



SPAC IPOs:

Underwriter Reputation and Investor Returns

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i. Acknowledgements

I would like to express my gratitude to my supervisors, Professor Miguel Sousa, for guiding me throughout my dissertation research and other important courses in my academic path. He also made possible for me to connect with two other great guiders. Also a co-supervisor, Professor Milos Vulcanovic, initiated my introductions to the focus of this study and, together with Professor Magnus Blomkvist, we held interesting discussions regarding the collected data and methodology. It was a tremendous experience. I would also like to thank my family and friends for the support they gave during this hardworking period.

ii. Abstract

This study aims to introduce the role of the underwriter syndicate, namely the lead underwriters, in the SPAC market. These entities have a different nature than the companies that traditionally complete an IPO as they are ‘blank-check’ companies that have the goal to complete a business combination in a pre-defined amount of time.

Besides other variables that picture the evolution of this now booming segment, there is evidence that a SPAC underwritten by investment banks with higher reputation might lead to higher annualized returns at the time of the announcement and at the time of the completion of the business combination. When considering a relationship with the size of the issue, another positively related variable with the returns, it is possible to understand that both these effects might be less predominant in big IPO issues that are already subscribed by high reputation underwriters.

Keywords: *SPAC, Underwriter, Reputation, Blank-Check, Business Combination, Announcement*

LIST OF TABLES

Table 1: Descriptive Statistics for the Announcement Returns (regular and winsorized)	28
Table 2: General Statistics for the Merger Returns (regular and winsorized)	28
Table 3: Winsorized Announcement Returns. (Adjustment of 10%) by Underwriter Reputation (MW Lead Rank)	30
Table 4: Winsorized Announcement Returns (Adjustment of 10%) by Multiple Lead (0=Single Lead Underwriter; 1=Multiple Lead Underwriter)	31
Table 5: Descriptive Statistics for the Announcement Return. 495 Observations	31
Table 6: Results of Regressions 1-4 applied over the Winsorized Announcement Returns @ 10%. Full Sample. 495 Observations	33
Table 7: Results of Regressions 1, 2 and 4 applied over the Winsorized Announcement Returns @ 10%. 2020 Sample. 136 Observations	37
Table 8: Results of Regression 5 applied over the Winsorized Announcement Returns @ 10%. 2020 Sample (136 Obs), 2019 Sample (53 Obs) and 2007 Sample (63 Obs)	39
Table 9: Results of Regressions 1, 2 and 4 applied over the Winsorized Merger Returns @ 5%. 2020 Sample. 136 Observations	41
Table 10: Results of Probit Regressions. With and Without the verified Annualized Announcement Return @ 10%	43

LIST OF FIGURES

Figure 1: Number of SPAC IPOs in the previous 2 years	23
Figure 2: Average SPAC IPO Size by Year	23
Figure 3: Average Size of the Underwriter Syndicate per Year	24
Figure 4: Average Underwriting Fee per Year	25
Figure 5: Average Amount in Trust per Year (% IPO Size)	25
Figure 6: Average Dilution per Year (Extra Shares per Unit)	27
Figure 7: Histograms of the distribution of the different annualized return measures at the Announcement	29
Figure 8: Histograms of the distribution of the different annualized return measures at the Merger	29
Figure 9: Rank-Size Relationship. Full Sample. 495 Observations	37
Figure 10: Rank-Size Relationship. 2020 Sample. 136 Observations	39

TABLE OF CONTENTS

1. Introduction to SPACs	1
1.1. Traditional IPO vs SPAC IPO	1
2. Key Literature on SPACs	3
3. Research Motivation	5
4. Key Literature on IPO Underwriting	6
4.1. Introduction	6
4.2. Underwriter Reputation Ranks	6
4.3. Underpricing	7
4.4. Spreads	8
4.5. Returns	8
4.6. Matching and Environment	9
4.7. Relations to the SPAC market	10
5. Data and Methodology	12
5.1. Reasoning and Challenges	12
5.2. Information Treatment and Underwriter Ranking	13
5.3. Information on Returns	15
5.4. Other Variables	17
6. Hypothesis and Objectives	18
6.1. Study on returns	18
6.2. Study on Negotiation’s Success	21
7. Descriptive Statistics	23
7.1. Market Activity and IPO Size	23
7.2. SPAC Underwriters	24
7.3. Fees and Commissions and Amount in Trust	25
7.4. Dilution	27
7.5. Returns	27
8. Results	32
8.1. Annualized Announcement Returns	32
8.2. Merger Returns	41
8.3. Probit regression	43
9. Conclusion	45

10. Appendix.....	46
10.1. Market Activity and IPO Size	46
10.2. Market Share Quantiles	47
10.3. Ranking System	47
10.4. Covariance Matrix.....	47
10.5. Distribution of returns per year of IPO.....	49
10.6. Applying the models to other variations of the return	49
10.7. Note for the possible efficiency of the ranking systems based on quantiles in the future	49
10.8. Other findings	50
10.9. Residual Graphs	50
11. Bibliography	52

1. Introduction to SPACs

Previously, the SPAC (Special Purpose Acquisition Company) market had a bad reputation due to their poor after-merger performance and due to the several frauds that were commonly related with the involved deals. SPACs are companies founded with a purpose of acquiring another existing business and, since they raise capital through an IPO, they are publicly traded. Using the raised capital, these companies, led by a team of investors and experts in certain industries (“founders”), search for a target that after completing the proposed business combination becomes a public company. As we will see, this process has evolved overtime in an effort of correcting the poor returns and fraud events observed in the past.

A turning point might have occurred in 2013 as a few SPAC IPOs of considerable size and with attractive returns propelled the surging of deals of the same type, eventually turning a yearly market turnover smaller than 2 billion USD to more than 75 billion USD in around 8 years. As of 2021, the boom is more pronounced than ever, as an enormous amount of capital is being raised by these firms as well as record-breaking deals are on course to be announced by these ‘blank-check’ companies (see Appendix Figure 1A and 2A).

1.1. Traditional IPO vs SPAC IPO

Traditionally, companies can become public through a regular IPO process, when they can either issue new or existing shares. Although with its costs, such as the underwriter’s fees, there are some advantages that justify this process. The main reason is the collection of outside capital in order to invest and develop business ideas, to help stabilize the business or to pay existing debt. Another important reason would be turning the founder’s investment liquid as they, under certain circumstances, may sell part or the full position on the company. Moreover, becoming public can also act as a marketing tool, promoting the company as a serious business in a highly regulated market. Before turning public, the company must disclose information to the public in certain standards and make an agreement with an investment bank, the underwriter. This underwriter may gather a team of more investment banks that, together, will present the company to possible investors in a roadshow, gathering information about the price that may be set at the IPO. With the negotiations finished and a price set, after the IPO, the company becomes publicly traded at the stock exchange.

Although with similar outcomes, the way a company becomes public through a SPAC and the way initial investors invest are different. The SPAC founders, usually a team of individuals with high reputation for investments in certain markets, express their intentions with the ‘to be raised’ capital. Then, several investors, either investment funds, pension funds or high net worth individuals, choose whether to invest in the project. The way this newly created firm gathers capital is by issuing units, composed mainly by stocks and warrants, in an IPO process that requires a team of underwriters. This firm, that at first has no defined business and with the only goal of acquiring other businesses, turns public and enters the hunt for a target company in a process that traditionally should not take more than 2 years. So, instead of the company looking to become public, this process sees that company as an acquisition target for an already public company.

During this process, the ‘fund’ is publicly traded, reacting especially to the announcement of the target company, either the official public announcement or eventual rumors, and during the time prior to the decision of the acquisition, where there is a higher trade activity that reflects the perspective of the investors on the proposed deal. Historically, these SPACs have shown poor performances, even exhibiting negative returns following the completion of the merger. (Lewellen, 2009; Kolb and Tykova, 2016; Dimitrova, 2017) There are several conflicts of interests, usually turning the event profitable to certain parties, such as the founders, in detriment to other parties. However, the more recent SPAC wave has a few very successful cases, showing that it is possible to be profitable in these types of investments.

In 2013, despite still being around 1 to 2% of the total US IPO market, these strategies were catching attention. In 2015, the SPAC IPOs totaled 10% of the proceeds generated by all the US IPOs (above 40 million USD). From that point forward, the average size of a SPAC deal consistently grew as well as the number of deals. The total proceeds generated in these issues was growing in absolute values and in relative values, comparing to the full IPO market, comprising almost 50% of the total US IPOs (larger than 40 million USD) in 2020 (see Appendix, Figure 1A and 2A).

2. Key Literature on SPACs

The topic of this dissertation was chosen to complete the academic literature currently available. Although SPACs are taking an essential share of the IPO market and more academic attention is being directed to this phenomenon, completed academic literature on them is still scarce. Previous studies are focused on more general aspects of the process, namely their “performance (Lewellen, 2009; Kolb and Tykvova, 2016; Dimitrova, 2017), the acquisition likelihood (Cumming et al. 2014; Lakicevic et al. 2014) and their survival post-merger (Vulanovic, 2017).” (Bloomkvist and Vulcanovic, 2020)

Therefore, this study will first present a story of the evolution of this market, to present its scenario, the reasons that it is growing and the main changes in the most important factors. Moreover, it will present a new approach to the underwriting of SPACs that includes controlling variables from some of the most important findings regarding the studied drivers.

