SPACs: An Alternative Investment Vehicle

by

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“There are no bad business and investment opportunities, but there are bad entrepreneurs and investors”

Robert Kiyosaki
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Abstract

Special Purpose Acquisition Companies (hereafter SPACs) well known as blind pool or blank check companies are defined, in a simple way, as alternative way to access the public markets. Since SPACs are becoming an increasingly popular alternative investment vehicle as they are a meritorious entity to substitute the presence of private equity in some segments of the market (Reimer 2007), this study is dedicated to analyze the returns for investors and clarify the impact that the market prices have in the decision of the investors. This topic assumes a particular importance for investors, managers, shareholders, and founders to understand how the decision-making process works in this kind of “blind pool” investments. Similar study (Jenkinson and Sousa, 2011) has been done for the period between 2003 and 2006 and concluded that investor should listen to the market while approving/rejecting proposed deals. Our sample expands the time frame for the period between 2007 and 2013, in order to identify if the changes occurred, after 2007, in the SPACs structure changed the way the investors take their decisions and started taking into account the information imbedded in market prices at the decision date. Our study clearly demonstrates that neither the alert of Jenkinson and Sousa (2011) nor the changes in the SPACs structure change the behavior of investors and so investors are still not listening to the market and approving value destroying deals.

Key-words: SPACs, blind pools, blank checks, IPO, Private Equity

JEL-Codes: G14, G24
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1. Introduction

Special Purpose Acquisition Companies (SPACs) are companies that go public with the sole purpose to acquire or merge with a private firm by using the money that was previously raised through an Initial Public Offering (IPO). This alternative route to the public markets is an undeveloped topic in the financial literature, as such only few studies were published and analyzed in detail its relation with the market prices.

Over the years the investment in SPACs has gained importance. While in 2003, only one SPAC was issued in the IPO markets, in 2007 sixty-six SPACs were part of IPO market rising $12 billion and constituting 24% of the US IPO market. In 2008, the number of SPACs started to fall (17 SPACs), maybe due to the worldwide crisis. However, in 2011, moment from which the US economy begun to pick up, the number of SPACs increased, taking part of 12% of the US IPO market. In 2015, 20 SPACs were issued raising around $4 billion.

Traditional IPO differs from SPACs because at the time of the SPAC, investors have no knowledge about the company that they are investing in, and so it is done taking into account the ability of the founders (blind pools). In another way, private equity funds can also differ from SPACs in different ways, namely the decision to be acquired by SPAC can bring cash infusion, liquidity and publicly traded shares without the loose of the control through the use of reverse merge.

SPACs have some particularities in its investment, being one of them the limited life time that should be attended to take a decision (merger or liquidation). Since there is a timeline to respect, sometimes the decision taken by investors (which are acquiring companies by trusting in the ability of the founders and have no protection due to the nature of the investment) are not in accordance with the returns that it can provide and as such it is most likely that significant losses are incurred.

As there are only few studies on this topic and as SPACs only recently become a very popular way to access the public markets, this study is relevant for founders, shareholders, management team and investors, to understand how the decision-making process in the SPACs work, the returns that can be obtained and how investors and founders react to the fluctuations of the share market prices between the announcement and decision date. Additionally, it is also important to stress that, around the years 2008
and 2009, some changes occurred in the structure of SPACs. Hence, this study is also pertinent to understand if the changes occurred in the structure of the SPACs conducted to different decision-making process for investors, considering the fact that the previous study conducted by Jenkinson and Sousa (2011) – “Why SPAC Investors Should Listen to the Market” – had already warned that investors should consider the market prices at the decision date.

Further to the above, this study main intent is to examine the results comprehended between the years of 2007 and 2013 of the US market, taking into account mainly the approach used by Jenkinson and Sousa (2011). We will compare the results with the previous released studies, which will allow us to analyze the differences in the returns of complete and incomplete SPACs with the previous period studied by these authors (2003-2006).

This study will proceed with a literature review in the next chapter which contains a detailed definition of SPACs, a general overview of the same and also some main changes occurred recently in the SPACs structure. Afterwards, in chapter 3, the methodology is explained while in chapter 4 the results are presented considering the implications (if any) of the change in SPACs structure in the judgments taken by investors and also the comparison of the results obtained in both of the periods that were analyzed (2003-2006 vs. 2007-2013). In chapter 5, one of the most famous acquisitions occurred in the SPACs – the Aldabra II acquisition of Boise, Inc. – is analyzed in order to provide a detailed view of the methodology applied in each of the company included in our study. Chapter 6 concludes.
2. Literature Review

The literature is divided into three parts. In the first part, a definition of the topic and a general overview will be described covering some of the main rules of this type of investments as well as the differences of this type of investment with the traditional IPO and the private equity funds. The second part point out the recent changes verified in the SPACs structures. Finally, the third and last part of this section contains some main theories and similar studies.

2.1. Definition and General overview of SPACs

Special Purpose Acquisition Companies (SPACs)\(^1\) are companies that go public with the sole purpose to acquire or merge with a private firm by using the money that was previously raised through the IPO (consisting in units composed by shares and normally by “out-the-money” warrants). In a simple way, SPACs can be defined as an alternative way to access the public markets that provide a potentially attractive way of raising external equity financing. It appears to be a viable alternative to the traditional IPO from the perspective of an acquired company because they bring in cash infusion, share liquidity and vested-in underwriters (Sjostrom, 2008). Traditional IPO differs from SPACs, since it’s a “blind pool” investment, i.e. investors at the time of the investment have no knowledge about the company which means that the investment is done taking into account the ability of the founders. In this sense, blind pools and blank check companies are terms often used to define SPACs, by means of there are no assets or revenues at the moment (no operational business) of the entry in the public market, and the only intent is to acquire an operational business. There is not a specific data, characteristics or indexes that are common in each SPAC; however they are sometimes formed to pursue an acquisition in a particular industry or sector, or even in a particular region.

Notwithstanding the above, SPACs can be also described as a type of IPO that have a limited life, normally due 24 months, while “traditional” IPOs don’t have a

\(^{1}\) SPACs are normally formed by a small group of experienced managers and sponsors that rely mainly on their reputation.
defined time frame in the markets, SPAC has a determinate period to announce an acquisition (18 months) and then decide to merge or acquire a company (24 months). SPACs life start at the first day of the IPO and if within two years the founders of the SPAC do not find a potential target, the SPAC is liquidated. To avoid liquidation, 80% of the net assets should be spent in a chosen business combination. Another specific characteristic of SPACs are that the proceeds that were raised through the IPO are placed in escrow, typically between 85% and 100%, however the “new generation of SPACs” are placing between 95 and 100% (Rodrigues and Stegemoller, 2013), which cannot be used by the founders until the deal with the potential target is closed. Thus, if in the referred period the founders were not able to found a company to acquire/merge, the proceeds that were previously placed in the escrow are returned to the holders of IPO shares (Savitz, 2005). For the period of time that the proceeds are placed in the trust, the amounts are invested in short-term government securities where the trust can earn the interest at Treasury bill rate. In another way, the remaining amount that is not placed in trust is used for underwriter fees, expenses and working capital. Besides the complete SPACs (SPACs that make an acquisition) and liquidated SPACs (SPACs that announce an acquisition but at the decision date don’t acquire or merge with a company) the incomplete SPACs are also important to understand. Incomplete SPACs are those that have not announced an acquisition within 18 months and so the SPAC ceases. Appendix 1 demonstrates SPACs timeline. As a result, during the life of the SPAC, potential targets are identified by the management team, afterwards in order to proceed with the business plan 80% of the votes of its shareholders should be obtained, otherwise the SPAC is liquidated. However, it is important to note that this last requirement has changed recently, as we will describe in the next section.

With this perspective, sometimes SPACs are presented to investors as an alternative to private equity funds. Well, private equity funds are quite different from SPACs. The biggest difference is while SPACs (normally take private companies public) issue new equity to fund their acquisitions, private equity funds (take either public or private company private) raise new fund to raise new equity capital. In another way, private equity executives require significant proportion of management fees, usually 20% of the profits of the fund. In SPACs, management fees are minimum but founders can profit even if the fund incur in losses (i.e. in the value destroying
deals), because they are allocated 20% of the equity of the merged/acquired company. Although a higher payout can be earned if the SPAC is value creator deal instead of value destroyer deal, the founder payoff is dependent on the capital value of the deal and so there is an incentive for founders to complete the SPAC, even if value destroyer deal.

