (buy and hold)	66	-0.28***	0.91	-1.00	3.17

Panel B: Characteristics and buy and hold unit returns for SPACs that announced a merger

Variable	Number	Mean	Std. Deviation	Minimum	Maximum
Unit Offer Price	16	8.50	1.36	6.00	10.00
Warrants Per Unit	16	1.12	0.34	1.00	2.00
Warrant exerc. price	16	6.04	1.10	4.50	7.50
Gross proceeds in mill	16	177.09	162.14	27.98	552.00
Percentage in escrow	16	0.98	0.01	0.94	1.03
StockPrice 06_23_2009	16	8.10	1.42	5.55	9.79
Unit price 06_23_2009	16	9.37	3.49	5.80	20.28
WarrantPrice 06_03_2009	16	0.27	0.22	0.01	0.65
Return on Unit (buy and hold)	16	0.09	0.32	-0.10	1.02

Panel C: Characteristics and buy and hold unit returns for SPACs that did not announce a merger

Variable	Number	Mean	Std. Deviation	Minimum	Maximum
Unit Offer Price	23	9.21	0.99	8.00	10.00
Warrants Per Unit	23	0.97	0.10	0.50	1.00
Warrant exerc. price	23	6.44	1.01	5.00	7.50
Gross proceeds in mill	23	293.65	286.91	33.91	103.50
Percentage in escrow	23	0.98	0.01	0.96	1.00
StockPrice 06_23_2009	23	8.83	0.98	7.25	9.77
Unit price 06_23_2009	23	8.59	2.12	0.00	10.00
WarrantPrice 06_03_2009	23	0.11	0.07	0.05	0.40
Return on Unit (buy and hold)	23	-0.082**	0.20	-1.00	100

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