The current wave of SPAC IPOs is challenging the historic association of these structures with the ‘blind pools structures’ that marked the previous century with fraud events. That fear is still present on SPAC investors and may be justified by the perceived lack of time to figure out the legitimacy of the company and other fraud possibilities (Osipovich, 2020). However, currently, there is no evidence of fraud or outright investor deception (Klausner and Ohlrogge, 2020).

Besides past outright frauds, the average performance of a SPAC, for an investor, is quite poor. The way the process was built leads to strong conflict of interests between several parties. As the founders of the SPAC and underwriters of the initial IPO, have their compensation dependent on the completion of the merger, it is possible that value-destroying mergers are still completed, even when there is market evidence that will be the result, since the pre-merger behavior, after the announcement of the target company can give some evidence of the possible post-merger evolution (Jenkinson and Sousa, 2011). The bad SPACs, with negative reactions after the announcement, are approved, with a lot of trades happening days before the decision date showing a possible “vote-buying” by the founders and affiliates, from investors that indicated that would vote against the merger (Jenkinson and Sousa, 2011).

These past events are what build the value-destroying and fraud reputation of the market. However, this recent wave of deals is helping to change this perspective. Mohsin Meghji, a

founder of one of these entities – MIII Acquisition Corp, states that “Today, SPACs are an accepted institutional investment class. Many are sponsored by leading investment firms, underwritten by leading investment banks, and purchased by well-respected institutional investors.” As more and more deals are being completed, more companies have been successful in becoming public by this process, giving light and hope to the system. The increase of the number and average size of a SPAC deal is bringing the entities with the highest reputation on the traditional IPO market, such as Citigroup Global Markets, Credit Suisse Securities, UBS Securities and Goldman Sachs & Co, to this segment. Although they did not support this option of going public in the beginning of the decade, the considerable growth of the sector has brought their attention. These four names comprise now more than half the market, with a strong competition (Freedman, 2020).

These underwriters joined the SPAC market as they saw the trending evolution but are now contributing to the exponential expansion. As stated before, this segment of IPOs has bad reputation and clear conflict of interests, but the factor of having underwriters with these high reputations is a sign of information for an outside investor (Klausner and Ohlrogge, 2020).

Relative to the underwriter variable, there is some evidence that a SPAC is less likely to withdraw their IPO if they have a larger number of underwriters in the syndicate, as well as being related to the level of volatility on the appointed for the IPO. The same study also points that the IPO process takes longer if there are two lead underwriters. (Dimic et al., 2020). Another general critic appointed to this segment is that there is a different treatment of SPAC underwriters than the ones involved in a traditional IPO process. As the initial SPAC vehicle does not exhibit operational activity, historically, the SPAC underwriter is not given the same responsibilities as in the traditional process. (Klausner and Ohlrogge, 2020). However, these underwriters are usually part of the advisory team for the valuation and negotiation of the target company, as well as active entities in the acquisition/merger process. This long-term commitment in the initial issues’ quality to the post-merger success of the deal can be transmitted to the public by the additional investment in warrants, especially during times of high uncertainty and risk aversion (Blomkvist and Vulcanovic, 2020). This point, combining with the increasing reputation of the underwriters, should start turning the reputation of the market.

Some studies concentrated part of their efforts in describing the structure of the deals, establishing a relationship to the post-merger survival, or understanding the pre-merger behavior

and reactions in the announcement date. Jenkinson and Sousa (2011) made a clear description based on a sample of 58 US SPACs that conducted an IPO between August 2003 and June 2008, of several general characteristics of the SPAC process, including the percentage of proceeds kept in the trust fund, the percentage attributed to the SPAC founders after the IPO, the time that the process takes and the composition of the issued units (warrants relative to common stock). This study also includes certain strategies that could exhibited high returns with low risk, that should have worked due to the events such as the dilution caused by warrants and compensation of the founders and underwriters, and possible explanations for the merger of bad SPACs, according to market information.

It is an on-going evolutionary process, with changes that take time to understand if they represent an improvement or not. Although some SPAC structures are replications of previous ones, there is innovation and diversification (Murray, 2017), giving possibility of a more efficient and complete study.

3. Research Motivation

As we presented, there have been studies on the sectors that have been attracting this SPAC activity, their performance, both pre- and post-merger, or acquisition likelihood but there is a lack of attention to the underwriter variable. As a matter of fact, the more recent years were marked by the entering and dominance of the traditional IPO market's biggest underwriters. Combining with the boom of the market, this new data permits a more complete study of this variable, namely on the effect of the underwriter's reputation and the structure of the deal (underwriters' fees and commitment) on the development of the process and of the unit price.

For this, we also analyzed the literature on the underwriter role on the traditional IPO market that, although being much more exhaustive and academically studied, hardly ever considers 'unit' IPOs. Nevertheless, the theories presented on this literature will help to explain the active role of the underwriters and how it is possible to be an indicator for the quality of a SPAC.

4. Key Literature on IPO Underwriting

4.1. Introduction

Contrary to the recent SPAC literature, the literature on underwriters is vast. The equity markets are not static, as they adapt and change overtime, and underwriters play a crucial part. They are a very important vehicle for a company to become publicly traded, either through an IPO or a direct listing. As the most common way to undergo this process is the IPO, also as the most transparent process to analyze, most of the literature relative to the underwriting aspect seeks to establish some sort of relationship to some IPO phenomena, to returns or to better explain the role and activity of this entity. In this case, we discuss the possible relationships and theories surrounding the reputation of these underwriter.

4.2. Underwriter Reputation Ranks

Before presenting the findings relative to underwriter reputation, it is better to first present the most predominant reputation ranking systems for the underwriters. Firstly, the study of Carter and Manaster (1990) presented the most widely used measurement of underwriter reputation: the CM ranking. This score, from 1 to 9, is based on the appearance of the underwriters on the tombstone announcement. This document is an advertisement that contains the basic information regarding the upcoming IPO, including a segmented list of the composition of the syndicate. Traditionally, the underwriters that appear on this announcement have the goal to appear higher on the list, reflecting their higher reputation. According to Carter and Manaster (1990), a continuous analyzes of the tombstone announcement, by comparing the relative position – ‘reputational order’ - of the underwriters on the syndicate list along time, can lead to a good measurement of their relative reputation.

Shortly after, Megginson and Weiss (1991) present another underwriter reputation measurement, now based according to their relative market share of public offerings. Fernando et al. 2013, based on the MW ranking, considered a three-year moving average of all the IPO and SEO proceeds, for each underwriter at each year, and compared it to the underwriter with the highest three-year moving average that would present a score of 100, following the formula:

$$i. \quad MWR_{jt} = \frac{\ln x_{jt}}{\max_t[\ln x_{it}]} \times 100$$

Although there are a few more reputation ranking scores, both the CM and the MW are the most used in the literature. However, it would be a problem to use these existing ranking scores to the SPAC market. First, although they can show experience in the subscribing to IPOs, the recent SPAC market does not present the same participants as the traditional IPO market, neither their experience in the market. The underwriters that were present in the SPAC market a decade ago, leading it, were not relevant in the tradition IPO market, for example. Second, since they do have other responsibilities involving the active search process and negotiation, a ranking that does not consider the experience in the SPAC market should not be considered as the entire measure for the underwriter reputation in this segment. Therefore, this paper will use a new measure of underwriter reputation, only applicable to the SPAC market, since it considers the participation of such entities along the existing period of SPACs.

4.3. Underpricing

Carter and Manaster (1990) stat that IPOs with more informed investor capital require higher initial returns (i.e. underpricing) as this may be compensation for the uninformed investors to participate in the offering, for the risk of trading against superior information (Rock, 1986). The higher the participation of informed investors, the higher the IPO underpricing since they have scarce resources for its acquisition of information and therefore specialize in more uncertain investments. Although some studies show positive (Betty and Welch, 1996; Cooney et al, 2001) or no robust relationship (Logue et al, 2002; Loughran and Ritter, 2004), Fernando et al (2014) also shows that there are reputational incentives do minimize underpricing as excessive underpricing leads to a loss in the market share for the underwriter (Beatty and Ritter, 1986, and Dunbar, 2000), makes them less likely to participate in future offerings (James, 1992) and it may also decrease the underwriters market value (Nanda and Yun, 1997). Similar consequences can also occur if the underwriters are target of SEC investigations (Betty and Hand, 1998).

So, prestigious underwriters, with the goal to reduce the incentive to information acquisition, market lower risk offerings and are subsequently associated with less underpricing. Simultaneously, less risky firms will look to communicate that to the market by contracting these underwriters with reputation for low-risk offerings, benefiting from less informed investors, less underpricing and therefore higher proceeds. In this matching, the more prestigious underwriters may charge higher fees, in the trade off with reduced underpricing (Carter and Manaster, 1990).