Many investors prefer to invest in SPACs then in private equity funds, due to the fact that investors do not want to lose their voting control over the companies that are chosen by the management team to invest in. Also, the SPAC involves limited downside because a significant portion of the funds raised in the IPO are placed in escrow (Michael A. Pittenger and Cara M. Grisin, 2007). In a simple way, sometimes SPACs are chosen by investors that need investment alternatives but do not want to lose the control of their investments and don’t want to expend a lot of money (private equity, as refereed previously, can be relatively expensive).

Despite the existence of these advantages in SPACs, when comparing to the traditional IPOs and private equity funds, there are some risks faced by its management team. SEC (Securities and Exchange Commission) regulation, arbitrage opportunities, liquidation and behavioral analysis are some of the risks identified by Stowell (2009). Taking into account this author perspective, SEC regulation can be seen as a risk due to the fact that SPACs are not subject to the “usual” SEC inspection process to access the public markets like the traditional IPOs. As such, some authors believe that due to the specific type of regulation of SEC provided to the SPACs, the rules can be abused. Also there are some authors that states that SEC regulations provided to SPACs are sufficient to protect the shareholders considering the corporate governance mechanisms that are placed in the SPACs.

Liquidation is also described as a risk since “a proposed transaction must not be rejected by more than 20% of the shareholder base, investors can easily vote to liquidate the trust rather than risk an acquisition”. Also the short-term defined to make an announcement or acquisition/merger is seen risker for investors to make a decision, as any economic event that may occur during the defined period can conduct to liquidation of the SPAC.
2.2. Relevant changes on the SPACs structure

After 2007 the SPACs structure has suffered some changes that are important to notice, such as in the SPACs securities and in their terms. As we know, SPACs go public through an IPO which consist, normally, in units of one share and one warrant. A warrant can be exercisable for a share of common stock. Moreover, it is likely to verify a potential dilution for shareholders of the combined company, also the terms of the warrant allows the warrant to be callable by the company only if the trading price of the stock appreciates meaningfully. In this way, the warrants that were only exercisable for one share of common stock are now exercisable also for one-half or one-third of the common stock. Some SPACs have also decided to offer just common stock in their IPOs.

The time frame of the SPAC has also suffered some changes. As we have noticed in the Appendix 1 there is a defined announcement period in which the SPAC should announce the target company within 18 months, but recently this have changed due to the short period given to decide to approve the deal after the announcement (6 months). Hence, some SPACs have applied only a flat time-frame term, usually of 24 months.

In the past for a business combination to proceed, it was needed the majority shareholders approval (80% of the votes in favor) and not more than 20% of the public shareholders could vote against the deal and exercise their redemption right. After 2007, the voting right policy changed, as in more recent SPACs it is not required the public shareholders to vote against the deal to redeem the shares. Thus, shareholders can redeem their shares even the votes are in favor of the respective combination. However, we still have some SPACs in the markets that require the votes against of the business combination to allow shareholders to redeem the shares.

In case a shareholder wants to redeem his shares by receiving a pro rata portion of the trust account at the time of the business combination, the trust account funds are used to proceed with the deal and then they are used to pay the shareholders that had chosen to redeem their shares.

It is important to note that the business combination agreement requires an amount of cash after the shares redemption. Moreover, the cash amount left in the trust
account after the shares redemption should not be lower than the amount fixed in the SPAC agreement to approve the deal. Otherwise, the SPAC cannot be completed.

In another way, in the past, the management team could only vote its founder shares and any public shares acquired by it after the IPO in favor of the proposed deal. After 2007, the management team can also vote during or after the IPO in favor of the proposed deal.

2.3. Relevant Studies

SPAC is a recent topic that grown popularity after the year of 2003, when only one SPAC generated $24 million in the US market and in 2008 SPACs was part of one third of the US IPO market (in both of the viewpoints: number of offerings and money raised). The Figure 1 exhibits the number of SPACs issued over the period 2003 and 2015 compared with the IPOs that were issued in the US markets, also the SPAC average proceeds generated over the period is shown.

Figure 1 – SPACs evolution over the period 2003-2015

![Number of deals vs $ million graph from 2003 to 2015 showing the evolution of SPACs and IPOs over the years.](image)
The Figure 1, also presents the increasing SPAC average proceeds that are placed in the public markets, reaching $195 million in 2015 by issuing 20 SPACs over 190 IPOs of the US markets. It is important to note that SPACs are normally only issued in the following US Markets: OTCBB, NASDAQ, AMEX and NYSE.

Due to the recent popularity, only few studies related to this topic were published, nevertheless given the fast increase of this “financial innovation” there are some very important studies that should be highlighted.

As previously mentioned, there are some main characteristics that should be taken into account when considering SPACs, as so, Jog and Sun (2007) introduced the first paper that explains the main characteristics of SPACs and examines the returns obtained by its investors and founders. These authors has completed this study by concluding that “it looks like that investors have wrote a blank check to investors”, this deduction is taken by the examination that was held using a sample of 62 SPACs between 2003-2006 were investors report a negative annual return of 3% in a subsample of 42 SPACs. Thus they have tested the SPACs equity in the long term and the performance of the securities at the day of issuance. In addition to the negative 3% annual return obtained in a subsample of 42 SPACs for the SPAC investors also a 1,900% of annualized returns were reported for SPAC founders as well as the underpricing on the day of the IPO. The result for the underpricing was 0.38%, which is highly expected to relate with expectations of SPACs investors that want to maintain the offering price at the first trading day. Related to the underpricing Boyer and Baigent (2008) analyzed a sample of 87 SPACs issued between 2003 and 2006 and concluded that a traditional IPO has higher underpricing at the first day when compared to SPACs. According to them, also a very positive relationship among the price and the size of the offerings at the first day is found.

In a more specific study Berger (2008) introduces three different cases studies of SPACs to allow a better understanding of the advantages that can be provided in the SPACs transactions and explains how SPACs can be used in a strategic way as an alternative way to access the public markets. Berger (2008) states that companies with specific requirements use SPACs as a way to access the public markets, otherwise the traditional IPOs have remained as a favorite route to companies.
Lewellen (2009) show three important factors that need to be considered while trading SPACs: 1) “stock prices should always exceed the value of the pro-rata share of the trust, discounted from the SPAC expiration date”, 2) “if an acquisition is approved, the stock price should be greater than pro-rata share of the trust” (i.e. shares values for investors should reflect their decision to keep the SPAC which should be reflected in its price), 3) “the acquisitions that have been completed should have positive excess returns as long as there is positive market beta, because after an acquisition there is a merely another company that have shares, no unique features are created in the SPAC stocks”. This third rule should be highlighted, because after the moment that a SPAC is complete (post-acquisition) a company is performing in the market that should account the market risk premium (in opposite of the pre-acquisition moment where the investment were riskless), however this rule is found in conflict with reality of the SPAC performance as most of the acquisitions made have negative returns. Therefore, after computing the predictability of returns in SPACs it was found that there is a positive post announcement return and a negative post transaction return.

This finding is also confirmed by Jenkinson and Sousa (2011). More precisely these authors have examined the specific relationship of market prices and investors’ return in a sample of 58 completed SPACs occurred between the years 2003 and 2008 (where the last two years already includes the 24 months given to the announcement and close of the business combination). In the examined sample most of the completed SPACs were value destroying instead of value creators.

Furthermore the study analyzed the management holdings before and after the IPO, the size of the SPAC (number of common stock, warrants and offering price) and the amount invested in the trust fund after the IPO. According to the conclusions of their study, the authors created a “decision rule” that states that investors should accept the deal if at the decision date the share price is higher than the trust value, otherwise the SPAC should be liquidated, in order to avoid huge losses as incurred with some investors that went against the market (lost around 39% of their investments within 6 months rising it to 79% over one year). Therefore, based on their study, investors that went against the “basic” rule have incurred in huge losses, and as so the value of a SPAC should be reflected in the stock prices. Additionally, if the decision to acquire or merge is taken near the deadline of the decision date (24 months) it would be better
because it will provide more certainty to investors about the investment value that the business deal will create.

