Institutional changes of SPACs

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Abstract

In this study we document the changes of corporate design of modern Specified Purpose Acquisition Companies (SPACs) from 2003 to 2012. We assign the impact on changes of SPACs to each of the three groups of stakeholders: founders, investors and underwriters and test whether institutional characteristics of SPACs determine the success of their merger outcomes. We document that SPACs significantly redesigned its structure in the period under observation. Additionally, the probability of the merger for SPACs is increasing if they are able to; announce the deal soon after the IPO, focus that deal on China and have their IPO underwritten by EarlyBirdCapital

1. Introduction

Although Specified Purpose Acquisition Companies (SPACs) have been in the existence in different forms in the U.S capital markets since early 1920s,[1] their corporate structure became intensely debated only recently. A major trigger for the increased interest in SPACs is the innovation in their structure as the response to regulation from the Security and Exchange Commission (SEC) of the speculative blank check market in the late 1990s.[2] EarlyBirdCapital, a midsize investment bank underwrote a successful initial public offering (IPO) for Millstream Acquisition Corporation in August 2003, complying with all blank check market regulation. The event triggered intense activity in the capital markets with SPACs representing 23% of IPOs in 2007 and 34% in 2008 (Ritter 2008).[3]

After few papers in the legal literature explained the characteristics of recent SPACs[4], Jog and Sun (2007) and Boyer and Baigent (2008) were the first to vouch for the more intense research on SPACs in financial literature. Jog and Sun (2007) examine characteristics of SPACs and refer to the SEC's definition as "a blank check company is a development stage company that has no specific business plan, or purpose, or has indicated its business plan is to engage in a merger or acquisition with an unidentified company, other entity, or person." A SPAC is created to pool funds in order to finance a merger or acquisition opportunity within a set time-frame. The opportunity usually has yet to be identified.[5]

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[1] "The American "investment" trusts functioned as blind speculative pools, administered in many cases by men of reputation and ability who were carried away by the universal madness. These new "creations" played a double role in intensifying the speculative orgy, for they were themselves both active speculators and active media of speculation." ,Graham and Dodd (1934).

[2] In late 1990s the Security and Exchange Commission revoked licensees to more than 10 blank check market promoters at the time which lead to complete cease of their market.

[3] Renaissance Capital confirms the percentage for 2007 and reports that SPACs were 35% of IPO activity in 2008

[4] Hale (2007), Heyman (2007), Reimer (2007), Sjostrom (2007).

[5] http://www.sec.gov/answers/blankcheck.htm .

A SPAC is a clean shell company[6] that acquires public status through the unit IPO 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 with a credible financial institution, and are kept there until SPAC founders are able to close a deal with 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. Units issued by SPACs are immediately tradable, while trading with warrants and shares starts after the date by which underwriter exercise overallotment rights.[7] On average, trading of warrants and common shares starts four weeks after the IPO. SPACs used to be traded on AMEX and OTC Bulletin Board. However, since 2008, SPAC shares are listed on NYSE and NASDAQ. Three groups of stakeholders have primary incentive in the success of SPACs and the execution of a merger as the final outcome, namely: SPAC founders, SPAC underwriters, and SPAC investors.

Within a short period of time, many studies on SPACs developed.[8] Due to the increase in the volume and occurrence of SPACs in capital markets, Lewellen (2009) called for the recognition of SPACs as a new class of financial asset. However, concurrently with Lewellen's suggestion, the market for SPACs almost ceased with only one SPAC conducting the initial public offering in 2009. It took more than a year for SPACs to revive. In May 2010, 57th Street Acquisition Company went public as a blank check SPAC company, this time having vastly redesigned corporate structure.

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[6] A shell company as a company± that is now or at any time previously has 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.
http://www.rule144solution.com/ShellCompany.asp .

[7] The sale of shares by the underwriters in excess of those shares initially available.

[8] Berger (2008), Hale (2007), Lewellen (2009), Floros and Travis (2011).

We document changes in the corporate design of SPACs and explain their evolution. Additionally, we examine the impact of SPAC stakeholders on the success of merger. None of these issues are fully explained in the current literature on SPACs.

The current literature on SPACs attempt to analyze various aspects such as; the institutional structure, the incentives of major stakeholders, the performance of issued securities and the factors determining successful mergers executed by SPACs.

Studies on the institutional structure and design of SPAC securities refer to Schultz (1993), Chemmanur and Fulghieri (1997) and Garner and Marshal (2007). Schultz (1993) models why companies use units, a bundle of common stock and warrants, during the initial public offering. And why they commit to issue more stocks in a future date at the warrant's exercise price. He finds that the major obstacles are: their small size, low earnings and low value of assets. Additionally, he sees units as the solution for the agency-cost problem resulting from the free cash flow awarded to managers at the time of the IPO.

Chemmanur and Fulghieri (1997) maintain that unit IPO solves the information asymmetry problems and enables companies that are considered risky by outsiders, to signal their true value. Garner and Marshal (2007) empirically test the predictions of Schultz (1993) and Chemmanur and Fulghieri (1997). They find that risky firms assign a higher proportion of firm value to the warrants at the time of the IPO and increase the underpricing.

Boyer and Baigent (2007) and Jog and Sun (2007) confirm the prediction from the baseline papers: SPACs' initial public offerings are relatively small in size, averaging less than $100 million. They also report that SPACs have a very low value of assets and earnings. Contrary to Garner and Marshal (2007), both Boyer and Baigent (2008) and Jog and Sun (2007)

find that SPAC units do not experience any significant underpricing.[9] Chakraborty et al. (2011) provide a theoretical explanation for the possibility for the lack of the underpricing of unit IPOs. They find the optimal ratio of stocks and warrants in a unit.

Jog and Sun (2007) and Thompson (2011) examine the incentives of the three major stakeholders group of SPACs: founders, underwriters and investors. Jog and Sun report that for their sample of SPACs, covering the period from 2003 to 2006, managers of successful SPACs earned on average 19 times their initial investment. Hale (2007) and later Thompson (2011) report that on average underwriters receive compensation of around 7% of gross proceeds obtained at the offering. Lewellen (2009) and Thompson (2011) report that part of underwriters' compensation is deferred until consummation of the merger.

For its investors SPACs are essentially a risk-free note plus a call option[10] where the maturity of the note is usually two years. The options expiration date represents the end of the prespecified deal period where the option's strike price is equal to the expected per-share trust amount at the expiration date. Performance of SPAC securities are examined in studies that mostly focus on the performance of common shares and do not perceive SPACs as a risk-free debt plus a call option.[11]

Jog and Sun (2007) report negative overall performance of around 22% to the investors holding common stock of SPACs. Similarly, Lewellen (2009) report a negative 2% monthly return. Tran (2010) focuses on post-merger announcement returns and reports a 1.7% monthly return to investors after the announcement date. Lakicevic and Vulanovic (2013), in addition to

[9] The finding that SPACs do not experience any underpricing is confirmed also in Lewellen (2009), Thompson (2010), Lakicevic and Vulanovic (2011) and Ignatyeva et al. (2012) using larger sample of SPACs both in the U.S and European markets.

[10] At the early years of SPACs entrance to the market the unit would consist of two warrants and one share.

[11] Major obstacle for the analysis of the complete financial structure of SPAC is the lack in the trading data on warrants.

the analysis of SPACs' common shares, analyze post-announcement returns of SPACs' units warrants. They report negative share performance after the announcement for common stock, but positive returns for holders of units and holders of warrants. Ignatyeva et al. (2012) report performance of 2.5% after the announcement of the merger, and attribute it to returns on the risk-free note rather than a signal of potential quality of the SPAC. Datar et al. (2012), states that operational performance of SPAC acquired firms are significantly inferior to their industry peers and to contemporaneous IPO firms. They report that after the merger, SPAC acquired companies have higher leverage, are smaller in size, have lower investment levels, and have lower growth opportunities than the firms that conduct a conventional IPO. While comparing SPACs' performances with the sample of similar IPOs, they report negative returns in the long term for both groups and underperformance of SPACs relative to the peer IPO's. In general, they recommend that investors stay away from SPACs. Rodrigues and Stegemoller (2012) report that SPACs do not exhibit IPO underpricing, with initial returns near zero and gross spreads similar to the traditional IPOs. Howe and O'Brien (2012) indicate that neither managerial nor institutional ownership are associated with the performance of SPAC securities.