4.4. Spreads

The main source of revenue for these underwriters comes in the form of spreads relative to the offer price. Chen and Mohan (2002) show that this underwriter spread serves as the compensation for the risk associated with firm commitment and price support activities. However, the underwriters can also implicitly price the firm's risk through underpricing. This pricing variables can be jointly determined but there are limits to both high spreads (competition and regulation) and to high underpricing (influence of the issuer). This study shows that the explicit cost is as large as the implicit cost. It also shows that prestigious underwriters may demand a smaller spread, similar to Carter (1992). Other findings in the study are that these prestigious underwriters also market IPOs with higher proceeds and with lower standard deviation in their aftermarket returns.

A more recent study on the relation of underwriter spreads and their reputation, by Fernando et al (2014), shows that there are significant returns for the underwriters that invest in their reputational capital (investment in reputation; Klein and Leffler, 1981; Shapiro, 1982; Allen, 1984), as they apply larger spreads than their low reputation counterparts. For the issuing firms, they can achieve higher valuations and benefit from other non-price benefits, such as premium analyst coverage. Although there are slight economies of scale, a negative relation of offering size and spreads measured in percentage, there is still reputational premiums applied. This study differs from others that found different results because it considers the ex-ante expected proceeds, as the ex-post proceeds are an endogenous function of the underwriter's reputation (Chemmanur and Fulghireri, 1994; Both and Smith, 1986). Since high reputation underwriters can receive higher compensation because they can generate more proceeds (Chemmanur and Fulghieri, 1994), using the ex-post proceeds may lead to a flat relation between reputation and spreads (Chen and Ritter, 2000; Hansen, 2001; and Abrahamson, Jenkinson, and Jones, 2011) or even declining (James, 1992; and Fernando, Gatchev, and Spindt, 2005).

4.5. Returns

Carter, Dark and Singh (1998) show that firms associated with more prestigious underwriters have less underperformance relative to the market than the ones underwritten by low prestige entities. Similarly, Michaely and Shaw (1994) show similar results when using the investment bank's capital as a proxy for prestige and Loughran and Ritter (1995) state that

investing in IPOs underwritten by prestigious investment banks mitigates the hazard effect of IPO investing. One support for this statement is that Fiels (1995) shows that, in the long run, IPOs with larger institutional shareholdings significantly outperform ones with smaller institutional shareholdings, and high reputation underwriters seem to achieve that.

The study of Logue et al (2002) controls the relationships of underwriter reputation by including the activities the underwriters take part with a path analysis approach. Therefore, the results are different than other studies (e.g., Beatty and Ritter 1986; Carter and Manaster 1990; and Carter, Dark, and Singh 1998). Overall, it seems that the performance in the equity markets is better explained by factors other than reputation, although the latter might have a small, mainly indirect relation to these factors. For longer time horizons, more exogenous factors, non-controlled by the underwriter, take a more important role in determining the performance of the company. Still, issuers pay for the reputational service for the investment banks to conduct effective premarket activities, solve information problems and to end the offering with a greater insider control.

4.6. Matching and Environment

One of the most discussed bias regards the matching of underwriters and issuing firms. Investors look at the quality of the firms underwritten by an investment bank as their performance (Chemmanur and Fulghieri, 1994) so, these investment banks, seek to maintain their reputation by marketing larger and lower risk IPOs (Ritter, 1994) and firms that are more likely to survive in the long-term and issue equity in the future (Fernando et al 2003). A study of Chang et al (2010) evaluates this matching by showing that the increase in accruals by issuing firms are more likely to represent actual changes in performance, rather than manipulation, if they have high prestige underwriters. These earnings management show a negative relation to post-IPO stock performance, but only for the low reputation underwriters, as the high reputation audit and certify the provided financial information more carefully, while also adding credibility to the information. This conflict of interest also emphasizes that if firms want to communicate their lower risk and truthful information, they usually contract high reputation underwriters (Boeh and Southam, 2011), exchanging higher short run costs (e.g. spreads) for long-term benefits (Chang et al 2010).

A recent study by Bajo et al (2016) introduces the concept and measures of Social Network Analysis (SNA) to the IPO market. Considering this format means that the investment banking sector has established networks and that the participating underwriters use these networks to both disseminate and to extract information, their two main roles. The underwriters have the role of communicating the information regarding the future strategy, performance, and legitimacy of the possible soon-to-be company with other investment banks and institutional investors, that also acts as the attraction on attention towards the firm. On the other side, the underwriters use the truthful feedback (Benvenist and Spindt, 1989) from these other entities to establish a more accurate valuation.

Within these networks, there are underwriters that have a more central position, as they have a higher number but also more relevant connections to other investment banks. These more central underwriters, in a similar manner than other studies that use the Carter-Manaster ranking, when acting as leading units, seem to do price revisions more frequently and achieve greater IPO and after market valuations. Besides acting as a two-way information vehicle, the underwriters with a higher centrality also seem to be able to gather greater analyst coverage in both pre and post IPO, a simultaneous information dissemination (advertising) and information extraction mechanism, as the generated attention by the syndicate and the analyst coverage translates in stock liquidity.

Merton (1987) created an “investor recognition” or “attention” model, stating that an investor will invest if it recognizes the information. Complemented by Van Nieuwerburgh and Veldkamp (2009) and Liu, Sherman and Zhang (2014), the process to recognize this information has a sunk cost associated. The establish networks make possible that this cost is decreased when the investment banks have repeated interactions, since the underwriter peer networks have implications for the quantity and quality of information as well as the level of cooperative efforts (Chuluun, 2015)

4.7. Relations to the SPAC market

Despite a vast literature on underwriter reputation and its possible repercussions, most of the studies only account for regular IPO offerings, excluding unit IPOs, a regular statement for SPACs. Moreover, the SPAC market, when it comes to the public offering, is much more straightforward. By its definition, the SPAC is a newly created blank-check company that does

not have an operating business. Therefore, its valuation is easily determined at the IPO process and, in the following period, the price of the units and its components are based on both the expectations on the merger and the generated interest in the trust account. As for the business combination, its nature is more price oriented than value oriented: there is an amount of money available that will buy a certain portion of the company.

Following the methodology and results of Gahng, Ritter and Zhang (2021), there are two periods of investments in SPACs: the SPAC period, from the IPO to days before the merger, and the deSPAC period, the period that follows the completion of the merger. This study covers a broad variety of aspects of the SPACs, including a small overview on underwriter reputation. Using the underwriter reputation ranks based on the Carter and Manaster (1990) prestige scale, they show that the average quality of the underwriters has increased over time as well as the increasing market share of the most prestigious underwriters (Goldman Sachs, Morgan Stanley and J.P. Morgan), that only recently started underwriting this type of IPOs. Moreover, they found that SPACs underwritten by more reputable underwriters tend to have higher returns, in both SPAC and deSPAC periods. However, due to some outliers with very high returns, the mid-tier on underwriter reputation outperformed the others.

For the SPAC period, the average returns are positive in every underwriter prestige tier since the proceeds are kept in a trust account with interest, besides the expectation on the business combination. As for the deSPAC period, the overall results of common shares returns are negative for both 1-year and 3-year periods, showing that the expectations created at the merger were not met, although there is a noticeable underperformance by the SPACs underwritten by low prestige investment banks. This is in line with the literature on underwriter reputation, that shows that high prestige underwriters match with lower risk firms that have higher chance of surviving in the future (Carter et al, 1998; Fernando et al 2003; Chang et al, 2010). For the SPAC period, the entities underwritten by high reputation banks may be associated with a better expectation on the quality of the merger. As for the deSPAC period, it is common that at least one of the lead underwriters follows the merger process as advisory, taking a relevant part on accessing and auditing the target firm, even though a lot of them have not yet produced any revenue, as well as a support entity in the following period. Therefore, even in the SPAC market, higher reputation underwriters seem to do better choices and/or communicating information than their low reputation counterparts do.

This study also presents the difference between the common shares' returns and the warrants' returns, the components of the issued units. Specifically, for the deSPAC period, common shares exhibit pronounced negative returns for 1 and 3 years after the merger but the returns of the warrants are much more volatile. In most of the examined years, the warrants have a better performance than the common shares, so when considering them as a unit issued, the overall return of the initially issued unit is less negative. They also found a clear monotonic relation in which SPACs with higher potential dilution (from warrants and rights) substantially underperform in the deSPAC period in line with the decrease of this potential dilution in the most recent SPAC IPOs.

Relative to the traditional IPO literature, the role of SPAC underwriters is different. Due to a low volatility and straightforward valuation shortly after its IPO, activities such as price stabilization and phenomenon such as underpricing are basically non-existing. Moreover, the exercise of the overallotment is a simply extra issue of capital that is traditionally adopted by the investment banks. As for the assertive matching theories, they may be present in the SPAC market in the time of negotiations, when there is a specific target to analyze, but also at the IPO, when the SPAC matches with the team of founders.

In SPACs, the extracted information consists on the views of the public and their opinion on the merger deal and target company. The dissemination is useful to improve share valuation and market the target company. Therefore, the information network and the relative position that the underwriters take might be relevant factors in the success of the SPAC objective.