Dimitrova (2012) explores the cross-sectional variation in SPACs performance and gives a significant importance to the shareholder value in the structure of the SPACs. The paper examines SPACs between 2004 and 2010 in the US markets. The results show that market reacts positively to the acquisition announcement but just for a short-term period of time – for long-run the results are the same as obtained by the previous authors – SPAC acquires underperform the market. Along the investigation a substantial cross-sectional variation at the short and long-term in the returns are evident, this may be caused due to the continuous involvement of the SPAC founders as shareholders and as board members. This result is consistent with Jenkinson and Sousa (2011) that state that “sponsors may be wrongly incentivized to make substantial purchases of the SPAC shares solely to ensure that they receive a favorable stockholder vote on the proposed acquisition”.
3. Sample and Methodology

The sample consists of SPACs issued in the US market within the period of 2007 and 2015\(^2\). The SPACs were obtained mainly from Capital IQ database (116 SPACs) and in some cases from Zephyr database (7 SPACs). From these databases it would be possible to access to the prospectus of each company and extract the data such as management holdings, investor returns, share prices, and others that seem important to analyze the “judgment” taken by the investors at the decision date.

In order to extract the needed data from the Capital IQ database we have defined the following criteria: 1) the registration effective date of the IPO should be between January 1\(^{st}\), 2007 and December 31\(^{st}\), 2013\(^3\); 2) IPOs should be issued in the OTTCB, NASDAQ, NYSE or AMEX (US markets were the SPACs are issued, as referred previously); 3) the IPOs should be considered as blank check or blind pool company. Since in 2007 the Capital IQ database has not identified all the SPACs that were issued in that year, we have used the Zephyr database to extract the missing SPACs. In order to extract them through the Zephyr database, we have defined the following criteria: 1) the deal should be issued on “IPOs & Capital Markets”; 2) on the business description we have tried to found the following key words: “Blank”, “Check”, “SPAC”; 3) the time period should be “on and after 01/01/2007 and up to and including 31/12/2007 (rumored, completed-confirmed, completed-assumed, announced)”\(^4\).

Using the above criteria’s 123 SPACs were identified. However, four companies were excluded due to data inconsistency\(^5\).

As in Jenkinson and Sousa (2011) the sample was divided in those that approved a deal (74) and those that were liquidated (49).

\(^2\) Although, the sample period in Jenkinson and Sousa (2011) is from 2003 to 2008, it only includes SPACs issued until 2006 in order to enable the examination of complete and incomplete SPACs, during the 24 months after the IPO. As such, our study sample does not overlap the sample used by Jenkinson and Sousa (2011).

\(^3\) The sample period ends in 2013 and not in 2015, because we are analyzing the results for complete and incomplete SPACs, as so we are analyzing companies that have already made the decision to approve or reject the deal, which takes normally up to two years.

\(^4\) The Zephyr database found 175 results for the defined criteria, from which we excluded SPACs that were not issued in the US markets, those that were rumored and also those that were not completed.

\(^5\) For instance, some companies were described as SPACs and were in reality funds.
3.1. “Good” and “Bad” SPACs split

In the research of the authors Jenkinson and Sousa (2011), SPACs that was issued between 2003 and 2006 were split according to the perspectives of “Good” and “Bad” SPACs, besides the separation of Approve or Liquidated SPACs. “Good” SPACs are those that at the decision date, investors approved the deal and at that date present a share price higher than the trust value per share. In another way, “Bad” SPACs are those that at the decision date, investors approved the deal with the share price below than the trust value per share. As so, investors went against the market – value destroying deal.

Therefore, their study was conducted taking into account 23 “Bad” SPACs and 20 “Good” SPACs, being the main purpose of the collected sample the analysis of the main characteristics of the SPACs issued in that period. After the previous separation of the data, the performance of the share prices was also compared to the trust value between the announcement and the decision dates.

Accordingly, in our study, with the intent to examine if there are also more approvals of “Bad” SPACs than “Good” SPACs, even with the alert of the previous study of Jenkinson and Sousa (2011) and the changes in the SPACs structure, and compute the descriptive statistics, the sub-sample of SPACs that made an acquisition was split in “Good” and “Bad” SPACs, according to the share price on the decision date. As such in our sample of 123 companies, 55 SPACs were considered as “Bad” SPAC and 19 were “Good” SPACs.

The last trust value is known taken into account the amount placed in the trust account by the company according to the last prospectus available. Therefore, the last trust value can be easily obtained by dividing the last amount placed in trust account and the number of shares in the day of the IPO, which was known from the beginning through the first prospectus of the company.

The share price at the decision date for each company will be obtained by using the following computation:

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6 Sample collected from Capital IQ database, namely, management holdings, number of units and offering price of the SPAC, common stock and warrants in each unit, share prices, announcement date, decision date, trust value and actual amount invested in the trust fund after the IPO.
**Share price at the decision date**

\[ \text{last trust value} \times (1 + \text{daily rate})^{\text{decision date} - \text{last trust value date}} \quad (1) \]

Accordingly the daily rate is computed as follows:

\[ \text{Daily Rate} = \frac{\text{last trust value}}{\text{share price at the IPO date}} \times \left( \frac{1}{\text{last trust value date} - \text{IPO date}} \right) \quad (2) \]

### 3.2. Average Cumulative Abnormal Returns

Then, similarly to Jenkinson and Sousa (2011), an event-study was conducted where the acquisition is considered as an event. Thus, a period of 26 weeks is examined, where the stocks are considered in event time and then the returns are analyzed after the acquisition date. Therefore, to enable the analysis of the post-acquisition returns of SPACs that consummated an acquisition for each week, the abnormal return, raw return and the cumulative abnormal return (CAR) are computed.

The abnormal return (AR) is computed through the difference between actual return of the share price of the SPAC and the return of the market index, which is multiplied by the \( \beta \) parameter. In a simple way, it corresponds to:

\[ \text{AR} = \text{Return on the Share Price} - \text{Return on the Index} \times \beta \quad (3) \]

The return on the share price and the return on the index are calculated, accordingly, as follows:

\[ \text{Return} = \ln(V_f) - \ln(V_i) \quad (4) \]

\( V_f \) – Final value of the share or the index, according to what we are calculating;
\( V_i \) – Initial value of the share or the index, according to what we are calculating.

In our calculations to compute the share price return and market index return, the share price are the ones available in each week after the decision date of the SPAC and
the market index parallels to each week after the decision date of the SPAC. The market index used in our analysis is the Russell 1000, which are also the one used in Jenkinson and Sousa (2011)\(^7\).

The beta parameters are used only after the acquisition because of the SPAC structure, since there is no operating business at a previous stage and between the announcement and the decision date the comparison of the share prices are not viable due to the short period of time to compute the firm beta parameters. As such, we use the beta parameter as also used by the authors, the market \( \beta = 1 \) and Industry \( \beta = \text{firm-specific} \beta \). The industry beta used in our calculations are the ones available by Aswath Damodaran, which were extracted by the Value Line database of 7,036 US companies as of January 2010 (middle of the sample that we are comparing with the previous results).

Additionally, when we are computing the raw returns it corresponds to the above formula described for the abnormal return but considering that \( \beta \) equals to zero.

Afterwards, the CAR of each acquiring firm is the sum of the abnormal return performances since the first week until the last week of the analysis, which in our case is the week 26:

\[
CAR = \sum_{t=1}^{T} AR
\]  

(5)

### 3.3. SPACs Investment Strategies

In the line with Jenkinson and Sousa (2011) we estimated how much would be the internal rate of return (IRR) earned by the investors that followed possible “SPAC Investments Strategies” proposed by the authors.

The possible “SPAC Investment Strategies” are as follows:

1) **Strategy I** – “the investor creates a portfolio by investing the same amount in the ordinary equity of all SPACs in our sample on the first trading day after the IPO

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\(^7\) The Russell 1000 lists the 1000 largest U.S. public companies. Moreover, it represents 92% of the U.S. stock market value.
and then follows the strategy of (a) voting against and redeeming Bad SPACs shares (we assume they would receive their money two months after the vote) and (b) selling their stake in “Good” SPACs on the day before the decision date; 

2) Strategy II – “the investor buys each SPAC on the first trading date after the IPO and sells one week after the announcement date”; 

3) Strategy III – “the investor buys a unit (share plus warrants) at the IPO and then follows the strategy of (a) voting against and redeeming Bad SPACs, and (b) selling their equity stakes in Good SPACs on the day before the decision date and selling the warrants on the first day after the decision date if the acquisition was approved”. 