Jenkinson and Sousa (2009) study the characteristics and performances of SPACs that successfully conducted a merger, and report that half of the deals were value destroyers. Tran (2010) using a sample from 2003 to 2008, reports that SPACs are less likely than other comparable IPOs to execute merger combination, and that SPACs tend to focus on acquisitions of private companies as their primary targets. He also reports that merger success is positively related to the involvement of institutions that want to invest in SPACs both pre-merger and post-merger. Lakicevic and Vulanovic (2011) examine the major merger determinants and find a positive impact on SPACs' mergers by underwriters who specialized in the SPAC market, such

as EarlyBirdCapital. They also find that the merger is more likely if a larger proportion of the money raised in the IPO is deposited in a trust fund.

SPACs today are vastly different corporate structure than when they entered capital markets in 2003. The changes are partially attributed to market factors, and to the impact of mainly institutional investors (Lewellen (2009), Tran (2010), Vulanovic (2010), Cumming et al. (2012)). Changes are also attributed to the relative underperformance of SPACs' securities after the merger as reported in Jenkinson and Sousa (2009) and Datar et al. (2012). Rodrigues and Stegemoller (2011) examine the changes in voting mechanisms for mergers and report significant changes in the SPAC structure where recent SPACs require significantly lower number of shareholders to approve a merger. Mitchel and Pulvino (2012) recognize the impact of the financial crisis on SPACs, because hedge funds are affected by the withdrawal of capital from their own investors. They also report that even if some SPACs kept their trust funds in the accounts of Lehman Brothers, the trusts were unaffected by the crisis and the failure of Lehman Brothers. Mitchel and Pulvino (2012) reports that investors buying shares that trade below net-asset value have the incentive to reject the deal. Some investors are possibly interested only in short term profits and not necessarily in the success of the SPAC. Vulanovic (2010) finds that hedge funds earn a 33% annual return by selling the warrant after the IPO, and waiting for face value payment at liquidation.[12] The returns for leveraged investors are even higher if SPAC managers purchase additional shares before the merger in order to enhance an approval of an acquisition.[13]

[12] The strategy of selling warrant and waiting for redemption at liquidation date is known as "yield game."

[13] In an attempt to proceed with the merger combination, SPAC promoters in their proxy statements before vote offer this kind of advice "Prior to exercising conversion rights, shareholders should verify the market price of common stock, as they may receive higher proceeds from the sale of their common stock in the public market than from exercising their conversion rights."

The paper proceeds as follows: Section two presents the data; section three explains institutional characteristics of SPACs in the period 2003 until 2012; section four reports the empirical tests; and section five concludes.

2. Data

The data comes from various sources. The majority of the data on the institutional characteristics of SPACs are from SEC website and the EDGAR database. SPACs are legally obliged to report to the SEC all issuance activities and any major corporate changes. Additionally, they are required to update the SEC with financial statements on a regular basis. We hand collect data on important characteristics of SPACs from their initial registration S-1 forms and update the data with information reported before the IPO event in the final prospectuses. The information from the SEC is summarized and represents our initial data. Furthermore, we cross check the data with updated public information about SPACs published by Morgan Joseph.[14] In case of discrepancy, we recheck the original filings with the SEC.

We collect data on merger dates and cross-check merger dates reported to the SEC and Morgan Joseph with the reports from major business news providers, such as Yahoo and Bloomberg. Renaissance Capital was used as the source for annual volumes and pricing of the IPOs from 2003 to 2012.[15]

To conduct the tests on merger outcomes for SPACs we collect data on the Volatility Index (VIX) from Chicago Board Option Exchange for all dates from August 2003 until August 2012.[16] We collect daily data from August 2003 until August 2012 on performance of Russell

[14] http://mjta.com/i/SPACMarketUpdate.pdf
[15] http://www.renaissancecapital.com/IPOHome/Press/IPOPricings.aspx
[16] http://www.cboe.com/micro/VIX/vixintro.aspx

2000 index from their website.[17] Finally we collect the daily news-based Economic Policy Uncertainty Index for the whole period under observation.[18]

The sample represents the whole population of SPACs that conducted the IPO between August 2003 when the Millstream Acquisition SPAC conducted the IPO, and August 2012. It includes all 184 SPACs that went public since 2003. We divide the sample into three subgroups based on the timing of SPAC's IPO. Although it seems that the division is arbitrary we assert that the division is due to the changes in both SPAC environment and the changes in the structure of SPACs. First subsample includes the period between August 2003 and December 2006. This subsample covers the period examined in earliest studies of SPACs by Boyer and Baigent (2008) and Jog and Sun (2007). The second subsample includes SPACs that conducted the IPO between January 2007 and December 2008. It is characterized by an increased interest in SPACs by the large financial houses such as Citibank, Merrill Lynch, Bank of America and similar institutions. The third subsample includes SPACs that executed their IPO after January 2009.

3. Characteristics of SPACs

This section presents the institutional characteristics and changes of the SPAC from 2003 to 2012. Panel A in Table 1, reports the development of the SPAC market from 2003 until 2012 for three major outcomes of SPAC: merged, liquidated and seeking for acquisition. The second column reports that 184 SPACs successfully executed the IPO. Out of these 184 SPACs, 98 merged within two-year period. In total, 65 SPACs have been liquidated between 2003 and 2012, while 21 SPACs are still in the process of seeking for a merger opportunity. Comparing the

[17] http://www.russell.com/indexes/data/fact_sheets/us/russell_2000_index.asp
[18] http://www.policyuncertainty.com/us_daily.html

activity over the three subsamples, both by volume and by percentage, shows that the first sub-period was the most successful for SPACs with 53 (49%) of them being able to conclude the merger. Panel B of Table 1, reports annual SPACs' activity. Judging by the absolute number of mergers by SPACs, the most successful year was 2007. SPACs that executed the IPO's in years 2004 and 2005 were also very successful. Comparing SPACs activity relative to the overall activity in the market for security issuance, the most successful year for SPACs was in 2008, when they constituted 35% of the total IPO market.

3.1 SPACs' population characteristics

Characteristics for the population of SPACs are reported in Table 2, Panel A. We report information on a range of institutional variables that determine SPAC at its issuance and help us to understand them better. First, it is used to describe SPACs and their dynamic corporate design. Second, it describes relevant information on the determinants that potentially affect the success of the merger for SPACs. We have complete data on all 184 companies for the following characteristics: number of founding members of SPAC and their age; the amount of underwriters total compensation charged to SPAC founders as well as the amounts collected at the IPO and deferred until the merger combination; gross proceeds from the unit IPO; amount of proceeds deposited in the trust account after the IPO and kept there until the merger or liquidation; warrant exercise price as determined in the pre-IPO prospectus; the number of warrants issued per unit; the offering price of the unit at the IPO date; the number of underwriters in the syndicate; and the quality of the lead underwriter and finally the classification for the market sentiment. We also

report on threshold level of investors needed to disapprove a merger and thus cause liquidation of the SPAC after two years.

SPAC managers or founders are entrepreneurs with different background who with initial investment of $ 25000 register the clean shell company and take it to the IPO. Thompson (2011) in detail reports the characteristics of SPAC sponsors and our statistics is similar to one reported there. Although we use almost all SPAC founders' characteristics reported in Thompson (2011) in later part of our paper, here we report on two characteristics: the number of SPAC founders and their age. On average 5.91 entrepreneurs found the SPAC and they are 50.59 years old at the time of filing.