5. Data and Methodology

5.1. Reasoning and Challenges

This study comprises all the completed SPAC IPOs until the end of 2020, with the first observation being from 2003. The collection of data depends on its nature. Firstly, there are no public datasets that contain a complete report of past SPAC activity, especially regarding underwriter participation, making the collection of information a mainly manual process.

Upon the approval of the IPO, the SPAC commonly issues a 424B4 form that contains information regarding the IPO, the underwriter syndicate, and the SPAC itself. Although there were a few cases where the same information was presented in another form (424B2; 424B3; S-

1), there are a few cases that where the disclosed information for this study was not available, mainly the syndicate composition, as the form was simply not complete.

To have consistent information, the collection of information such as the announcement date and the merger date was, once again, individually collected from issued forms. As these companies are publicly traded, once they have a formal agreement to engage in negotiations with a certain target, they must disclose it to their shareholders. Traditionally, following the announcement of the possible target, even if it does not include specific information regarding the deal, the SPAC issues a current form 8-K expressing that it as entered into a Business/Merger Agreement. It is also common to disclose this information via the 425 form, a “required prospectus that discloses information about business combinations such as mergers and acquisitions” (Investopedia¹). Similarly, the merger date is also retrieved from issued current forms (8-K) that specifically state the conclusion of the Business/Merger Agreement, that can be amended several times since its announcement.

5.2. Information Treatment and Underwriter Ranking

Although some information does not require specific treatment due to being explicitly available in the disclosed form, the focus variable of this study – underwriter reputation – does require an extensive treatment. As stated before, a common underwriter reputation measure is the Carter and Manaster Ranking (CM) (Carter and Manaster, 1990) that uses the tombstone announcement and the relative positioning of the underwriter banks on that list. However, this ranking is not suitable for a fast-paced market like SPAC IPOs. Therefore, the starting point for creating an underwriter reputation score, following other existing traditional scores (Megginson and Weiss, 1991), is their market share. With the information disclosed by each SPAC regarding their syndicate, it is possible to measure their participations in the market at each point in time.

The computation of the market share of each underwriter for each SPAC requires a recurring analysis of the previous activity of the investment bank in the last two years, the traditional time limit a SPAC has to complete an acquisition/merger. Therefore, for each SPAC IPO or for each day, in the case that there were more than one SPAC IPOs, it is possible to create a list of active banks and their respective market share, computed by dividing the participation (in dollar amounts) of the investment bank in the previous two years by the issued

¹ Investopedia: <https://www.investopedia.com/terms/s/sec-form-425.asp>

amount in all SPAC IPOs (“active SPACs”) in the previous two years. Although it is possible to use the market share as a reputation score, it has the standard problem of being relative to the average and median market shares of the market, which vary according to the active banks at each point in time (i.e. the same market share for different moments in time should be able to lead to different ranking scores, depending on the distribution of the market) and the concentration of market share in a small amount of investment banks. Therefore, it is necessary to create a more stable and limited measure.

The first reputation ranking system is a simple model that attributes a score - from 1 to 10 - according to the quantile the market share of the underwriter belongs. However, the attribution of the score is not straightforward: the top 10% in market share do not receive a score of 10. By observing the market share distribution (see Appendix, Figure 3A), the market is commonly dominated by a few investment banks, followed by a few others that exhibit a significant, but not dominant, participation in SPAC IPOs. Moreover, there is a strong concentration of investment banks that possess low market shares. Due to this distribution, I decided to do a segmentation in the upper hand of market share, to attribute different scores to these entities, and concentrate more investment banks with lower and very similar market shares around the lower end of reputation scores (see Appendix Table 2A).

A second ranking measure uses the logarithmic function to smooth the different levels of underwriter market share. With the same starting point, this reputation ranking considers the natural logarithm of the market share values which, due to its mathematical properties, should widen the gap between close values (i.e. the underwriters with lower levels of market share) and considers the higher values to be more similar (i.e. the highest values are considered in the same level even if there is a considerable difference in market share). Due to this factor, there is no need for the adjustment made for the other model and then ranking simply symbolizes the corresponding quantiles.

Finally, the third ranking model adapts the ranking score of Megginson-Weiss (1) to the SPAC market. For each moment in time, this model considers the relative market share of an underwriter to the market share of the leading underwriter (i.e. the one with the highest market share that, by definition, will have a score of 100). This enables the distribution of underwriter reputation to be much more versatile and accurate as it concentrates a higher amount of ranks

in the lower end, in line with the concentration of market share for a small amount of underwriters.

However, the purpose of this study is to understand a possible relationship between the returns of the SPAC and the reputation of the participating underwriters, either being the full syndicate or the leading underwriters. Although there are SPACs, like traditional IPOs, only underwritten by a single investment bank, most of them have multiple underwriters as there can also be more than one leading underwriter. These values are then obtained by a weighted average method: underwriter rank times their relative subscription on the IPO (for the average rank of the syndicate) and underwriter rank times their relative subscription of the leading underwriters (for the average rank of the leading underwriters).

The distribution of these values is now different than the initial values of the market share and the individual rankings, since the subscription made by each investment bank at each IPO is different and traditionally higher for high reputation banks. Therefore, the simple ranking method, despite adjusting in the higher scores' region, creates a distribution of average underwriting score that is skewed to the right. Similarly, the simple log ranking shows a strong skewness to the right, with almost half of the syndicates having a ranking between 9 and 10. However, the adaptation of Megginson-Weiss ranking, when considering the computed values of the syndicate ranking or leading underwriter ranking, leads to much more uniformly distributed ranking scores, which can be useful when studying the stated relationships. The distributions of the average lead underwriter rank are available in the appendix (see Appendix, Figure 4A).

5.3. Information on Returns

Retrieving price information of these SPACs to compute the required information (returns at several periods in time) is also quite complex. Firstly, the SPACs can be seen as temporary entities as they usually do not survive more than 2 years with its initial name and the initially attributed tickers, meaning that some information is difficult to retrieve, especially in older observations. Another cause that can lead to a similar problem is the repetition of ticker symbols as some SPACs belong to a series of SPACs issued by the same founders/investors, which can lead to confusion in data retrieval. Second, there is the reason that leads to the exclusion of “unit IPOs” in most studies: the unit is a compound structure that can be dismantled and traded

separately, sometimes at the will of the investor other times imposed by the SPAC itself. For example, after the IPO, the unit can be traded as a whole for an undefined amount of time before being dismantled and its components (shares and warrants) start to be traded in a separate fashion. However, the timing of this ‘separate trading’ can vary and the unit itself may still be traded in full after the mentioned separation. Moreover, since the inception of the SPAC market, these entities can decide if they make the warrants publicly available for trade shortly after the IPO (which has been a present trend) or only after the announcement or even merger. Due to that complexity, the prices were gathered (using DataStream by Eikon) and verified individually for the moments of the announcement and the merger.

The price information relative to the main SPAC events (announcement and merger completion) was not retrieved at the specific date. As the disclosure of such events can be done after the closing of the markets (for example, at an extreme case, being disclosed in a Friday afternoon) it is possible that the reaction of the public may not be captured in that day. Therefore, to better capture the reaction of the public to announcement or merger completion, even for intraweek days, the retrieved price will be of the third day after the respective event day.

For the announcement, the preferred considered value to compute the returns was the price of the whole unit. First, there are cases where the warrant was not yet publicly traded at the moment of the event. Second, before the announcement the investor should not have a reason to dismantle the unit, as there was no indication of the volatility and nature of the investment. Nevertheless, in cases where the unit was delisted before the announcement, the share and warrant prices, together with the unit structure, are enough to compute the price of an ‘artificial unit’.

As for the completion of the business combination, the ‘artificial unit’ was considered for the computation of returns as there are a considerable number of cases where the unit is dismantled before the event or at the event (i.e. it is common that immediately after the business combination, the unit is dismantled and only the components are publicly traded). Still, in the cases that the separate components were not available or extremely abnormal values were encountered, if the unit was still publicly traded, that would be the considered price.

These entities can be quickly described as piles of cash available to complete a business combination. Therefore, up until the moment of the announcement, the company is simply cash

kept at a trust account, which, in theory, should lead to a very stable price and practically non-existing volatility. Although the trust account may generate interest, the verified price in the market, if no major event occurs (i.e. an announcement), should remain close to the IPO price because, if there is no business combination, the trust account is liquidated. Therefore, the pricing for SPACs that seem to that that destiny should at least be around the amount in trust relative to the initial IPO. Despite the initial amount in trust being much lower than 100%, a standard value in today's market, the interest rate was usually big enough to cover the discrepancy if the company did not complete any business combination. Due to this lack of volatility and certain established limits, at least up until the business combination, there is no reason to have a benchmark that is used to compute abnormal returns (i.e. SP500 vs US stock).