It is important to stress that for each of the strategy the individual IRR has its particularities, as such further details of the IRR computations done for each of the above strategy and the portfolio return calculations are described in the Appendix 2.
4. Results

This chapter main objective is to present the results obtained by using the methodology above and compare our results with the ones obtained in Jenkinson and Sousa (2011), considering the changes in the SPACs structure referred in the subchapter 2.2.


In the Table 1 the descriptive statistics of the SPACs occurred between 2007 and 2013 are presented and then compared to the ones occurred between 2003 and 2006 (Table 2) studied in Jenkinson and Sousa (2011).

Table 1 – All SPACs analysis 2007-2013

<table>
<thead>
<tr>
<th>All SPACs (123)</th>
<th>Average</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAC size ($m raised)</td>
<td>155.3</td>
<td>92.0</td>
<td>1035.0</td>
<td>11.9</td>
</tr>
<tr>
<td>% of IPO proceeds in the trust</td>
<td>97.3%</td>
<td>98.8%</td>
<td>105.0%</td>
<td>79.7%</td>
</tr>
<tr>
<td>% owned by founders after the IPO</td>
<td>21.1%</td>
<td>20.0%</td>
<td>54.0%</td>
<td>10.5%</td>
</tr>
<tr>
<td>% of warrants issue over common stock</td>
<td>103.5%</td>
<td>97.2%</td>
<td>206.5%</td>
<td>49.3%</td>
</tr>
<tr>
<td>Nº of days between IPO and announcement date</td>
<td>510.2</td>
<td>546.0</td>
<td>953.0</td>
<td>28.0</td>
</tr>
<tr>
<td>Nº of days between announcement date and decision date</td>
<td>162.5</td>
<td>125.0</td>
<td>573.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Share price at announcement date / Actual trust value</td>
<td>97.2%</td>
<td>93.3%</td>
<td>433.1%</td>
<td>56.4%</td>
</tr>
<tr>
<td>Share price at day before decision date / Actual trust value</td>
<td>101.2%</td>
<td>94.6%</td>
<td>450.4%</td>
<td>70.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPACs that made an acquisition (74)</th>
<th>Average</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAC size ($mnl raised)</td>
<td>151.2</td>
<td>77.5</td>
<td>1035.0</td>
<td>11.9</td>
</tr>
<tr>
<td>% of IPO proceeds in the trust</td>
<td>97.6%</td>
<td>99.0%</td>
<td>105.0%</td>
<td>83.2%</td>
</tr>
<tr>
<td>% of management after the IPO</td>
<td>21.5%</td>
<td>20.0%</td>
<td>54.0%</td>
<td>10.5%</td>
</tr>
<tr>
<td>% of warrants issue over common stock</td>
<td>103.5%</td>
<td>97.2%</td>
<td>206.5%</td>
<td>49.3%</td>
</tr>
<tr>
<td>Nº of days between IPO and announcement date</td>
<td>510.0</td>
<td>546.5</td>
<td>953.0</td>
<td>28.0</td>
</tr>
<tr>
<td>Nº of days between announcement date and decision date</td>
<td>147.8</td>
<td>121.5</td>
<td>482.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Share price at announcement date / Actual trust value</td>
<td>100.8%</td>
<td>93.0%</td>
<td>433.1%</td>
<td>56.4%</td>
</tr>
<tr>
<td>Share price at day before decision date / Actual trust value</td>
<td>106.2%</td>
<td>93.4%</td>
<td>450.4%</td>
<td>70.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPACs that were liquidated (49)</th>
<th>Average</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAC size ($mnl raised)</td>
<td>161.5</td>
<td>100.0</td>
<td>920.0</td>
<td>35.0</td>
</tr>
<tr>
<td>% of IPO proceeds in the trust</td>
<td>96.8%</td>
<td>98.5%</td>
<td>104.0%</td>
<td>79.7%</td>
</tr>
<tr>
<td>% of management after the IPO</td>
<td>20.5%</td>
<td>20.0%</td>
<td>27.7%</td>
<td>15.2%</td>
</tr>
<tr>
<td>% of warrants issue over common stock</td>
<td>98.6%</td>
<td>92.3%</td>
<td>183.7%</td>
<td>76.8%</td>
</tr>
<tr>
<td>Nº of days between IPO and announcement date</td>
<td>510.6</td>
<td>538.0</td>
<td>697.0</td>
<td>128.0</td>
</tr>
<tr>
<td>Nº of days between announcement date and decision date</td>
<td>184.7</td>
<td>133.0</td>
<td>573.0</td>
<td>35.0</td>
</tr>
<tr>
<td>Share price at announcement date / Actual trust value</td>
<td>90.4%</td>
<td>90.2%</td>
<td>99.5%</td>
<td>65.8%</td>
</tr>
<tr>
<td>Share price at day before decision date / Actual trust value</td>
<td>92.3%</td>
<td>91.3%</td>
<td>99.9%</td>
<td>79.2%</td>
</tr>
</tbody>
</table>
It is important to note that during the period 2007-2013, some of the changes that occurred in the SPACs “composition” were visible in our computations, such as the offering units in the IPO and the time frame adopted for announcement and decision to approve a deal.

Unlike to previous SPACs, which went public and sold units comprised of shares of common stock and warrants in their IPO, some of the SPACs analyzed in the period between 2007 and 2013 sold only shares of common stock, due to the fact that they believe that the dilutive effects of the warrants found in the typical structure of other SPAC IPO was not present in their case, and as such they believed that this SPACs will be viewed more favorably by potential target companies when determining which company to engage in a business combination with. Examples of SPACs with this composition are American Realty Capital Healthcare Trust, Inc. and Hyde Park Acquisition Corp. II.