On average, each unit of IPO by SPACs raised close to $128 million, totaling around $23.5 billion in IPO proceeds from 2003 to 2012. The smallest SPAC in the sample collected $ 7.88 million and the largest $1.035 billion. Overall, 96.5% of the money obtained during the IPO process is deposited in the trust accounts with financial institution in good standing. This process of depositing money in the trust account is important since it provides a guarantee that investors in the SPAC would be able to redeem their shares at the pro rata value in case they disagree with a proposed merger combination. Furthermore, it represents commitment of SPAC managers to the deal since managers on average invest only $25,000 to form the SPAC and retain 20% of common shares after the IPO. The average price of a unit bundle across the sample is $8.08 with prices fairly standardized at $6, $8 and $10 respectively. An average unit consists of 1 common share and 1.3 warrants. Owners of SPAC warrants have the option to exercise them at $6.30 after a successful merger combination. On average, 3.46 underwriters are involved in the IPO of SPAC which is approximately 4 times lower than the number of underwriters in a syndicate for typical IPO (Corvin and Stultz, 2005). Underwriters across the sample charge SPACs 6.88% of

the gross proceeds for their services. On average 2.3 % of gross proceeds or approximately 33% of underwriters compensation is deferred until the SPAC merger outcome.

The threshold level represents the maximum percentage of SPAC shareholders that could redeem their shares before the merger is, on average 32.35%. The last institutional characteristics for which we have complete information is the amount of warrants purchased before the IPO by SPAC promoters. On average, they buy as a pre-commitment to the deal 2.44 million warrants.

3.2 SPACs' characteristics across samples

Comparing SPACs institutional characteristics across the sample, we notice changes in their structure over time.[19] The lowest number of SPAC founders, (5.42), was in the first period, while the highest number of SPAC founders, (6.33), was involved in the second period of observation. Their age across samples varies with 51.50 being the highest in second period.

SPAC size in the second period is 2.5 times and 2.7 times larger than the size in period one and three, respectively. Various factors may attribute to this difference in size of SPACs across the periods, and we believe that market conditions and the financial crisis had an impact. It was natural that in the period 2003-2006 SPACs were of the lower size since that was the time of their introduction to capital markets, inability to be listed in major exchanges and similar. The largest size of SPACs in the second period could represent increased market interest for the product and involvement of well known and established financial institutions as underwriters. The data on number of underwriters in IPO syndicate shows a reduction of number of underwriters in a syndicate over time and possibly points towards greater specialization of underwriters. Similarly like for the number of underwriters we report monotonic decrease in the

[19] Appendix B has graphs on relevant characteristics and their changes over time.

total amount of underwriters compensation paid by SPACs,(7.43% vs. 6.94% vs. 4.73%). While total underwriters compensation is declining from period to period, the deferred part of compensation is increasing from 1.25% of gross proceeds in the first period up to 3.29% of gross proceeds in second period. While the deferred part of compensation in the third period is in the middle by the amount of gross proceeds it is the largest as the percentage of compensation deferred out of total compensation (18.55% vs. 47.30% vs. 47.77%). This information leads to conclusion that underwriters were aligning themselves more with merger outcomes in period after 2006 than before.

Panel B of Table 2 reports that the proceeds deposited in the trust accounts are increasing over time from 93% in the first, to 101% in the third period . However, the threshold level that determines the percentage of investors that could block a merger increases dramatically from the first to the third period (20.47% vs. 84.24%). The increase in threshold level and change in voting rights is also reported in Rodrigues and Stegemoller (2011). This reported increase in threshold level is the response of SPAC founders to the activism of institutional investors reported in previous studies (Lewellen (2009), Tran (2010), Vulanovic (2010), Cumming et al. (2012)). The characteristics of a unit as a security changed significantly. In 2003 to 2006, the average unit was packaged as 1 share and 1.62 warrants, in the period between 2009 and 2012 it consisted of 1 share and 0.97 warrants. In addition to the decrease in the number of warrants packaged in one unit over time, SPACs also significantly increased the exercise price for warrants from $5.28 in the first to $ 10.12 in the third period. Although the absolute size of SPACs is the lowest in the third period, the underwriters and managers sell the units at the highest nominal price in the third period, ($7.06 vs. $8.63 vs. $9.57). SPAC founders

monotonically increased their commitment to the inside warrant purchases from period to period (0.71 million vs. 3.40 million vs. 4.73 million) respectively.

4. Merger Determinants and Characteristics

4.1 Institutional Characteristics of SPACs that Merged

The merger is the ultimate reason of the existence of SPACs. Upon a merger, all vested parties experience could positive returns. If SPAC founders are not able to execute the merger before at the IPO determined date, they are required to return all proceeds kept in the trust accounts to its investors, and liquidate.

Table 3 reports the characteristics of SPACs that successfully executed business mergers for the full sample and compare them with the ones liquidated. This comparison is important because in our regression we only use the SPACs that merged and that were liquidated. On average, SPAC size of merged companies is $130 million, with SPACs from the 2007 to 2008 sub-period having almost 3 times larger size than SPACs from 2003 to 2006. As previously mentioned, successful SPACs entering the markets in 2003 to 2006 had the lowest amount of IPO proceeds deposited in the escrow accounts.

Panel A in Table 3, reports that merged SPACs are smaller in size than liquidated ones, $130.51 million compared with $141.55 million. Merged SPACs have lower amount of trust funds deposited in escrow accounts than liquidated SPACs, 0.95% and 0.97% respectively. Both the units and warrants of SPACs that merged are priced at the lower value than for liquidated SPACs. There is no difference among two groups for the number of underwriters, the threshold level and number of warrants purchased by SPAC managers before the IPO.

4.2 Merger Determinants

We evaluate whether important corporate determinants of SPACs impact the probability of merger. Thirty seven explanatory variables are used for evaluation and we discuss each of them as well as their expected impact on merger. Twelve of these variables are from fourteen variables reported on Table 2 and Table 3 and we exclude total underwriters compensation and underwriters allowance since we use the parts that make total compensation in our analysis.

The first set of defining characteristics of SPACs is one on SPAC founders. We reported previously the number of founders involved in SPAC ***(Found_number)*** and their average age. We expect that both of these variables would impact the probability of merger of the SPAC in a positive way. The more founders are involved in the SPAC it means that their collective knowledge would be beneficial in properly executing first the IPO and latter in finding of target company to merge with. Following the same logic we believe that the age of founders should have positive impact on merger. In addition to the above variables we construct four additional dummy variables that describe founders' characteristics. Looking in the final prospectuses before the IPO we read disclosed information on the founders' involvement in the blank check issuance prior 2003 or in their involvement in another SPAC and create dummy variable ***Found_SPACs***. If the SPAC founders were previously involved in blank check industry we code the information as 1 for particular SPAC and 0 otherwise. Our expectation is that the previous involvement in the blank check industry by SPAC founders may contribute to the increase in the probability of merger. In a similar manner we create three remaining dummy variables ***Found_PEVC***, ***Fund_Inst*** and ***Sadvisor***. The variable ***Found_PEVC*** discloses the prior involvement of SPAC founders in private equity and venture capital industry. Since SPACs can be considered financial innovation or new asset class and by some are recognized as venture capital companies we

believe that prior involvement in private equity and venture capital industry increases the chance for successful merger in the end. We have same prediction for ***Fund_Inst*** which represents involvement or backing of an existent institution in founding of SPACs. Finally we believe that SPACs are more likely to merge if their founders in the process of merger seeking include special advisors. The variable ***Sadvisor*** represents their involvement.

Underwriters have an important role in the success of SPAC. They work with SPAC founders and structure their IPO's. After the IPO they are market makers for SPAC securities. Millstream Acquisition Company, the first SPAC that went public in 2003, is considered an innovation of its underwriter an investment bank EarlyBirdCapital. Vulanovic (2010) reports that six underwriters participated in at least 20% of SPAC deals.[20] After the first SPAC successfully went public, EarlyBirdCapital participated in more than forty-five IPO's, either as the lead underwriter or as a member of the underwriting syndicate. Lakicevic and Vulanovic (2011) report that involvement of EarlyBirdCapital in the underwriting of SPACs increases the probability of the merger. For that reason we create dummy variable ***EBCAP*** that reports the involvement of EarlyBirdCapital as the lead underwriter and believe that their participation would positively impact merger outcomes. Following the same logic we create two more variables to report the involvement of investment banks Morgan Joseph and Citigroup as underwriters and name them ***Mjoseph*** and ***Citi***.