Both sets of returns are then annualized. For SPACs, the annualized return is a combination of target choice, which can be seen as the actual target valuation (a flat return), and timing. Due to this relationship, there is a considerable number of positive outliers: SPACs that managed to announce a good target or complete a business combination that was well received by the market in a short amount of time. Even within the outliers, the differences can be abysmal. In order to deal with this problem, the data of returns will be adjusted latter on.

5.4. Other Variables

Other variables that will be included in the model are directly or indirectly available in the SPAC public issued documents, namely the 424B4 document issued after the IPO.

Underwriter Syndicate: The 'Underwriting' section of the prospectus, as it contains the structure of the IPO subscription, implicitly contains information regarding the size of the syndicate. Moreover, it states information regarding the lead underwriting team or sole lead-underwriter. This information was also used in the computation of the underwriting reputation variables.

Fees: That document contains data on the fees and commissions paid to the underwriters as well as the structure/timing of those payments. Besides the total amount of fees, a variable named "fee structure" will represent the amount of deferred fees relative to the total amount of fees.

Amount in trust: Connected to the amount of fees and its structure, the amount in trust can be found in the Use of Proceeds section of the document. Besides providing information of the sources of funds, the IPO and private placements, it presents the initial costs the SPAC is going to incur in the IPO and in the search of a target, providing a proxy for the expected amount that

is to be kept in the trust account. That value can be relative to the size of the IPO and it creates a lower bound limit for the pricing of the share, since the trust account may be liquidated. The current standard for this value is 100% of the IPO issue, which is obtained by lower fees than before, more deferred fees and private placements to certain investors, with the straightforward goal of covering the referred initial costs, protecting the regular investor.

Dilution: The start of the document contains general information about the IPO, which includes the price and composition of the units. Although the previously stated private placements generally include warrants, the dilution variable for the model measures the potential dilution present in the unit issuing: the number of warrants per unit times the number of shares entitled to each warrant, representing the potential extra shares per unit that might be issued.

6. Hypothesis and Objectives

6.1. Study on returns

The goal of this paper is to understand if prestigious ranks are an indicator of the quality of SPACs along several points in their lifecycle, as these companies, for initial investors, traditionally exhibit poor returns when comparing to normal public investments such as indices. A major factor is the fee paid to the SPAC founders -around the 20% mark – with a small amount of capital at risk - and the commission paid to the underwriters, especially the upfront fees, that reduce the available capital in a substantial amount. However, there are recent efforts to reduce the effects of such factors, as some founders are reducing or even forfeiting their usual ‘20%’ fee and other third parties are covering the underwriter fees, mainly the upfront ones, through private placement of units or warrants.

Intuitively, and following the literature of IPO returns, we will examine the returns of these ‘blank-check’ companies at specific points in time that reflect the relevant events of a SPAC life cycle: the announcement and the merger. In this matter, we expect that the models that consider more long-term returns are weaker due to both the past of time and the stronger influence of external factors (market and economic sentiment, etc) (Logue et al, 2002) and the decrease of the size of the sample, as some SPACs of the recent wave have not yet surpassed such time and event checkpoints. Similar to most literature on IPO returns of traditional companies and SPACs, we will consider annualized returns to better perceive the magnitude of the returns of the whole unit.

Starting with the goal of this paper, we will analyze the average rank of the leader underwriters and the average rank of the syndicate as explainable variables. We expect both to exhibit a positive relationship (H1) as, according to the literature, prestigious underwrites should be better at acquiring and diffusing information as well as promoting analyst coverage (Merton, 1987, Bajo et al, 2016; Gahng et al., 2021), which in theory should be quite relevant for discussing possible business combinations intended by the SPACs. It is also relevant to consider that the “assortive matching” verified in the traditional IPO market might occur in both the SPAC IPO, between the underwriters and founders, and in the choosing of the target. Moreover, we expect that the average leader rank is more significant than the average rank of the whole syndicate, especially for returns of longer periods, since the leaders do have an impact in the negotiations of possible business combinations.

Hypothesis 1: A underwriter syndicate/ lead underwriter with a higher reputation rank leads to higher returns for the IPO investor.

As stated before, the commissions that these underwriters receive have an impact on the available fund. During the yearly years of these SPAC IPOs, the underwriters were being fully paid at the moment of the IPO, with considerably high fees. However, the poor performance of the SPAC market demanded a better equilibrium which led to a decrease in the overall fees and the change of their structure. Some SPACs started to defer part of the fees attributable to their underwriters to a moment later in time to market the legitimacy of the company: the completion of the business combination. Besides these deferred fees, the initial SPAC market paid its underwriters a non-accountable expense that, although being of a small magnitude (1-2%), was somewhat hidden in the disclosed forms. Now considering the division of fees, we have the upfront commissions, that negatively impact the amount in the trust account that will be used to either pay for the business combination or distribute if the SPAC does not conclude a deal in the available time frame.

Following the reasoning, the deferred fees can be examined in two perspectives. Higher deferred fees may signal an overall higher commission, reducing the available amount to complete a deal thus translating in smaller returns, or, for the same total commissions, can increase the security of the investors as they have more security if no deal is complete as well as benefiting from a higher amount in the trust account thus translating in higher returns due to more generated interest (H2).

It can also be an indicator of the commitment made by the investment bank, that requires the completion of a business combination to be fully paid for its work. This confronting perspective can be isolated if the total underwriting fee is included, that by itself, is expected to have a negative relation with returns (H3), since it represents more costs.

Hypothesis 2: Higher deferred underwriter fees, relative to the total underwriting fee, leads to higher returns for the IPO investor.

Hypothesis 3: Higher underwriter fees lead to smaller returns for the IPO investor.

Continuing the approach of the underwriter syndicate, its size may exhibit a positive relationship to the returns (H4a) as there is a perceived benefit is on the increase in information dissemination/acquisition and analyst coverage, both points also connected to the average rank of the syndicate and leader underwriters. On the other hand, more underwriters in the syndicate may increase the miscommunication among them, leading to a less efficient process in both speed and value creation (H4b).

Hypothesis 4a: A larger syndicate leads to higher returns for the IPO investor.

Hypothesis 4b: A larger syndicate leads to smaller returns for the IPO investor.

As stated before, the investors deliver their capital to the SPAC that deposits it in a trust account, paying several services including the underwriters, throughout the process. As the SPAC market evolved, it became common for companies to complete a private placement, to underwriters, founders, and other entities, simultaneous to the IPO, to cover for some of the IPO and negotiation costs. Therefore, the amount kept in the trust account is quite relevant for these regular investors. The higher it is, namely the closer it is to 100% of the IPO size (with a few exceptions surpassing the 100% mark), the better it is for them: more available capital for the business combination, less supported costs and more available capital to be distributed in the possible event of liquidation (less downside potential), which means a much more secure investment. Therefore, this should, in theory, be an indicator of positive SPAC returns (H5), especially for sustainable SPAC (non-negative returns), not necessarily of the best performing SPACs.

Hypothesis 5: A higher amount in the trust account, relative to the amount issued, leads to higher returns for the IPO investor.

The most recent SPAC wave, that saw a high amount of SPAC IPOs also saw a ‘hype’ around the market itself, bringing more analyst coverage, a higher presence of retail investors and more knowledge of the functioning of this process, by SPACs but also by private companies, that started to consider this a viable way to become publicly traded. Therefore, the ‘count’ of SPAC IPOs in the previous two years at the time of each SPAC IPO can be used as a proxy for this ‘hype’, which we expect to exhibit a positive and significant relationship, especially for short-run returns (H6).

Hypothesis 6: A higher deal count leads to higher returns for the IPO investor.

Similarly, the size of the SPAC should also be positively related to the returns (H7) as, besides giving the possibility to consider more target companies, the size itself can result in more investor attention and analyst coverage, as well as benefiting from economies of scale as there are a few fixed costs in registering the SPAC to be public traded and others related to the possible negotiations.

Hypothesis 7: A higher deal size leads to higher returns

Following the findings of Ghang et al (2021), the potential dilution of the SPAC units is expected to show a negative relation with the annualized event returns. Finally, we will also analyze the lead underwriting power and agency problems regarding miscommunication and confusion in the overall syndicate by including the percentage of subscription by the lead underwriting team, that is the concentration of the subscription in these entities, as a control variable. In theory, a higher concentration may increase the concentration of responsibilities in the lead underwriting team and simultaneously decreasing the intervention of other participating underwriters, possibly increasing the efficiency of the project (H8).

Hypothesis 8: Higher subscription allocation to the lead underwriters, relative to the full underwriting syndicate, leads to higher returns for the IPO investor.

6.2. Study on Negotiation’s Success

With SPACs having a common goal of completing a business combination before a pre-determined period, that may even be extended upon certain criteria, the gathered data also enables the study of the success of the negotiations that SPACs has with their targets.

Following the reasoning above, we expect that higher rank underwriters have a higher chance of completing the business combination after making its respective announcement (H9) as well as larger SPACs. The effect of the number of underwriters may once again be ambiguous due to the existing of two contradictory effects (H10a; H10b). As for the number of lead underwriters, has the theory of miscommunication may be smaller, we can expect it to be positively related with the success of the negotiations (H11). As for the remaining variables, the historical evolution is evidence that the negative trend in total fees and potential dilution and the positive trend in the deferred portion of the underwriting fee (H12) and the amount in trust relative to the issued amount, may lead to higher success rates of SPAC negotiations.