### Table 2 – All SPACs analysis 2003-2006

<table>
<thead>
<tr>
<th></th>
<th>All SPACs (58)</th>
<th>Average</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAC size ($m raised)</td>
<td></td>
<td>69.0</td>
<td>53.5</td>
<td>196.7</td>
<td>9.1</td>
</tr>
<tr>
<td>% of IPO proceeds in the trust</td>
<td></td>
<td>91.3%</td>
<td>91.2%</td>
<td>100.0%</td>
<td>85.0%</td>
</tr>
<tr>
<td>% owned by founders after the IPO</td>
<td></td>
<td>19.1%</td>
<td>18.5%</td>
<td>35.0%</td>
<td>15.3%</td>
</tr>
<tr>
<td>% of warrants issue over common stock</td>
<td></td>
<td>143.2%</td>
<td>163.8%</td>
<td>210.1%</td>
<td>68.9%</td>
</tr>
<tr>
<td>N° of days between IPO and announcement date</td>
<td></td>
<td>377.7</td>
<td>412.0</td>
<td>602.0</td>
<td>62.0</td>
</tr>
<tr>
<td>N° of days between announcement date and decision date</td>
<td></td>
<td>263.6</td>
<td>231.0</td>
<td>637.0</td>
<td>61.0</td>
</tr>
<tr>
<td>Share price at announcement date / Actual trust value</td>
<td></td>
<td>99.7%</td>
<td>97.8%</td>
<td>151.5%</td>
<td>91.9%</td>
</tr>
<tr>
<td>Share price at day before decision date / Actual trust value</td>
<td></td>
<td>107.3%</td>
<td>98.8%</td>
<td>224.3%</td>
<td>79.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>SPACs that made an acquisition (43)</th>
<th>Average</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAC size ($m raised)</td>
<td></td>
<td>65.3</td>
<td>51.5</td>
<td>196.7</td>
<td>9.1</td>
</tr>
<tr>
<td>% of IPO proceeds in the trust</td>
<td></td>
<td>90.7%</td>
<td>90.1%</td>
<td>100.0%</td>
<td>85.0%</td>
</tr>
<tr>
<td>% of management after the IPO</td>
<td></td>
<td>19.1%</td>
<td>18.1%</td>
<td>35.0%</td>
<td>15.7%</td>
</tr>
<tr>
<td>% of warrants issue over common stock</td>
<td></td>
<td>144.5%</td>
<td>163.9%</td>
<td>210.1%</td>
<td>68.9%</td>
</tr>
<tr>
<td>N° of days between IPO and announcement date</td>
<td></td>
<td>364.0</td>
<td>396.0</td>
<td>588.0</td>
<td>62.0</td>
</tr>
<tr>
<td>N° of days between announcement date and decision date</td>
<td></td>
<td>271.2</td>
<td>235.0</td>
<td>637.0</td>
<td>140.0</td>
</tr>
<tr>
<td>Share price at announcement date / Actual trust value</td>
<td></td>
<td>100.7%</td>
<td>98.1%</td>
<td>151.5%</td>
<td>92.6%</td>
</tr>
<tr>
<td>Share price at day before decision date / Actual trust value</td>
<td></td>
<td>110.7%</td>
<td>99.6%</td>
<td>224.3%</td>
<td>79.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>SPACs that were liquidated (15)</th>
<th>Average</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAC size ($m raised)</td>
<td></td>
<td>79.5</td>
<td>70.4</td>
<td>150.0</td>
<td>19.0</td>
</tr>
<tr>
<td>% of IPO proceeds in the trust</td>
<td></td>
<td>93.1%</td>
<td>95.0%</td>
<td>100.0%</td>
<td>85.0%</td>
</tr>
<tr>
<td>% of management after the IPO</td>
<td></td>
<td>19.1%</td>
<td>19.2%</td>
<td>24.0%</td>
<td>15.3%</td>
</tr>
<tr>
<td>% of warrants issue over common stock</td>
<td></td>
<td>139.3%</td>
<td>160.6%</td>
<td>181.4%</td>
<td>81.1%</td>
</tr>
<tr>
<td>N° of days between IPO and announcement date</td>
<td></td>
<td>419.6</td>
<td>429.5</td>
<td>602.0</td>
<td>148.0</td>
</tr>
<tr>
<td>N° of days between announcement date and decision date</td>
<td></td>
<td>240.1</td>
<td>210.5</td>
<td>511.0</td>
<td>61.0</td>
</tr>
<tr>
<td>Share price at announcement date / Actual trust value</td>
<td></td>
<td>96.2%</td>
<td>96.9%</td>
<td>99.2%</td>
<td>91.9%</td>
</tr>
<tr>
<td>Share price at day before decision date / Actual trust value</td>
<td></td>
<td>95.9%</td>
<td>96.3%</td>
<td>99.2%</td>
<td>90.7%</td>
</tr>
</tbody>
</table>

By comparing the averages of all SPAC sizes, in 2003-2006 and 2007-2013, we can verify that in the second period the SPAC size were more than double when compared to the first period ($155.30m vs. $69.01m). According to Lakicevic et al. (2013), this huge difference between the both periods can be justified considering the fact that between 2003 and 2006 SPACs were newly introduced to the capital markets, as so they were not listed on the major markets.

The percentages of proceeds placed in the IPO are also important to compare. The recent SPACs “overfund” the trust account by placing a higher amount in the trust account instead of offering more of warrants as a unit. As we can see in the Table 1, recently investors are placing 105% in the trust account, while in the first period of analysis the maximum amount placed in the trust account were 100% (Table 2). The extra amount placed to “overfund” in the trust account, comes from an investment that the sponsors make in the SPAC through a private placement that occurs simultaneously with the IPO. For instance, this higher amount placed in the trust account and a lower amount in warrants by investors makes sense, since it would allow investors to receive a higher amount back in case they want to redeem their shares, i.e. in case they would not like to proceed with the investment, they can redeem their shares and receive the return on the investment made on the shares of the SPACs, which would be higher.

Moreover, by comparing the Table 1 with the Table 2, we can see that the percentage of warrants issued over the common stock has changed from 143.2% in 2003-2008 to 103.5% in 2007-2013. The reason of having such decrease in the amount of warrants issued over the common stock is due to the fact that some SPACs decided to offer less warrants comparing to the common stocks or offer only common stock as a unit, since investors can get a higher return in case they want to redeem their shares.

Additionally, after the possibility given to SPACs to not announce the acquisition in the period of 18 months and adopt only the flat time of more or less than 24 months to take the decision, most of the SPACs have chosen to proceed in this way. Hence, their announcement and decision to approve or reject a deal are in approximate dates. As such the maximum period to announce an acquisition has increased over the time reaching to the maximum of 953 days between the IPO and announcement date while in the first period of examination (2003-2006) it has reached to 602 days, which
means that during this period of analysis most of the companies were accomplishing the given period of 18 months to announce an acquisition.

Consequently, we can also realize that, between 2003 and 2006 the average number of days between announcement date and decision date (264 days) is higher than in the second period (2007-2013).

The descriptive statistics regarding the SPACs that made an acquisition and those that were liquidated are also important to compare.

As we can see in the Table 1, the situation stated by the authors Jenkinson and Sousa (2011) in the Table 2 – SPACs that made an acquisition were smaller than those that were liquidated ($65m vs. $80m) – has, in one way or another, similar. In our study, the size of the SPACs that were acquired ($151m) is also smaller than the SPACs that were liquidated ($161m).

Jenkinson and Sousa (2011) descriptive statistics analysis suggests that “deals that convince investors are found sooner” than those that are liquidated. According to the Table 2, the time took to made the announcement of an acquisition is 364 days compared to 420 days to liquidate the business combination. However, the above suggestion is not applicable for 2007-2013, since the SPACs that were acquired and those that were liquidated have spent approximate days (Table 1).

4.2. Comparison of Descriptive Statistics between “Good” and “Bad” SPACs

Besides the comparison of the SPACs that conducted an IPO in the both time-frames (2007-2013 vs. 2003-2006), it is also important to compare the SPACs that proceeded with a business combination in the both of the time-frames, i.e. comparison between the “Good” and “Bad” SPACs.
### Table 3 – SPACs that proceeded with an acquisition (2007-2013)

<table>
<thead>
<tr>
<th>SPACs that made a GOOD acquisition (19)</th>
<th>Average</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAC size ($mln raised)</td>
<td>135.2</td>
<td>80.0</td>
<td>432.9</td>
<td>11.9</td>
</tr>
<tr>
<td>% of IPO proceeds in the trust</td>
<td>97.9%</td>
<td>99.8%</td>
<td>100.4%</td>
<td>83.2%</td>
</tr>
<tr>
<td>% of management after the IPO</td>
<td>24.3%</td>
<td>21.0%</td>
<td>54.0%</td>
<td>16.5%</td>
</tr>
<tr>
<td>% of warrants issue over common stock</td>
<td>104.3%</td>
<td>103.4%</td>
<td>138.5%</td>
<td>56.0%</td>
</tr>
<tr>
<td>N° of days between IPO and announcement date</td>
<td>518.3</td>
<td>574.0</td>
<td>679.0</td>
<td>192.0</td>
</tr>
<tr>
<td>N° of days between announcement date and decision date</td>
<td>118.3</td>
<td>68.0</td>
<td>408.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Share price at announcement date / Actual trust value</td>
<td>134.6%</td>
<td>100.2%</td>
<td>433.1%</td>
<td>77.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPACs that made a BAD acquisition (55)</th>
<th>Average</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAC size ($mln raised)</td>
<td>156.7</td>
<td>75.0</td>
<td>1035.0</td>
<td>20.0</td>
</tr>
<tr>
<td>% of IPO proceeds in the trust</td>
<td>97.6%</td>
<td>98.7%</td>
<td>105.0%</td>
<td>83.8%</td>
</tr>
<tr>
<td>% of management after the IPO</td>
<td>20.5%</td>
<td>20.0%</td>
<td>28.8%</td>
<td>10.5%</td>
</tr>
<tr>
<td>% of warrants issue over common stock</td>
<td>107.6%</td>
<td>99.1%</td>
<td>206.5%</td>
<td>49.3%</td>
</tr>
<tr>
<td>N° of days between IPO and announcement date</td>
<td>507.1</td>
<td>544.0</td>
<td>953.0</td>
<td>28.0</td>
</tr>
<tr>
<td>N° of days between announcement date and decision date</td>
<td>157.9</td>
<td>125.0</td>
<td>482.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Share price at announcement date / Actual trust value</td>
<td>89.7%</td>
<td>88.2%</td>
<td>105.1%</td>
<td>56.4%</td>
</tr>
<tr>
<td>Share price at day before decision date / Actual trust value</td>
<td>87.9%</td>
<td>87.0%</td>
<td>100.0%</td>
<td>70.8%</td>
</tr>
</tbody>
</table>

The time taken by a “Good” SPAC to announce an acquisition (518 days) is approximately the time that a “Bad” SPAC takes to announce an acquisition (507 days). This conclusion is quite different with the obtained for the period 2003-2006 by Jenkinson and Sousa (2011) when the “Bad” acquisitions were announced later than “Good” Acquisitions, as can be seen in Table 4.