Lakicevic and Vulanovic (2013) report that underwriters charge a typical fee of 7% of gross proceeds, but on average defer half of the fee, or 3.4% of gross proceeds, until the merger is completed. This behavior aligns the incentives of underwriters with the SPAC founders with

[20] Midsize investment banks Maxim Group, Ladenburg Thalmann, Early Bird Capital, Legend Merchant, Gunn Allen Financial and I-bankers were the members of underwriting syndicate for more than 20% of SPACs each. Morgan Joseph and Citibank were lead underwriters in approximately 16 and 18 SPACs respectively.

respect to the success of the merger. Corvin and Stultz (2005) find that the single strongest determinant of whether an underwriter is included in a syndicate is participation in recent syndicates led by the same book manager. They argue that the importance of the relationships between the issuer and underwriters suggests that syndicate members are expected to play an active role in selling IPOs, determining IPO value, or providing aftermarket services. Pichler and Wilhelm (2001) observe similar behavior where syndicate members are required to provide an effort that is difficult to observe. Four underwriter related variables are used in our tests. The first underwriters' related variable is the percentage of gross proceeds (***UNDgrosspr***) that they collect at the time of the IPO. We expect that the decrease in underwriters' compensation would be beneficial for SPAC merger outcomes. The second is the amount of deferred compensation ***(Udef)*** as a percentage of gross proceeds. Here we expect that the increase in the deferred part of compensation lead to the increase in the probability of merger because underwriters commit to collect this compensation conditional on merger outcome. The third variable is the number of underwriters in the syndicate ***(Undn)***. The expectation on the expected impact of number of underwriters in syndicate is unclear. The fourth variable that defines underwriters and potentially impacts merger outcomes is the quality of the lead underwriter in the SPAC (**Und_Q**). We construct this underwriter's quality variable as a dummy, a value of 1 is assigned if the underwriter is a lesser known investment bank that participated in the SPAC market since the beginning such as: EarlyBirdCapital, Morgan Joseph , Maxim Group, Gun Allen etc. The value of 0 is assigned to the SPAC if the lead underwriter is well known financial institution as Citigroup, Bank of America, Meryl Lynch, Lazard and similar. We expect that the involvement of less known underwriters who were longer involved in the SPAC underwriting has positive impact on merger.

SPAC mergers until 2010 and new tender offer introduced by 57th Street Acquisition Company were approved by the majority of shareholders in the meeting. In addition to the approval by majority of shareholders, SPAC managers and underwriters, in order to proceed with that merger, had to secure that only certain number of shareholders redeems their shares before the merger. In the first sub period for all SPACs the threshold was 20% of shareholders. This threshold rule was an important incentive for hedge funds and institutional investors to participate in the SPAC by playing a "yield game" and by focusing on short term returns.[21] Appendix B graphically depicts the changes in threshold level over time and shows relatively large increases. It is expected that higher threshold improves the probability of a merger.

Two important variables describe the commitment of SPAC promoters to the deal. One variable is the amount of proceeds in the trust fund. The second is the number of warrants that SPAC promoters buy and deposit before the IPO into trust account (***Proceedsintrust***). SPAC promoters with initial investments of $25,000, purchase approximately 20% equity in a SPAC. As the result of these characteristics, every new SPAC investor experiences significant dilution. Miller (2008) reports of "warrant overhang" and explains how it leads to high dilution. He proposes that in the future, SPACs decrease the number of warrants in a unit. Lakicevic and Vulanovic (2013) report approximately 30% dilution if no conversion rights are exercised. If the conversion threshold goes up to 20%, the dilution increases to more than 40%. Contributions of managers by purchasing warrants lower this dilution effect and we expect positive impact of the variable on the merger outcomes. We are uncertain for the effect of the percentage deposited in the trust.

[21] It is well known attempt of Goldman Sachs in 2008[21]to create a "Super SPAC" that would focus on long term investors and offer them only ½ of a warrant in unit. Super SPAC did not happen but underwriters and SPAC founder increased the threshold number by the time.

The size of a SPAC ***(Grossproceeds)*** is another determinant that potentially explains the success of a merger. Our summary statistics showed that the size varies from period to period and most likely corresponds with the state of the financial marker. We do not have clear expectation on the size effect. Although it seems that SPAC as a close to a 100% cash entity should benefit from its size, it is unknown what the demand is. Additional demand factors could play a role. Following the same reasoning, we do not have clear expectation about the impact of unit IPO price on the merger.

Given the dilution effects and warrant overhang, it is expected that the decrease in the number of warrants per unit ***(Warrantsperunit)*** would be beneficial for SPAC. We are uncertain what effect warrants exercise price could have.

To account for the dynamic in financial markets and environment surrounding SPACs' limited life after the IPO we use variables widely discussed in finance and economics literature that potentially capture these changes and potentially impact merger outcomes. They variables are named: ***IPO_Hot***; ***VIX***, ***Russel_2000***, ***Russel_Ann***, ***Ecindex*** ***Confid_Exp*** and ***AnnDays_IPO***. We create dummy variable for the state of the IPO market (***IPO_Hot)*** , coding it 1 for the years when the IPO activity is above the average and 0 otherwise. By definition SPACs and other companies are competitors in the IPO market and the higher interest in other companies limit the ability of SPACs to raise capital. But it is possible that investor demand increases during "hot " years, enough to both increase the interest in SPACs and other companies. Therefore we do not have clear expectations of the impact on SPAC merger of this variable. To account for the dynamics of financial markets as a predictive variable we use Volatility Index (***VIX***) created by Chicago Board Option Exchange. SPACs by its structure keep all the proceedings in the trust account with credible financial institutions and are prone to the

immediate negative consequences of changes in the market. Given that volatility in the markets may lead to more willingness of investors to invest in SPAC and potentially higher interest for successful merger outcome.

We use ***Russel_2000*** and ***Russel_Ann*** with the idea to capture state of the market for small stocks in size similar to SPACs , following the approach in the SPAC literature to use Russel 2000 index as a benchmark as in Boyer and Baigent (2007) and Jog and Sun (2007). The variable ***Russel_2000*** is created by inputting the daily values of the Russel 2000 index for the dates that SPACs did their IPO and ***Russel_Ann*** is created by inputting values of the Russel 2000 index for the days when SPACs announced that they found company to merge with. To gauge market sentiment in addition to the above market variables we use Economic Policy Uncertainty Index recorded for each SPAC at the date of the IPO and at the date of the merger announcement and call the variables ***Ecindex*** and ***Confid_Exp*** respectively.The Economic Policy Uncertainty Index is constructed weighting the sentiment in the newspaper reporting on economic activities in the U.S in Baker et. al. (2012). We do not have clear expectations of the impact of these two variables on the merger outcome. Final variable in this group is the ***AnnDays_IPO*** which simply measures the time between the IPO and the announcement date. The longer the time between the IPO and announcement day is the shorter is the time for SPAC to conduct the merger in the allowed timeframe. Given this we expect negative impact of this variable on merger outcomes.

Finally, we construct the set of variables that define the nature of the SPAC and their merger focus. Variable ***doubleunit*** is a dummy with value of 1 if at the IPO two types of units are issued. The rest of our dummy variables define the focus of SPAC in general, and than in the sense of geography or particular industry. Almost a third of SPACs in their final prospectuses

before the IPO do not express any particular industry, market or country where they seek to find target to merge. We create variable ***focus*** and code it as 1 if SPACs outline their focus toward industry, market or country. Possibly the ability to outline the focus of their merger will increase the chances to execute one. We create four variables based on the geographic focus of SPACs for the four most frequently targets countries outside U.S . They are ***China, Israel, Greece and India***. In a similar fashion we create variables with the focus on either private equity (***PEtarget***) or health sector (***HCtarg***) in the U.S. For both of these we expect positive impact on the merger probability.

Finally to take into consideration that there are few SPACs that are outliers by size in the sample we create dummy variable ***Sizedummy*** to take that in account.