Nevertheless, SPAC founders and underwriters have private interests, the founders fee and the deferred fee, respectively, surrounding the completion of the proposed merger. The existence of this conflict of interest may even lead to the completion of value destroying business combinations, as verified by Jenkinson and Sousa (2011). In general, the SPAC is expected to complete the business combination as their nature, the observed evolution of the market and the existing conflict of interest from influencing parties all point to its success, therefore the model should not be necessarily strong. Note that this is a complementary study and that the true question is whether there is are relationships with the expected returns.

Hypothesis 9: An underwriter syndicate/ leading underwriter with a higher reputation rank increases the probability of completing the business combination.

Hypothesis 10a: A larger syndicate decreases the probability of completing the business combination.

Hypothesis 10b: A larger syndicate increases the probability of completing the business combination.

Hypothesis 11: Multiple lead underwriters increases the probability of completing the business combination.

Hypothesis 12: Higher deferred underwriting fees, relative to the total underwriting fees, increase the probability of completing the business combination.

7. Descriptive Statistics

7.1. Market Activity and IPO Size

Figures 1 and 2 present the general information regarding the evolution of the SPAC market. After the first SPACs in the beginning of the century, this segment was exhibiting an interesting growth. However, it slowed down during the Financial Crisis but still presented an average IPO size above 200 million USD in 2008. After that major event for the global economy, the SPAC market lost its strength and stayed mostly dormant until 2017. Still, the amount issued per IPO increase drastically during that period to levels much similar to the current market, pivoting the general acceptance of SPACs as investment opportunities and as a way for companies to become public. Before 2020, this segment of the IPO market was quite small relative to the overall market, but it now represents around 50% of the number of deals and amount of capital raised, including issues well above 1 billion USD (See Appendix, Figure 1A and Figure 2A)

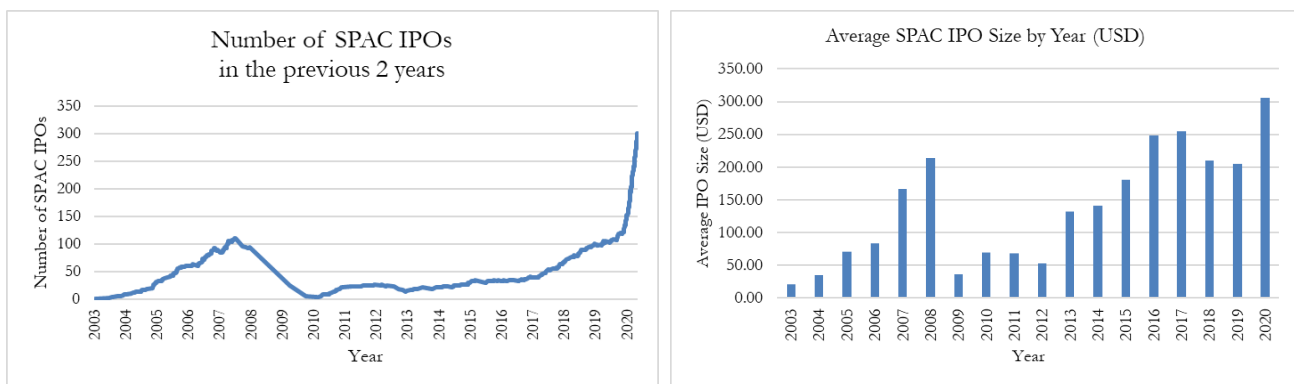


Figure 1: Number of SPAC IPOs in the previous 2 years

Figure 2: Average SPAC IPO Size by Year

It is important to understand that the market is now, by far, at its historical peak. Besides having evolved in many ways, as we will see, it is much more competitive in both the actual target searching and underwriter segment. Unfortunately, since a considerable number of SPACs were issued either in 2019 or in 2020, there are still a few of them looking for a target, meaning that, for those, there was no gathered information on returns for both main events.

7.2. SPAC Underwriters

As a segment of the IPO market, the underwriting syndicate is a crucial factor for the raising of capital. In the traditional IPO, these entities gather and, among themselves and other groups, exchange information about the company that is to become public, with the goal of issuing capital in an equilibrium: for the existing investors and for the new. A traditional IPO has an underlying business that can be critical analyzed by reviewing its historical numbers, its core competences, the general industry and, of course, its projected growth and position. Therefore, a larger underwriter syndicate might use its larger network of entities to gather and discuss more information, better perceiving the market sentiment regarding the soon to be public company. On the contrary, the SPAC does not require that kind of due diligence, forecasting and discussion. The work of an underwriter, in the preceding moments of a SPAC IPO, is quite simple and straightforward: simply gather investors that believe in the investment capacities of the founders. As the market evolved and the investment banks increase their network for these types of investors it became easier to complete these kinds of capital raise, leading the size of the average syndicate to decrease over time.

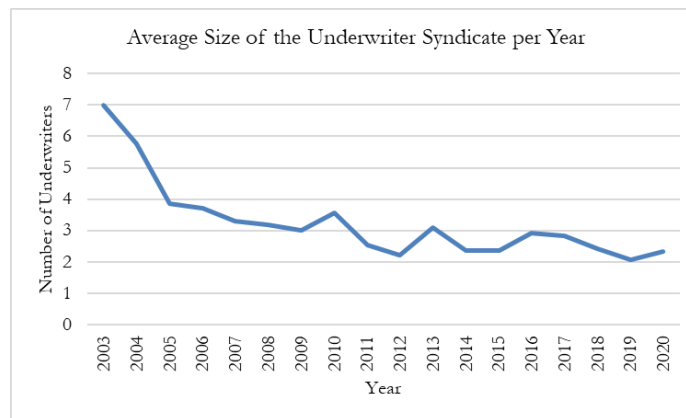


Figure 3: Average Size of the Underwriter Syndicate per Year

Moreover, since 2016, the biggest underwriters of the traditional IPO market entered this segment, and they used their large pool of contacts to dominate their SPAC issues. These high reputation entities, besides participating in the market, acted mainly as lead underwriters. It became common for an IPO to be subscribed by a single underwriter or by a couple of high reputation leading underwriters, not giving space for smaller investment banks. This factor contributed not only for the decrease of the average size of the syndicate but also for the perceived concentration of the issue in the leading team. Another consequence of this

concentration of subscription is that the market, even in the current high competition environment is highly segmented, as a small amount of underwriters comprise a large share of the market.

7.3. Fees and Commissions and Amount in Trust

The underwriters are generally paid by a variable commission based on the size of the issue. In the traditional IPO market, there is a standard value for this commission: the rule of 7% (Chen and Ritter, 2000). However, in the SPAC IPO market, that commission evolved in both its value but also in its structure (Figure 4), having impacts in another main ratio of SPACs: the amount in trust (Figure 5) – the value that is kept in the trust account that is to be used for the business combination and other costs that will be incurred in that moment.

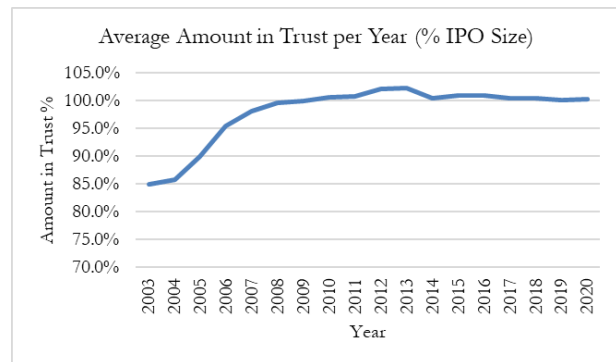
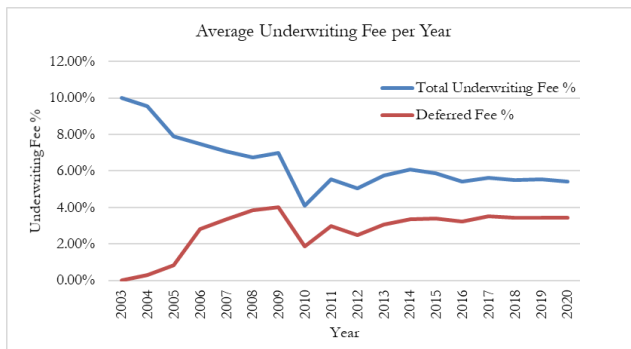


Figure 4: Average Underwriting Fee per Year

Figure 5: Average Amount in Trust per Year (% IPO Size)

The initial SPACs were mostly presented as a fast route for private companies to become public, but the perceived costs were relatively high. Besides the high fees paid to the founders (a general 20% of the newly public company), the underwriters were paid above the traditional IPO market, with up-front fees close to 10%. However, contrary to the traditional IPO market, the main underwriter compensation comes with these fees and not with a combination of them with the underpricing phenomenon. As these fees were mostly paid by the raised capital, the amount that was kept in trust was far from 100%. But why is that important? A direct impact is that, if all goes well, there is a smaller amount to be used by the SPAC for its purpose, decreasing the value of the initial investment. On another perspective, this decrease can be felt if the SPAC does not complete a merger and decides to liquidate its trust account, in a pro-rata form. If that happens, the investor may receive less than the initially invested value if the trust account does not generate enough interest.