Even though the occurred SPAC structure changes and the fact that most of the SPACs adopted a flat time to take the decision to proceed with a business combination, the investors are not taking advantage of having more to decide to proceed with the deal or not.

Moreover, even considering the advice provided in Jenkinson and Sousa (2011), i.e. investors should consider the share prices at the decision date, it seems that investors are not considering it as a factor to acquire or liquidate the business combination. There are still more “Bad” SPACs (55) than “Good” SPACs (19).
In 2003-2006, as presented in the Table 4, a SPAC was approved even when the price was representing 79% of the trust. Nevertheless in 2007-2013 we have a more surprising fact, as we can see in Table 3, a SPAC was agreed even when the price represented 70.8% of the actual trust value.

As we can see in the Table 4 (2003-2006), “For the portfolio of Good SPACs (...) the premium to the trust value drifts steadily upwards, reaching an average of 131% of the trust value at the decision date”. Taking into account our study, Table 3 (2007-2013), we can also confirm that the same response of the share price is achieved, getting an average of 159% of the trust value at the decision date.

Notwithstanding the above, it is important to note that, even with SPACs structure change, namely in the period taken for the announcement and decision date, there is always the obligation of the investors to announce the acquisition – investors cannot decide to proceed with a business combination without announcing its intent –
even if the days between the announcement and decision are very short, e.g. three days (as the minimum reached in our study, Table 3).

**Figure 2 – Response of the share prices around the announcement date**

![Graph showing share price response around the announcement date](image)

**Figure 3 – Response of the share prices around the decision date**

![Graph showing share price response around the decision date](image)
As in the study of the authors Jenkinson and Sousa (2011), Equally-weighted price indices are created also based on the share price three days before the announcement date. The above figures, shows us that on average the share prices after the announcement date for the “Bad” SPACs remains below the trust value, which drops in the last few days before the decision date. The inverse is also visible for the “Good” SPACs, on average the share prices of “Good” SPACs remains upper than the trust value of the SPAC, which seems to drift upward before the decision date. As so, investors are provided with those signals, which are related to the future post-acquisition returns, provided that market prices are informative.

Considering the fact that share prices remains similar after the announcement of an acquisition it suggests that investors already knew the acquisition that would be announced.

As such, since most of the acquisition deals were “Bad” SPACs instead of “Good” SPACs, an event-study was conducted, as in Jenkinson and Sousa (2011), which results are explained in the next section in order to let us know also if the market prices at the decision date, in our sample, corresponds to the returns that the investors can get post-acquisition, i.e. if market prices are also informative in 2007-2013.

4.3. Average Cumulative Abnormal Returns

Table 5 shows the raw returns for each of the groups of “Good” and “Bad” SPAC. It is clearly visible that, even not considering in the week 26 one of “Good” and one of “Bad” SPAC due to the fact that the trading data of those SPACs that was not yet available, “Bad” SPACs performance decrease after the decision date and “Good” SPACs does not appear to perform so poorly as “Bad” SPACs.
Table 5 – Cumulative Abnormal Returns (2007 – 2013)

Panel A. Cumulative returns

<table>
<thead>
<tr>
<th>Weeks after acquisition</th>
<th>N</th>
<th>Average</th>
<th>se</th>
<th>N</th>
<th>Average</th>
<th>Se</th>
<th>Average</th>
<th>se</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.1. Good SPACs</td>
<td>4</td>
<td>19</td>
<td>-2.4% (0.151)</td>
<td>55</td>
<td>-34.1% (1.369) **</td>
<td>31.6% -(0.327) *</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>19</td>
<td>-11.1% (0.478)</td>
<td>55</td>
<td>-42.6% (1.617) ***</td>
<td>31.4% -(0.647) *</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>18</td>
<td>-22.9% (1.125)</td>
<td>54</td>
<td>-63.7% (7.759) ***</td>
<td>40.8% -(1.125) ***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel B. Cumulative abnormal returns (Beta = 1)

<table>
<thead>
<tr>
<th>Weeks after acquisition</th>
<th>N</th>
<th>Average</th>
<th>se</th>
<th>N</th>
<th>Average</th>
<th>Se</th>
<th>Average</th>
<th>se</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.1. Good SPACs</td>
<td>4</td>
<td>19</td>
<td>-2.9% (0.202)</td>
<td>55</td>
<td>-9.1% (0.520) **</td>
<td>6.2% -(0.317) *</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>19</td>
<td>-9.3% (0.212)</td>
<td>55</td>
<td>-23.9% (0.608) ***</td>
<td>14.6% -(0.396) *</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>19</td>
<td>-18.7% (0.318)</td>
<td>54</td>
<td>-58.8%* (1.178) ***</td>
<td>40.1% -(0.860) ***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel C. Cumulative abnormal returns (Industry beta)

<table>
<thead>
<tr>
<th>Weeks after acquisition</th>
<th>N</th>
<th>Average</th>
<th>se</th>
<th>N</th>
<th>Average</th>
<th>Se</th>
<th>Average</th>
<th>se</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.1. Good SPACs</td>
<td>4</td>
<td>19</td>
<td>-1.9% (0.137)</td>
<td>55</td>
<td>-4.0% (0.228) **</td>
<td>2.1% -(0.091) *</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>19</td>
<td>-3.1% (0.181)</td>
<td>55</td>
<td>-11.9% (0.278) ***</td>
<td>8.8% -(0.097) *</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>18</td>
<td>-5.0% (0.056)</td>
<td>54</td>
<td>-19.5% (0.653) ***</td>
<td>14.4% -(0.596) ***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The raw returns after six months (26 weeks) of decision date for the “Bad” SPACs is -63.7% while for “Good” SPACs is just -22.9%. These results continue decreasing after six months (Figure 4) by reaching a negative raw return of 111.5% for the “Bad” SPACs and -53.5% for “Good” SPACs, after one year.

It is important to note that, as in the study previously examined by the authors Jenkinson and Sousa (2011), in the above results the cumulative abnormal returns for “Bad” SPACs are statistically different from zero after the second week of the acquisition.

Once again, it suggests that investors knew the announcement that would take place, since it is already reflected in the share prices.
Additionally, as already mentioned, we have also compared the average cumulative abnormal return (CAR) considering the single factor model CAPM. Thus, according to our computations, CAR for “Good” and “Bad” SPACs are quite similar to the raw returns (Table 5).

The results demonstrate that markets share price were still informative to approve/reject the acquisitions as in Jenkinson and Sousa (2011) but so if investors would have listened to the market, i.e. at the date of the decision to approve or reject the deal they should considerate into their “decision arguments” the share price at that moment, they would have avoided huge losses.

The negative raw return obtained in our sample was larger than in Jenkinson and Sousa (2011). Jenkinson and Sousa (2011) obtained a negative raw return for “Bad” SPACs after six weeks of 39%, while in our study we obtained a negative raw return of 63.7%. By comparing the “Good” SPACs raw returns, we can see that in both of the periods (2003-2006 vs. 2007-2013), after 6 months of the acquisition the raw returns also increased from 6.2% to 22.9%. The raw returns for the second period increased
may be due to the fact that larger companies were issued as SPACs in larger capital markets.

According to our results, we can also argue that even with the recent changes in the voting policy of SPACs investors are still not listing to the market in order to liquidate “Bad” SPACs and avoid huge losses, as advised in Jenkinson and Sousa (2011).