4.3 Regression Analysis and Results

We use logistic regression to determine the impact of SPAC characteristics on merger. The sample includes 163 companies with complete data points on all thirty seven possible merger determinants. We exclude from the population of 184 SPACs, 21 SPACs with unresolved corporate status at the time of final observation of the sample. We include seven SPACs that executed their IPO by issuing units with dual class shares, contrary to Cumming et al. (2012). The reason for their inclusion is that the gross proceeds raised by a second class of shares are negligible in comparison to the size of the IPO, and that all other characteristics of these 7 SPACs are identical as the rest of the SPACs. Our observed variable is "merged" and is coded as 1 if the SPAC successfully merged and 0 otherwise. The results are reported in Table 4.

The overall predictive power of the determinants of SPACs on merger is in line with results reported by Cumming et al. (2012). We discuss variables with statistically significant impact on the probability of merger outcome for SPACs.

The number of SPAC founders ***(Found_number)*** is positively impacting the probability of the merger outcomes. This is the expected the results in respect to our priors. The number of underwriters ***(Undn)*** has negative impact on the probability of the merger. The size has small positive impact on the merger outcome. ***VIX*** also had positive impact on the merger outcomes. ***Russel_2000*** has slightly negative impact. SPACS with focus on ***China*** are more likely to execute merger combination. The same is true for SPACs that in their prospectuses have outlined focus. In agreement with previous findings the involvement of Early Bird Capital ***(Ebcap)*** in the SPAC IPO process significantly increases the likelihood of the merger. Finally the further the announcement date is from the IPO date the lower is the chance of SPAC to successfully conduct the merger transaction. None of the remaining variables have statistically significant impact on the merger outcomes

5. Conclusions

We describe changes in the SPAC structure over time and document that in a relatively short time-frame they significantly redesigned their corporate structure by adjusting their size, the amount of the IPO proceeds deposited in the escrow accounts, the number of the warrants upfront purchased by founders and the percentage of deferred compensation awarded to the underwriters. All these changes are attempts by SPAC stakeholders to increase the likelihood of merger outcomes. When we test for the impact of these defining characteristics on the merger outcomes only some of them show statistically significant impact on merger. As a policy suggestion it pays off to have the IPO underwritten by EarlyBirdCapital have a focus and that focus be on China. Additionally it pays off to have larger team when entering SPACs market and to find the target as soon as possible.

Although this paper adds to the existing literature on SPACs by further examining the major determinants of SPAC mergers we call for additional empirical investigation.

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Table 1

Sample Statistics:

The table presents summary statistics for the sample period from August 2003 to June 2012. All Specified Purpose Acquisition Companies that conducted The Initial Public Offering in that period are classified into four subgroups depending on their corporate status on January 1st 2012. From the left to the right we report the number of SPACs that: completed the Initial Public Offering, the number of companies that completed merger, the number of companies that were liquidated and the number of companies that are seeking merger.

Panel A:

	IPO	Merged	% Merged	Liquidated	% Liquidated	Seeking	% Seeking
2003 - 2006	78	53	67.9%	25	32.1%	0	0.0%
2007 - 2008	83	43	51.8%	40	48.2%	0	0.0%
2009 - 2012	23	2	8.7%	0	0.0%	21	91.3%
Total	184	98	53.3%	65	35.3%	21	11.4%

Panel B:

Year	SPAC IPO's	Merger completed	Liquidated	Seeking merger	IPO market volume	SPACs as % of IPO's
2003	1	1	0	0	68	0.014
2004	12	10	2	0	216	0.053
2005	28	24	4	0	192	0.127
2006	37	18	19	0	196	0.159
2007	66	32	34	0	213	0.237
2008	17	11	6	0	31	0.354
2009	1	1	0	0	63	0.016
2010	7	1	0	6	154	0.043
2011	15	0	0	15	125	0.107
Total	184	98	65	21	1258	0.128

Table 2: Major Characteristics of SPACs for full sample and three subsamples

Variable	All SPACs				
	Obs	Mean	Std. D	Min	Max
Panel A: Full Sample					
Found_number	184	5.91	1.86	2.00	13.00
Found_age	184	50.69	6.90	4.00	63.75
UNDgrosspr	184	4.18	1.71	1.00	9.00
Undall	184	0.40	0.76	0.00	3.00
Udeff	184	2.30	1.53	0.00	5.40
UTOT	184	6.88	1.42	2.25	10.00
Undn	184	3.47	1.78	1.00	10.00
Thres	184	32.35	20.87	20.00	94.40
WI	184	2.44	2.81	0.00	15.60
Grossproceds	184	127.83	150.76	7.88	1035.00
Proceeds in trust	184	0.97	0.05	0.85	1.03
Warrant Strike Prc	184	6.30	1.90	3.00	12.00
Warrants per unit	184	1.30	0.47	0.50	2.00
Unit offer price	184	8.08	1.60	6.00	10.10

	Period 2003-2006					Period 2006-2008					Period 2009-2012				
Panel B: Subsamples	Obs	Mean	Std. D	Min	Max	Obs	Mean	Std. D	Min	Max	Obs	Mean	Std. D	Min	Max
Found_number	78	5.42	1.64	2.00	10.00	84	6.33	1.99	2.00	13.00	21	6.05	1.80	3.00	9.00
Found_age	78	49.72	7.90	4.00	63.50	84	51.50	5.57	37.00	63.75	21	51.11	7.71	31.33	63.50
UNDgrosspr	78	5.42	1.79	1.00	9.00	84	3.49	0.81	1.50	5.00	21	2.47	0.52	2.00	3.50
Undall	78	0.76	0.96	0.00	3.00	84	0.16	0.42	0.00	2.00	21	0.00	0.00	0.00	0.00
Udeff	78	1.25	1.38	0.00	5.40	84	3.29	0.93	0.00	5.00	21	2.26	1.41	0.00	4.50
UTOT	78	7.43	1.50	4.00	10.00	84	6.94	0.66	3.00	9.00	21	4.73	1.11	2.25	7.00
Undn	78	3.85	1.99	1.00	10.00	84	3.27	1.62	1.00	9.00	21	2.76	1.26	1.00	5.00
Thres	78	20.48	2.64	20.00	40.00	84	29.75	8.27	20.00	81.00	21	84.23	10.84	50.00	94.40
WI	78	0.71	1.23	0.00	5.50	84	3.50	3.15	0.00	15.60	21	4.59	1.90	1.50	8.00
Grossproceds	78	76.47	74.89	7.88	528.00	84	190.14	192.77	28.75	1035.00	21	72.83	46.16	18.98	189.93
Proceeds in trust	78	0.93	0.05	0.85	1.03	84	0.99	0.01	0.95	1.03	21	1.01	0.01	1.00	1.03
Warrant Strike Prc	78	5.29	0.70	3.00	8.00	84	6.26	1.14	4.50	11.50	21	10.00	2.49	5.00	12.00
Warrants per unit	78	1.63	0.49	1.00	2.00	84	1.08	0.29	0.50	2.00	21	0.98	0.11	0.50	1.00
Unit offer price	78	7.06	1.41	6.00	10.10	84	8.64	1.25	6.00	10.00	21	9.52	1.25	6.00	10.00

Table 3: Major Characteristics of SPACs: Merged vs. Liquidated and Merged for three subsamples

Variable	All Merged SPACs					All Liquidated SPACs				
	Obs	Mean	Std. D	Min	Max	Obs	Mean	Std. D	Min	Max
Panel A: Full Sample										
Found_number	98	5.85	1.97	2.00	13.00	65	5.95	1.74	2.00	10.00
Found_age	98	49.78	7.38	4.00	63.75	65	51.93	5.65	38.25	63.20
UNDgrosspr	98	4.57	1.86	1.00	9.00	65	4.15	1.35	1.50	8.00
Undall	98	0.58	0.91	0.00	3.00	65	0.25	0.52	0.00	2.00
Udeff	98	2.08	1.67	0.00	5.40	65	2.63	1.29	0.00	5.00
UTOT	98	7.23	1.30	3.00	10.00	65	7.04	1.05	3.00	10.00
Undn	98	3.56	1.82	1.00	10.00	65	3.55	1.84	1.00	9.00
Thres	98	25.79	10.63	20.00	88.00	65	25.49	6.42	20.00	40.00
WI	98	2.11	2.61	0.00	12.00	65	2.26	3.05	0.00	15.60
Grossproceds	98	130.51	159.09	7.88	1035.00	65	141.55	157.39	18.98	920.00
Proceeds in trust	98	0.95	0.05	0.85	1.03	65	0.97	0.03	0.85	1.02
Warrant Strike Prc	98	5.77	1.26	3.00	11.50	65	5.92	0.98	4.50	8.00
Warrants per unit	98	1.37	0.49	0.50	2.00	65	1.29	0.46	1.00	2.00
Unit offer price	98	7.74	1.57	6.00	10.10	65	8.13	1.50	6.00	10.10