Following the critics to the SPAC market, and even before the market break, these underlying characteristics started to change to much more attractable numbers to the investors. First, the overall fees started to decline to the regular values of the IPO market, eventually becoming cheaper. There was also the introduction of a deferred fee that was dependent on the completion of the business combination and/or the advisory work usually made by the leading underwriters. This new structure, although the fee may be eventually paid in full, had the purpose to increase the credibility of the segment as it increases the security of the investor (i.e. it could see less upfront costs and a more stable trust in the case the SPAC had to be liquidated). Also, the combination of the reduction in the overall fee and its deferred component implicitly led to an increase in the average amount in trust, that was also complemented by the introduction of a private placement, made in simultaneous with the IPO, that was aimed to cover for these upfront costs. This private placement was generally used to sponsors close to the founders and/or underwriters and mostly comprised by warrants, that traditionally have a great upside potential. After a few years and in the current competitive market, there are a few standards regarding these characteristics: almost all SPACs are paying a total of 5,5% of underwriting commission with 3,5% being the deferred component. Overall, these factors combine for the average SPAC to have 100% of the issue amount kept in the trust account.

Although this change benefits the investor and the shareholders of the yet private company, there are still considerable conflicts of interest between the investors and the underwriters, as the latter now sees a considerable portion of its payment dependent on the success of the negotiations and target research. As Jenkinson and Sousa (2011) stated, it is possible that underwriters, together with founders, that also have their fee dependent on the completion of the business combination, may undergo in value destroying transactions that greatly affect common investors.

7.4. Dilution

In their study, Ghang et al (2021) found a negative relationship between potential dilution and returns for the deSPAC period. Following these findings, it is possible to analyze that the market evolved to correct this problem (Figure 6), once again making the SPAC a more considered opportunity of investment.

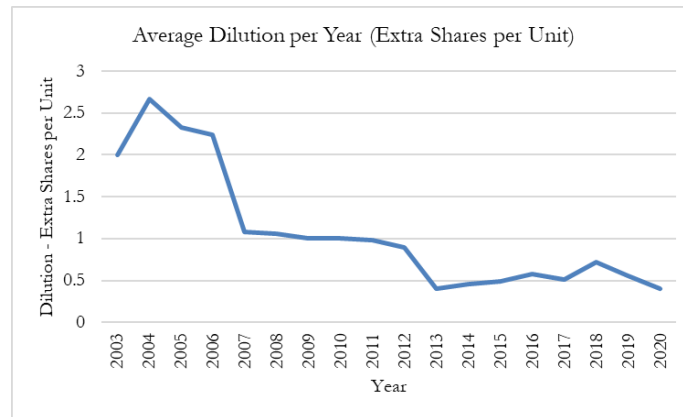


Figure 6: Average Dilution per Year (Extra Shares per Unit)

Although there may be other warrants surrounding the SPAC, the overall potential dilution from the unit issue has been reducing over the years. Again, this variable can lead to a very complex analysis of the structure of the SPAC: the first SPAC units, beside the traditional single common share, could contain more than one warrants and/or each warrant would give the investor the right to buy multiple common shares at the exercise price. These numbers could vary from SPAC to SPAC but there was a notable potential dilution as a unit could have more potential shares, i.e. issued by the exercise of the warrants, than actual common shares.

7.5. Returns

From the 508 SPACs that have made an announcement (excluding 7 double series observations), meaning that they are either currently in negotiations, or have completed a business combination or liquidated, only 495 observations have return data associated to the moment of the announcement.

By looking at the statistics of the returns (Table 1), as well as its distribution graph (Figure 7 and Figure 8), it is possible to understand that there are a considerable number of outliers relative to the more clustered data (Gahng et al., 2021). These outliers are usually a combination of two factors: first, there is a shorter amount of time, relative to the norm, between the SPAC

IPO and the moment of the announcement/merger; second, a considerable increase in the price of the unit or its elements, reflecting the quality of the target. Since these factors can occur in extreme fashion simultaneously, some of these outliers can extensively damage the fit of the model and the establishment of other relationships.

Table 1: Descriptive Statistics for the Announcement Returns (regular and winsorized)

	Announcement Unit Return	Winsorized Announcement @ 5%	Winsorized Announcement @ 10%
Mean	106.84%	35.82%	21.99%
Median	7.87%	7.87%	7.87%
Maximum	10897.1%	292.86%	94.60%
Minimum	-11.86%	-8.98%	-8.98%
Std. Dev.	10.68%	71.99%	30.39%

Table 2: General Statistics for the Merger Returns (regular and winsorized)

	Merger Unit Return	Winsorized Merger @ 5%	Winsorized Merger @ 10%
Mean	44.09%	26.44%	21.59%
Median	8.44%	8.44%	8.44%
Maximum	2897.38%	172.47%	103.38%
Minimum	-72.14%	-52.78%	-52.78%
Std. Dev.	192.23%	48.65%	35.98%

To correct that problem, we considered that winsorizing the return data, for both announcement and merger, would be possible. This treatment, that considers the outliers as a specific value/quantile of the distribution, may be heavily imposed if the number of outliers imposes it as it still considers the general quality of the outliers. The goal of this adjustment may be to correct the sample to a more stable distribution. This way it will be possible to focus more on the regular returns that these entities may exhibit as they become relatively more dispersed. In the case of the announcement, the 10% highest annualized return will be adjusted to be equal to the 90th quantile of the initial annualized announcement return distribution (94,4%), since and adjustment of 5% still shows a cluster in the regular area and a high dispersion in the positive tail. As for the observed annualized merger returns, comprising a considerably smaller sample than of the announcement, and adjustment of 5% is enough to smooth the distribution. Now,

5% highest annualized returns at merger will all be equal to the 95th quantile of the initial distribution (172,4%). By considering 10%, a cluster in the positive tail was created, an already too heavy adjustment (Figure 7 and 8).

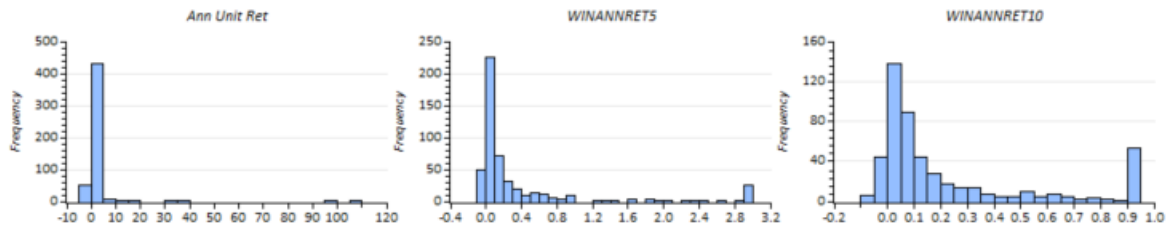


Figure 7: Histograms of the distribution of the different annualized return measures at the Announcement

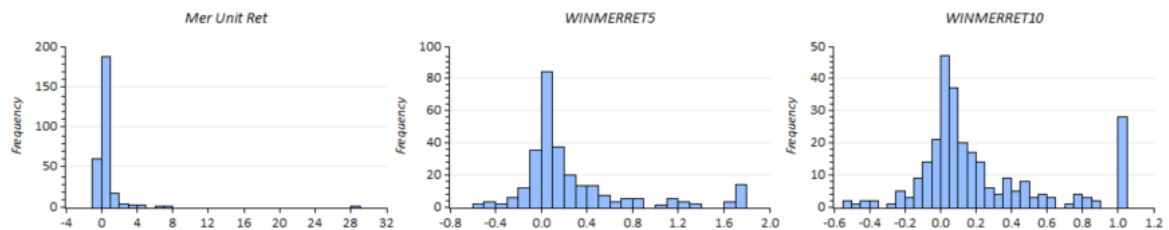


Figure 8: Histograms of the distribution of the different annualized return measures at the Merger

As described above, the SPAC market has evolved over time, adapting several characteristics to satisfy investors and private companies that opt for this process of becoming public. In the beginning of this market, SPAC investors could obtain decent returns as well as not seeing the SPAC complete a business combination. However, the current SPAC standards and market reputation are good enough to attract a high number of private companies to negotiations and business agreements, increasing the number of investment opportunities. So, with a greater target database, founder teams and underwriters have been able to identify and target better opportunities than before, making possible to obtain returns that could be considered abnormal in a regular market

Our first approach to evaluate the relationship that the returns have with the SPAC characteristics, including the details surrounding the underwriting segment, is to observe the average return per leading underwriter rank. Using the ranking score based on Megginson-Weiss, it is possible to understand that, in general, the observed returns are higher for higher reputation banks. Since the SPACs issued in 2020 have exhibited much higher returns than the ones before, it is also important to analyze both samples separately (Table 3).