For a founder, proceed with a “Bad” SPAC, rather than liquidated is always a better decision, since his payoff depends on a business combination, even if it is a good or a bad deal. Sometimes, founders know exactly how to proceed with a business combination, even if prior to the decision date the majority is not in favor of the same. As we know to complete an acquisition, founders have to vote their founder shares according to the majority voting of public shares. However, as already mentioned by Jenkinson and Sousa (2011), founders can have the public shares that are also taken into account at the decision date. As such, founders can buy shares, which correspond to votes just to proceed with the deal by voting in favor of the agreement. With this possibility introduced for the SPAC founders, the change in the voting policy that entered recently does not matter, due to the fact that investors can redeem their shares and get their investment return back even if the votes are in favor of the proposed deal.

In order to confirm this behave we analyze the share turnover in the two months prior to the decision date (Figure 5), which will allow us to measure the average liquidity of the stocks just prior to its decision date.
According to the figure above, we can see that our results are consistent with Jenkinson and Sousa (2011), i.e. the share turnover increases in the last week of the decision for the “Bad” SPACs that were approved while the turnover for “Good” SPACs remains quite similar along the days. The increase in the share turnover in the last days before the decision also means that the stocks are robust and in the last days it is easier to find targets for our business combination. This fact corresponds to the reality that we have stated above, if founders notice days before the supposed decision date that the SPAC will be liquidated, they will buy public shares just before the decision date in order to increase the turnover and allow to proceed with an acquisition, by voting in favor of the business combination.

4.4. SPACs Investment Strategies

Similar to Jenkinson and Sousa (2011) we also estimated the IRR of possible Investment Strategies. Strategy I, an investor spend the same amount in the ordinary equity of all SPACs on the first trading day after the IPO and then votes against and redeems “Bad” SPACs shares or sells their stake in “Good” SPACs on the day before the decision date, Strategy II, an investor buys each SPAC on the first trading date after the IPO and sells one week after the announcement date and finally, in Strategy III an
investor buys a unit (share plus warrants) at the IPO and then follows the strategy of voting against and redeeming “Bad SPACs” or selling their equity stakes in “Good” SPACs on the day before the decision date and selling the warrants on the first day after the decision date if the acquisition was approved.

The results of these strategies are presented in Table 6 and confirm that markets are informative, and thus investors can profit at low levels of risk as previously shown by Jenkinson and Sousa (2011) for the period between 2003 and 2006 (Table 7).

**Table 6 – Investment Strategies 2007-2013**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Individual IRR</th>
<th>Portfolio IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Median</td>
</tr>
<tr>
<td>Strategy 1</td>
<td>11.1%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Strategy 2</td>
<td>3.9%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Strategy 3</td>
<td>8.5%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

**Table 7 – Investment Strategies 2003-2006**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Individual IRR</th>
<th>Portfolio IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Median</td>
</tr>
<tr>
<td>Strategy 1</td>
<td>13.0%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Strategy 2</td>
<td>21.6%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Strategy 3</td>
<td>13.2%</td>
<td>-0.1%</td>
</tr>
</tbody>
</table>

Source: "Why SPAC Investors Should Listen to the Market?", Jenkinson and Sousa (2011)

According to the results for the period between 2007 and 2013, presented in Table 6, it is possible to confirm that following the Strategy I, an individual SPAC would have obtained an average return of 11.1%.

From the results obtained for each strategy for both periods (2003-2006 and 2007-2013) it is clear that the second strategy presents the higher difference between both periods. As mentioned, the strategy II implies that an investor buys a SPAC on the first trading date after the IPO and sells one week after the announcement date. This can be justified by the fact that SPACs are no longer obligated to announce a business combination within a defined period, i.e. 18 months. Recently SPACs are allowed to
announce an acquisition and a week after, for example, acquire or merge with a company. Considering that the SPAC price near the decision date of the deal produces lower portfolio returns since the value created/destroyed of the deal is already reflected in the SPAC at that time, in the second period of the analysis as the announcement date is nearby the decision date, the portfolio return is lower than in the first period of the analysis.

Regarding the strategy III the returns are lower in the second period of analysis. This difference is mainly justified due to the fact that lower amounts are invested in a unit of SPACs, and also some SPACs are recently composed only by common stock instead of common stock and warrants.
5. A real case: “Aldabra II acquires Boise”

Aldabra II Acquisition Corp. (hereafter Aldabra II), based on the industry of paper packaging, consummated its IPO on June, 2007. Aldabra II received gross proceeds of $414 million that were composed by 41.4 million units of securities at $10.00 per unit. Each unit was composed by one share of common stock and one warrant. The warrants were exercisable for one share of common stock at $7.50, as previously referred warrants are normally “out of the money”. Considering the prospectus available we were able to extract the first and the last trust amount placed in the escrow, i.e. $400,010,092 and $403,989,000, respectively. By dividing the trust amount by the number of units of the SPAC (41.4 millions of units, in our case) we got the initial ($9.86) and the last trust value ($11.25) per share. It is important to stress, that the last trust value, normally, does not correspond to the trust value at the decision date, since the last prospectus available is issued days or months before the decision date.

In order to get the trust value during the SPAC, and consequently at the decision date, we estimate the trust value, by rolling forward the trust value using comparison of the last trust value per share with the first trust value available.

On the first day the share price of Aldabra II was $9.15, while at the decision date the share price was $8.50.

Aldabra II announced its intent to acquire Boise Cascade, LLC on September, 2007 and on February, 2008 closed the deal. The new (merged) company was renamed Boise, Inc. Figure 6 compares the share price with the trust value as from the IPO to the decision date and it can be seen that even after the announcement of the acquisition the share price remains below the trust value, which suggest that investor didn’t value the deal as a value created deal. Nearby the decision date, the price goes down again, suggesting investors were trying to sell their shares instead of voting against and get their pro-rata shares of the trust account (which can take several months to happen). The behave of the share price (specifically in the decision date) clearly suggest the investors see this business combination as value destroying deal. The fact that the deal went ahead clearly suggest the investors didn’t “listened” to the market.
The CAR for the year that followed the acquisition was measured and the results presented in Table 8.

**Table 8 – CAR – Aldabra II Acquisition Corporation**

<table>
<thead>
<tr>
<th>Weeks after acquisition</th>
<th>Cumulative Returns</th>
<th>Cumulative Returns (Beta=1)</th>
<th>Cumulative Returns (Beta=industry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>-15.2%</td>
<td>-13.1%</td>
<td>-10.9%</td>
</tr>
<tr>
<td>13</td>
<td>-67.0%</td>
<td>-69.5%</td>
<td>-57.9%</td>
</tr>
<tr>
<td>26</td>
<td>-78.7%</td>
<td>-74.9%</td>
<td>-62.4%</td>
</tr>
<tr>
<td>52</td>
<td>-228.2%</td>
<td>-177.8%</td>
<td>-148.2%</td>
</tr>
</tbody>
</table>

As the share price at decision date suggested, the cumulative abnormal returns clearly confirm the fact that this deal was indeed a value destroying operation, or in the terminology of this dissertation a “Bad” SPAC. The Aldabra II acquisition of Boise, Inc. shows us the (huge) negative returns obtained by the investors since the deal was approved. After 6 months of the approval of the deal the cumulative return was -78.7% which increase to an astonishing -228.2% after one year. The cumulative abnormal returns are similar.
“In the days after Boise, Inc. was created in 2008, its new CEO said the outlook for the paper and packaging company was strong. A year later, the company’s stock was trading at 24 cents a share, a 97 percent decline.” Further to this news, if in this case investors had listened to the market they had avoided huge losses. Of course, there was a period afterwards that the company (Boise, Inc.) has recovered its “bad” period, however the investors that invested in the SPAC, maybe by trusting in the ability of the founders, incurred to huge losses that could be avoided at the decision date just by “listen” to the market.

6. Conclusion

SPACs are considered as an alternative investment vehicle to access to the public markets. Some investors use this alternative vehicle to access public markets instead of private equity funds or a traditional IPO. In reality, SPACs are a very specific type of an IPO but with some characteristics that make it more interesting for some investors.

Our study focus in the relationship between the markets share prices and the decision of the investors regarding the acceptance or rejection of an announced acquisition. According to the previous studies investors are influenced by the decision taken by the founders of the SPACs, which have a strong incentive to approve the proposed deal even if a value destroying deal. Recent changes in the SPAC structure made pertinent to update the study by Jenkinson and Sousa (2011) where the authors advised that investors should “listen” to the market at the decision date. Hence, this dissertation followed very close the methodology used by the authors. Although Jenkinson and Sousa (2011) recommended investors that they should listen to the market, our study clearly show that investor are not following their advice and are constantly approving “Bad” SPACs, which lead to huge negative returns in the year after the acquisition is approved.