	Period 2003 - 2006					Period 2007 - 2008					Period 2009 - 2012				
Panel B: Subsamples	Obs	Mean	Std. D	Min	Max	Obs	Mean	Std. D	Min	Max	Obs	Mean	Std. D	Min	Max
Found_number	53	5.45	1.66	3.00	10.00	43	6.42	2.18	2.00	13.00	2	4.00	1.4142	3.00	5.00
Found_age	53	49.05	8.66	4.00	63.50	43	50.98	5.20	40.00	63.75	2	43.00	8.49	37.00	49.00
UNDgrosspr	53	5.60	1.90	1.00	9.00	43	3.40	0.76	1.50	5.00	2	2.45	0.78	1.90	3.00
Undall	53	0.92	1.04	0.00	3.00	43	0.19	0.49	0.00	2.00	2	0.00	0.00	0.00	0.00
Udeff	53	1.03	1.40	0.00	5.40	43	3.36	0.91	1.00	4.50	2	2.55	2.05	1.10	4.00
UTOT	53	7.54	1.57	4.00	10.00	43	6.95	0.47	6.00	8.00	2	5.00	2.83	3.00	7.00
Undn	53	3.75	2.04	1.00	10.00	43	3.30	1.54	2.00	9.00	2	4.00	1.41	3.00	5.00
Thres	53	20.00	0.00	20.00	20.00	43	30.19	5.84	20.00	40.00	2	84.50	4.95	81.00	88.00
WI	53	0.81	1.42	0.00	5.50	43	3.64	2.94	0.00	12.00	2	3.65	0.07	3.60	3.70
Grossproceds	53	76.13	84.43	7.88	528.00	43	201.51	200.97	33.12	1035.00	2	45.28	13.13	36.00	54.56
Proceeds in trust	53	0.92	0.05	0.85	1.03	43	0.98	0.01	0.95	1.00	2	1.02	0.02	1.00	1.03
Warrant Strike Prc	53	5.26	0.70	3.00	8.00	43	6.12	1.03	5.00	7.50	2	11.50	0.00	11.50	11.50
Warrants per unit	53	1.62	0.49	1.00	2.00	43	1.08	0.31	0.50	2.00	2	1.00	0.00	1.00	1.00
Unit offer price	53	6.95	1.35	6.00	10.10	43	8.60	1.28	6.00	10.00	2	10.00	0.00	10.00	10.00

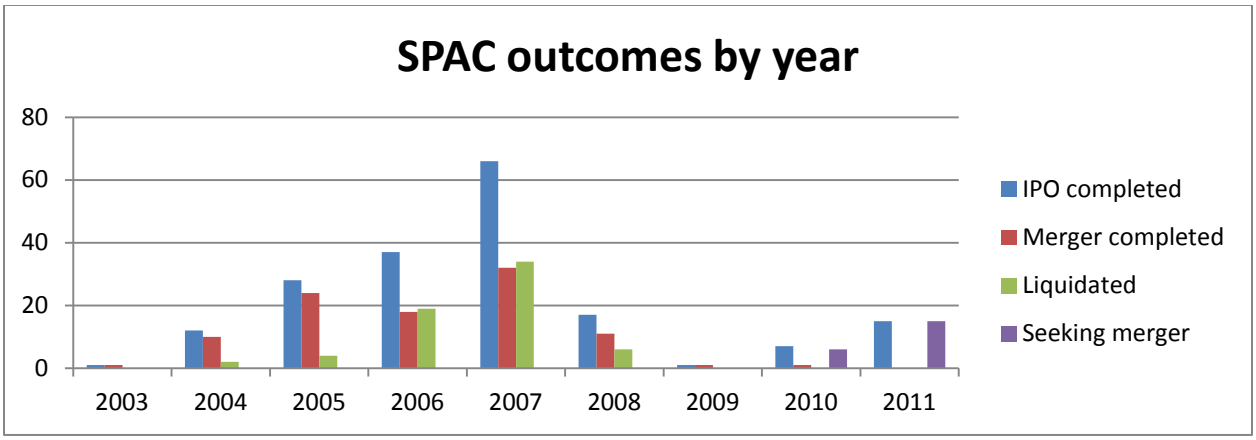
Table 4: Regression results:

Results of logistic regression are reported. The dependent variable is ***merged*** which takes value of 1 if SPAC merged and 0 if liquidated. All 163 SPACs analyzed have all information on characteristics below.

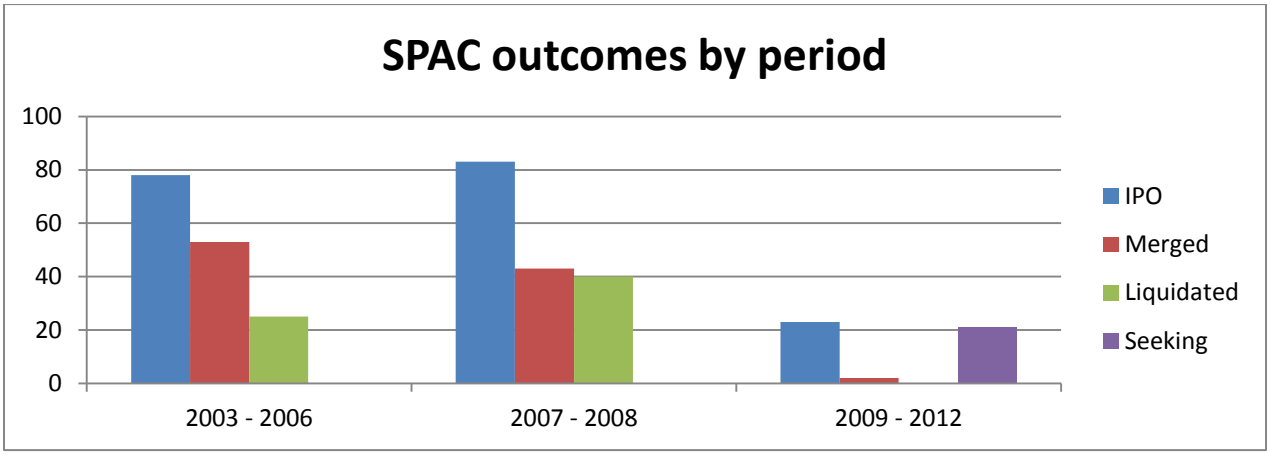
	Dependent variable: Merged Logit				
Variables	Coef.	Sig	Std. Err.	z	P>z
Found_number	0.362	**	0.170	2.130	0.033
Found_age	-0.046		0.039	-1.190	0.233
UNDgrosspr	-0.508		0.603	-0.840	0.400
Udef	-0.321		0.682	-0.470	0.637
UTOT	-0.188		0.534	-0.350	0.725
Undn	0.000	*	0.178	-1.740	0.083
Thres	-0.009		0.051	-0.180	0.860
WI	-0.012		0.180	-0.070	0.946
Grossproceeds	0.000	**	0.000	1.980	0.048
Proceedsintrust	-9.368		16.184	-0.580	0.563
WarrantStrikeprice	-0.569		0.629	-0.910	0.365
Warrantsperunit	-1.849		1.433	-1.290	0.197
Unitofferprice	-0.317		0.799	-0.400	0.692
IPO_Hot	0.263		1.528	0.170	0.863
Und_Q	1.178		0.743	1.590	0.113
VIX	0.250	**	0.127	1.970	0.049
Ecindex	-0.016		0.032	-0.500	0.615
Russel_2000	-0.006	**	0.003	-2.140	0.032
China	2.136	**	0.870	2.450	0.014
Israel	-2.059		1.842	-1.120	0.264
Greece	-0.127		1.416	-0.090	0.928
India	0.531		1.682	0.320	0.752
Doubleunit	1.260		3.291	0.380	0.702
Focus	1.461	**	0.720	2.030	0.042
PEtarget	33.294		4837.139	0.010	0.995
HCtarg	-1.093		0.950	-1.150	0.250
Found_PEVC	-0.541		0.652	-0.830	0.406
Found_SPACs	0.608		0.672	0.910	0.365
Found_inst	0.439		0.781	0.560	0.574
Sadvisor	-0.600		0.619	-0.970	0.332
Ebcap	2.348	**	1.089	2.160	0.031
AnnDays_IPO	-0.009	***	0.002	-3.880	0.000
Confid_Exp	-0.007		0.016	-0.480	0.629
Russel_Ann	-0.002		0.002	-1.450	0.146
Sizedummy	-24.344		3412.394	-0.010	0.994
Mjoseph	0.478		0.888	0.540	0.590
Citi	1.028		0.966	1.060	0.287
Constant	38.431		16.876	2.280	0.023

Appendix A: Graphs on SPAC activity from Table 1

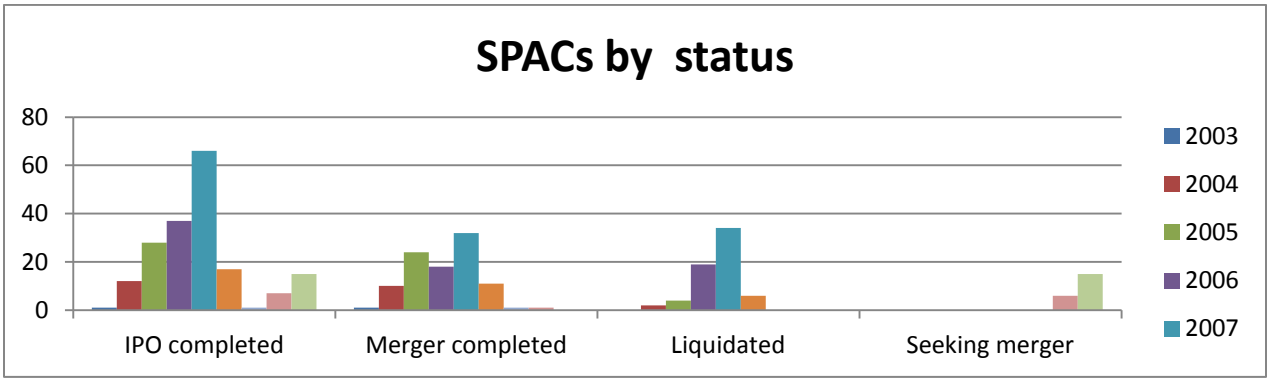
SPAC outcomes by year:



SPAC outcomes by subsample period:

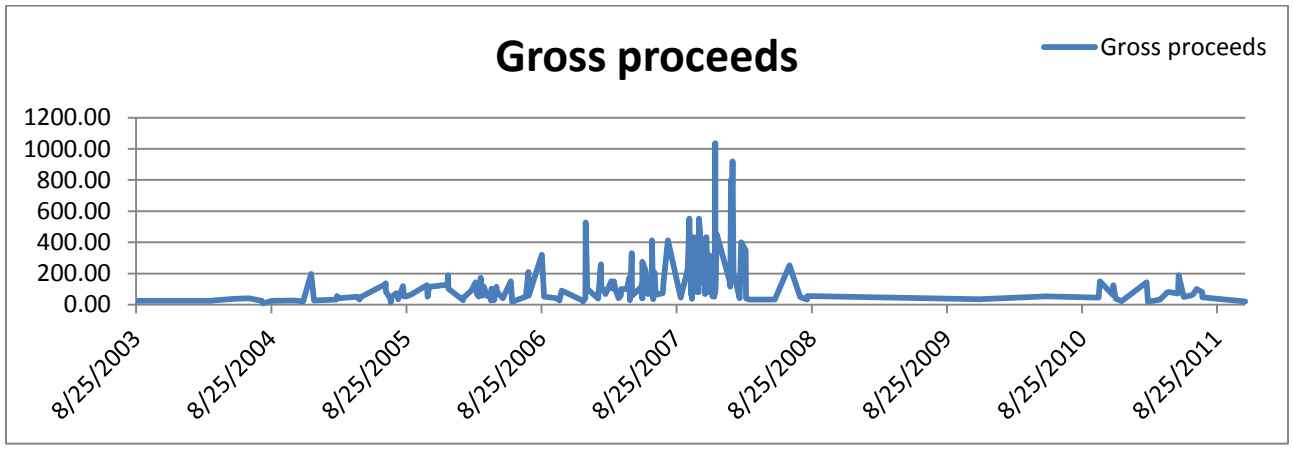


SPAC changes of status year by year

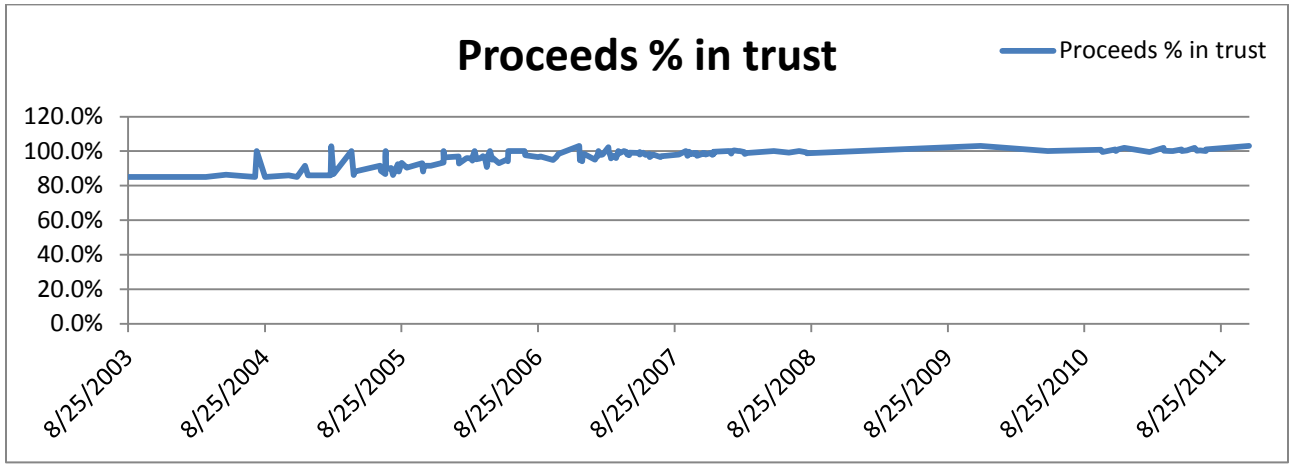


Appendix B: Graphs presenting changes in institutional characteristics of SPACs over time