Recent changes in the SPACs structures also didn’t help the investors to take better decisions. The change in the SPAC structure has altered the lifetime given to the investors to announce or make a decision, in order to enable the investors to have more time to make the right decision, as there were some of them stating that the short period of 18 months was not enough to announce good deals since they were not provided with enough time to evaluate the deal. Also, a new voting policy that introduced the possibility of the investors to redeem their shares even if the votes are in favor of the deal has not proved to be enough to prevent investors to approve value destroying deals.

According to this study, neither the recent changes in SPAC structure nor the warning provided by Jenkinson and Sousa (2011), that stated investors should consider the market prices at the decision date before approve/reject the deal, prevented the investors of constantly approving value destroying deals and obtaining large negative returns in the year that followed the deal.
7. References


Lewellen M., Stephan, (2008). “SPACs as an asset class.”, Yale University

Murray S., James, (2014). "The Regulation and Pricing of Special Purpose Acquisition Corporation IPOs", Christchurch Polytechnic Institute of Technology


8. Appendixes

Appendix 1: SPACs Timeline

- **SPAC IPO**
- Founders search for a potential target
- Announcement of the acquisition
- Decision Date: Acquire a company?
  - YES: Complete SPAC, Merged companies trade
  - NO: Liquidated SPAC, Become a normal public company and shares are distributed to investors

Timeline:
- 18 Months
- 24 Months
Appendix 2: Individual IRR measure for each strategy

In order to compute the individual IRR, we separate each SPAC according to the decisions of “redeem” or “sell” (this separation would be useful for the first and third strategies referred above). “Redeem”, if the share price one day before of the decision date is lower than the last trust value and “sell”, if otherwise. As such in each of the strategy the individual IRR is calculated as follows:

- **Strategy I** - Buy at the 1st trading day and sell in the day before the decision date (D-1) or redeem 60 days after the decision date (D+60):

  If the investor should “sell”:

  \[
  IRR = \left( \frac{\text{share price } D-1}{\text{trust } 1^{st} \text{trading day}} \right)^{\frac{365}{\text{duration}}} \quad (6)
  \]

  \[\text{Duration} = \text{day before the decision date} - 1^{st} \text{trading date} \quad (7)\]

  If the investor should “redeem”:

  \[
  IRR = \left( \frac{\text{last trust}}{\text{trust } 1^{st} \text{trading day}} \right)^{\frac{365}{\text{duration}}} \quad (8)
  \]

  \[\text{Duration} = 60 \text{ days after the decision date} - 1^{st} \text{trading date} \quad (9)\]

- **Strategy II** – Buy at the 1st trading day and selling one week after the announcement (A+1w):

  \[
  IRR = \left( \frac{\text{share price at } A+1w}{\text{trust } 1^{st} \text{trading day}} \right)^{\frac{365}{\text{duration}}} \quad (10)
  \]

  \[\text{Duration} = \text{One week after the announcement date} - 1^{st} \text{trading date} \quad (11)\]

- **Strategy III** - Buy at the IPO and sell the equity stakes one day before the decision date (S D-1) or redeem 60 days after the decision date (D+60) and the warrants one day after the decision date (W D+1):
If the investor should “sell”:

\[
IRR = \left( \frac{\text{share price } D - (1 + \text{warrants})}{\text{IPO share price}} \right) \cdot \text{Max} (\text{share price } D + 1 - \text{Exercise price warrant}; 0)^{\frac{365}{\text{duration}} - 1} \tag{12}
\]

If the investor should “redeem”:

\[
IRR = \left( \frac{\text{last trust value}}{\text{IPO}} \right)^{\frac{365}{\text{duration}} - 1} \tag{13}
\]

\[
\text{Duration} = \text{day before the decision date – IPO date} \tag{14}
\]

Afterwards, the IRR for the portfolios are computed. As referred previously, we construct two different portfolios for each of the strategies described above. The equally weighted portfolio main idea is to provide the same weight to each share of the portfolio. Our portfolio is constructed with all of the SPACs issued between 2007 and 2013 (giving two years of decision time, i.e. until end of 2015 or start of 2016). The construction of this portfolio for each of the mentioned strategies provides to investors, which participate in more than one SPAC, a better perspective of the strategy that should be followed, since it gives the same weight to the shares of small and large SPACs. The value weighted portfolio is based on the value of the market capitalization of the issued SPAC. This type of portfolio is also analyzed for each of the strategies providing the weight to each of the SPAC and considering their weight in the market, so that smaller and larger components hold their value accordingly.

Further to the above, the equally weighted portfolio for the first strategy (Buy at the 1st trading day and sell in the day before the decision date (D-1) or redeem 60 days after the decision date (D+60)), is constructed by following the next steps:

1) We sort all the dates available, i.e. dates of the 1st trading day and the date available one day before the decision or sixty days after the decision date, it will depend if the investor should “redeem” or “sell” according to our previous analysis for the individual IRR;

2) We define a value of the share price for the above sorted dates, i.e. we define the amount of -1.00 USD as a value at the 1st trading day and the value of
the share price at the day before the decision date or 60 days after the decision date, which will correspond to the defined prices used in the approach to define the individual IRR, divided by the share price at the first date. It is important to note that, we define the value of -1.00 USD at the first trading date of the SPAC considering that if the decision is taken at the same date of the IPO, the SPAC is liquidated and investors and founders will get nothing.

3) After sorting the above dates considering the respective values for those dates, we compute the actual value for each date, as follows:

$$\text{Actual Value} = \frac{\text{Value at the defined date}}{(1 + \text{Daily IRR})^{(X - Y)}}$$

(15)

Where the,

X – Date for which we are computing the actual value;

Y – First date that we have computed

Daily IRR – is obtained by pre-defining that the sum of all the actual values should be zero. Consequently we can also obtain Annual IRR = $(1 + \text{Daily IRR})^{365} - 1$

The computations in the second strategy have the same approach of the first one, but in this strategy the value of the share price is defined for the 1st trading day, as in the previous strategy, and for one week after the announcement date.

For the third strategy we also use a similar approach with the same computations, however using different variables. Instead of 1st trading day we use the prices of the shares ate the IPO to compute the value of the same. Additionally, instead of using only the share prices for the day before of the decision date or share prices for 60 days after the decision date, which will depend on the decision to take by the investors, we use the share prices and also the warrants price.

The second type of portfolio, value weighted portfolio, is also computed for each of the strategies, as referred above. Therefore, first of all, we sort all the dates that will be included in each of the strategies (1st trading date, one day before decision date or sixty days after the decision date, one week after the announcement date, IPO date). Then we will define the value for the dates included in each of the strategy. In the first
and second strategy, we are buying at the 1st trading date; as such we define that the value of all shares at the 1st trading date for each SPAC will correspond to one percent of the market capitalization of the SPAC (share price multiplied by the number of shares at the 1st trading day). It is important to note that as in the previous portfolio we also define a negative share price for the 1st trading day of the SPAC. Thus, in all of the SPACs the 1st trading date value will be one percent of the “negative” market capitalization at that date. The value of the SPAC, depending on the decision to “sell” or “redeem” for each strategy, is calculated by dividing the amount that the investor can get at that date (one day before the decision/sixty days after the decision or one week after the announcement, for the first and second strategy respectively) by the value calculated previously for the 1st trading date, multiplied by the negative share price at the first trading date. In the third strategy instead of defining the value of 1st trading day we define the value for the IPO with the same approach. Additionally the value at the decision is defined also with the same approach but includes also the warrants value, which is defined as zero if the decision should be “redeem” the SPAC or if the decision should be “sell”, as follows:

\[
\text{Warrant Value} = (\text{Share price at } D+1 - \text{warrant exercise price}) \times \frac{\text{no warrants}}{\text{no shares at IPO}}
\]  

(16)

After these calculations for the construction of the value weighted portfolio, we compute the actual value for each of the SPAC as in the equally weighted portfolio and then the Daily IRR and Annual IRR, as previously mentioned.