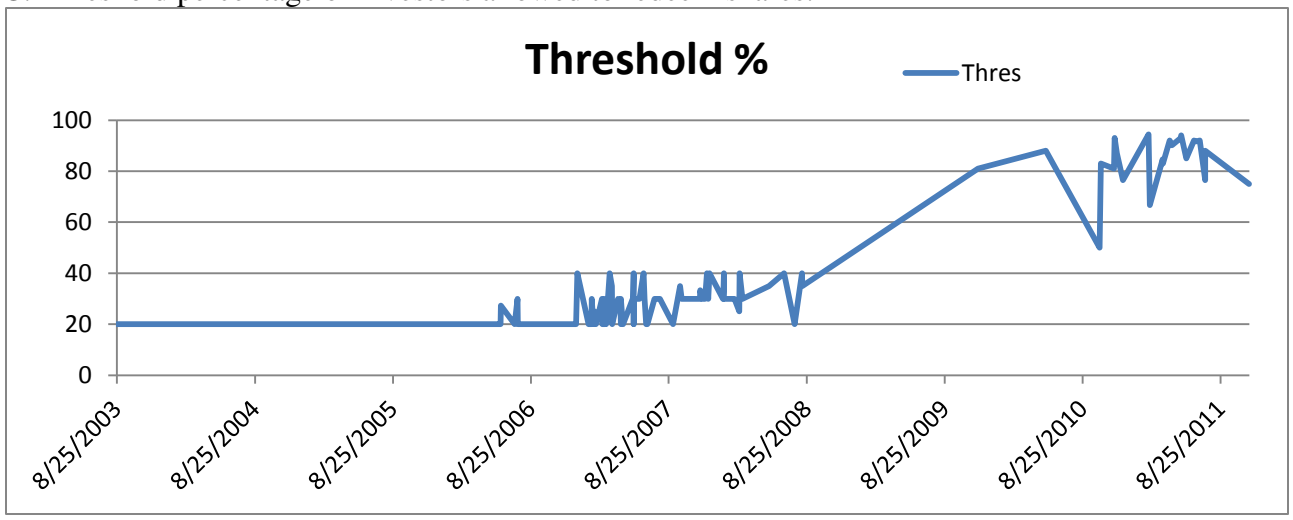
A: Gross proceeds over time



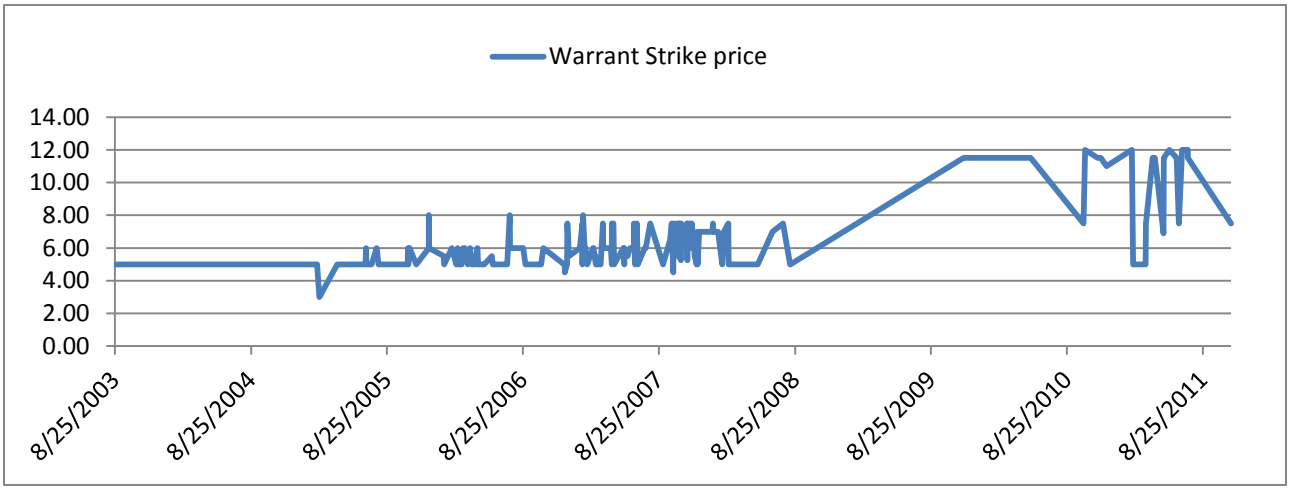
B: Percent of IPO proceeds deposited in the Trust over time:



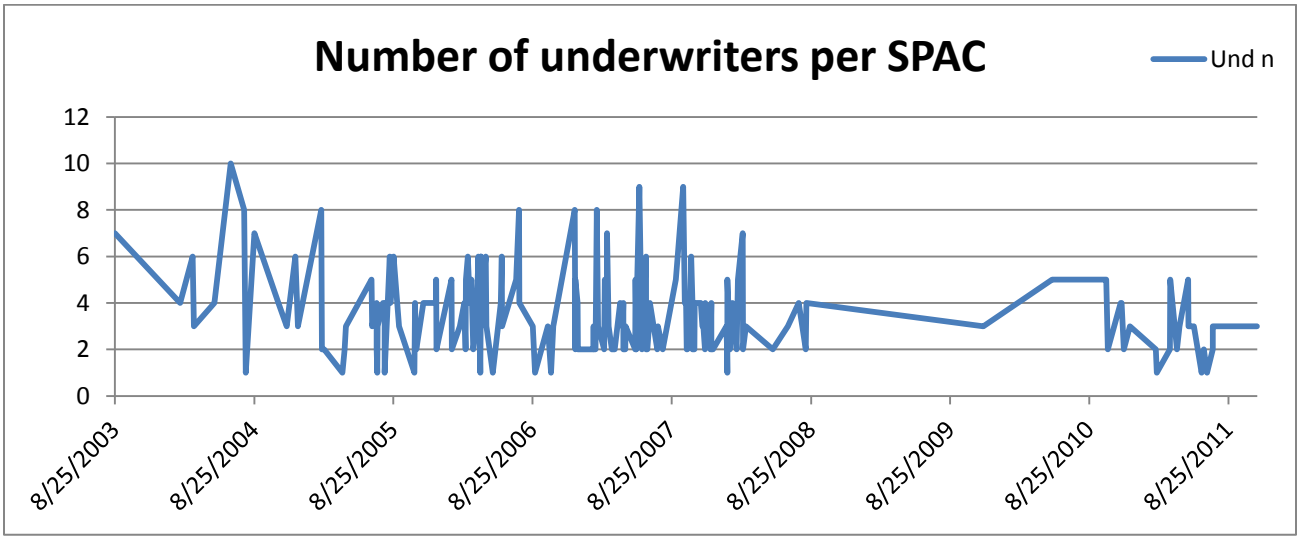
C. Threshold percentage of investors allowed to redeem shares:



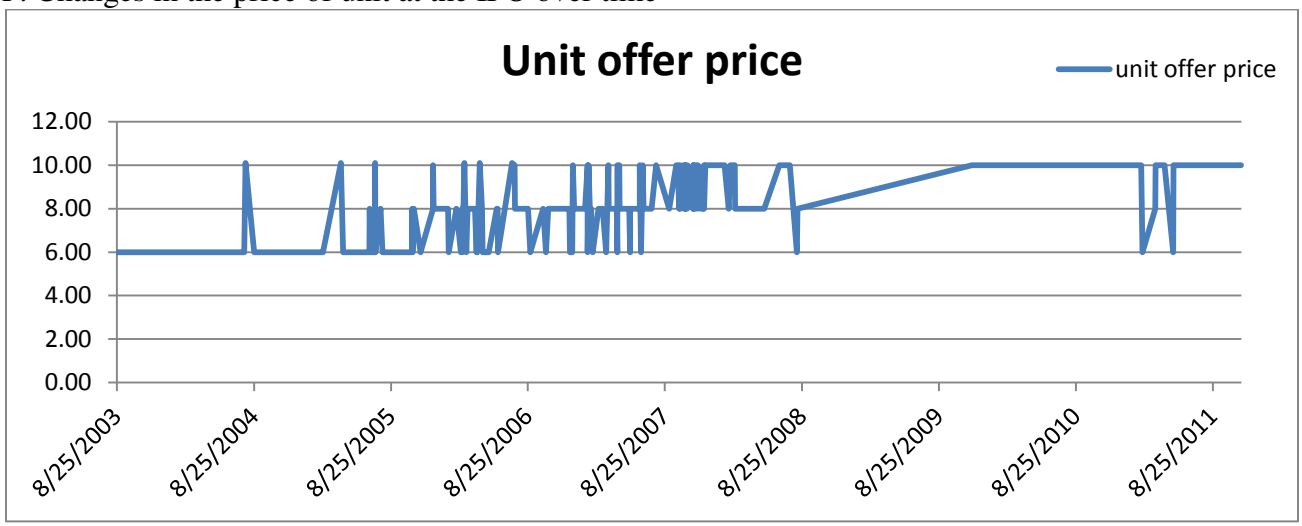
D. Exercise price of warrants:



E. Number of underwriters involved in SPAC



F. Changes in the price of unit at the IPO over time



G. Number of warrants purchased by SPAC founders over time