Table 3: Winsorized Announcement Returns
(Adjustment of 10%) by Underwriter Reputation (MW Lead Rank)

MW Lead Rank	Full Sample			2020 Sample		
	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.
[0, 20)	20.81%	29.37%	114	46.91%	35.88%	34
[20, 40)	22.11%	30.90%	113	44.19%	37.20%	41
[40, 60)	20.27%	30.08%	98	58.19%	38.28%	24
[60, 80)	22.98%	28.58%	71	58.24%	33.70%	17
[80, 100)	38.63%	37.65%	28	74.93%	24.45%	12
[100, 120)	18.54%	29.15%	71	53.62%	44.12%	8
All	22.00%	30.39%	495	52.36%	36.63%	136

Another interesting point that is seems to be observable in these tables is the benefit of having multiple leading underwriters with high rank scores. By the definition of the underwriter score based on the Megginson-Weiss measure, the underwriter that possesses the highest market share would be the only one to have an underwriting rank score of 100. Therefore, in the tables above, the group with the highest score represents SPACs that had a singular lead underwriter: the market leader (or two market leaders, in extreme cases). However, in both the general table and in the table that represents the SPACs issued in 2020, the annualized returns are higher for the leading teams with the ‘second’ best score. Although it is possible for a singular bank to have such rank, SPACs that have multiple lead underwriters with high market shares will be part of this group, pointing to a positive effect of having multiple lead underwriters.

By directly looking at the multiple lead variable (Table 4), it becomes clear that a team of lead underwriters may lead to a more efficient process (less time to announcement and merger) and also to better choices, as in both samples, the general dataset and for the SPACs issued only in 2020, the difference in the average annualized returns is significant.

Table 4: Winsorized Announcement Returns (Adjustment of 10%) by Multiple Lead
(0=Single Lead Underwriter; 1=Multiple Lead Underwriter)

Multiple Lead	Full Sample			2020 Sample		
	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.
0	18.26%	27.37%	364	46.79%	36.92%	77
1	32.39%	35.62%	131	59.64%	35.24%	59
All	22.00%	30.39%	495	52.36%	36.63%	136

Table 5 presents the general statistics for the 495 observations that will be used in the first studies. The tables for the remaining samples that will be studied will be available in the appendix.

Table 5: Descriptive Statistics for the Announcement Return. 495 Observations

	WinAnnRet @ 10	MW_Lead_Rank	Deal Size	#_Underwriters	Fee Structure	Amount in Trust	Dilution	Total Fee	Lead Percentage	Count
Mean	22.00%	48.19	203.1	2.749495	53.86%	99.00%	0.77	6.06%	83.84%	89.28
Median	7.87%	44.62	150	2	63.64%	100.00%	0.5	5.50%	92.50%	80
Maximum	94.60%	100	1800	14	100.00%	105.00%	2	10.54%	100.00%	289
Minimum	-8.98%	0.47	16.5	1	0.00%	85.00%	0	0.59%	3.50%	1
Std. Dev.	30.39%	31.18	185.6	1.63	17.78%	3.38%	0.50	1.20%	19.67%	64.79

8. Results

8.1. Annualized Announcement Returns

The goal of this study is to understand if SPACs have different expected returns, at both the announcement and merger events, based on their initial characteristics (syndicate composition, SPAC activity, fees, etc.). The first regressions are applied to all SPACs that made an announcement, since the beginning of the “SPAC market” in 2003 to the end of 2020, and that had the available data, comprising a total of 495 companies from a total of 508 announcements.

For the main tests, we will use the underwriter ranking, based on the Megginson-Weiss reputation score, of the lead underwriting team, as they traditionally follow the process as advisors, exerting more power over the SPAC decisions. The results obtained by using the other ranking systems are briefly discussed in the appendix. As explained before, by using relative market shares to create the ranking score, we have a wider variety of rank scores that reflect the different underwriters active in the market, meaning that we may be able to better analyze the relationship with returns.

Before presenting the analysis, it is important to analyze the existing correlations between the variables (See Appendix Table 2A). In this case, we will first look at the sample as a whole since the first regressions will use that full sample (other covariances will be available in the appendix). As expected, the underwriter reputation and the size of the issue are positively correlated with the expected annualized returns at the announcement and merger. Moreover, the deferred fee portion (fee structure), the amount in trust, the multiple lead dummy, the lead percentage and the count variable (proxy for the hype around the market) are also positively correlated with the return. On the contrary, the expected announcement returns is negatively correlated with the number of underwriters, indicating the possibility of a higher “miscommunication” for larger syndicates, with the total underwriting fee, justifying the verified trend, and also with the dilution variable, pointing to the findings of Ghang et al, 2021. As the count variable as being a proxy for the SPAC activity in the market it can also act as a control variable for fixed year effect problems. Therefore, the correlations observed in this variable follow the trend analysis above discussed, as certain variables are tending to standard values.

Also we find that there is a strong relationship among the dilution, total underwriting fee, amount in trust and fee structure variables, with dilution-underwriting fee and fee structure-amount in trust having the only positive relationships. Although this may lead to factor multicollinearity, we can see that these variables, between themselves, might be able to adjust by the different signals' correlations. Still, this is understandable as the variables have evolved accordingly over time and some of them are linked.

We can first analyze in regression (1) the evolution of the overall market statistics for certain variables other than the underwriter reputation. As for regression (2), it estimates the expected annualized returns at the announcement with the information available at the IPO without considering its size.

Table 6: Results of Regressions 1-4 applied over the Winsorized Announcement Returns @ 10%
Full Sample. 495 Observations

	Regression (1)	Regression (2)	Regression (3)	Regression (4)
MW Lead Rank		0.0006	0.0003	0.0043**
MWLeadRankSize				-0.0008*
Ln(Size)	0.0368**		0.0314	0.0712***
#_Underwriters	-0.0134	-0.0118	-0.0131	-0.0143
Fee Structure	-0.1010	-0.0197	-0.0856	-0.0641
Amount in Trust	-2.5249***	-2.5793***	-2.4443***	-2.2701***
Dilution	-0.0818**	-0.0894***	-0.0775**	-0.0802**
Total Fee	-2.2977**	-2.7496***	-2.3659**	-2.3095**
Multiple Lead	0.0474	0.0665**	0.0531	0.0541*
Lead Percentage	-0.0467	-0.0606	-0.0566	-0.0845
Count	0.0022***	0.0024***	0.0023***	0.0023***
C	2.6571***	2.8458***	2.5832***	2.2346***
R-squared	0.3379	0.3348	0.3387	0.3437
F-Statistic	27.50***	27.12***	24.79***	22.99***

$$(1) \text{ WINANNRET10} = C(1) + C(2) * \text{LN(SIZE)} + C(3) * \text{NB_UNDERWRITERS} + C(4) * \text{FEESTRUCTURE} + C(5) * \text{AMOUNT_IN_TRUST} + C(6) * \text{DILUTION} + C(7) * \text{TOTALFEE} + C(8) * \text{MULTIPLE_LEAD} + C(9) * \text{LEAD_PERCENTAGE} + C(10) * \text{COUNT}$$

Overall, there is a significant fit of the model for regression (1). As expected, the count of active SPAC deals is a positive and significant factor for the expected return at the announcement as it serves as a proxy for the attention towards the market. A more active SPAC market may evidence its credibility, increase competition among SPACs, leading to better targets, and influencing the opinion of private companies' owners, which may now consider this option as the preferred way to become public.

Following the findings of Change et al., 2021, dilution shows a significant negative relationship with the return, justifying the decrease of this factor to smaller and more stable values. Contrarily to the expected, the amount in trust shows a considerable negative relationship with the return, significant at all common significance values. This unexpected value may act as a adjustment for the group of variables with high correlations mentioned above.

Now, for the variables regarding the underwriters, the total fee paid to the underwriter, including the deferred fees - that are commonly dependent on the conclusion of the business combination and/or the advisory work of the leading underwriters, is significant at all levels and negatively related to the expected return. However, the fee structure – the amount of deferred fees relative to the total amount of fees – is not significant. Although this was not expected, there is a reason for the non-existence of a relationship since the SPAC will eventually pay that deferred fee if it concludes the announced business combination. The analysis of the percentage of the IPO issue that the leading underwriters subscribe states that this variable is highly insignificant: the leading underwriters do not require a big participation in the SPAC issue to exercise their power. However, this study points to better returns for leading underwriter teams in detriment to a singular lead underwriter, a reasonable statement as multiple leading underwriters, commonly acting as advisors, will use their networks to disseminate and acquire information relative to possible targets and actively discuss the possible business combination, which may lead to the announcement of a higher quality target and more attention towards that deal. Still, this relationship is not found on the number of underwriters of the full syndicate as this variable, pointing towards a negative relationship, is insignificant. This is understandable as the bulk of the involvement of the underwriting syndicate is made by the lead underwriters and not by other underwriters that subscribe to extremely small amounts of the IPO. The multiple lead dummy variable it does not exhibit a significant relationship.

As for Size, the natural logarithm of the dollar amount of the issue, is significant by itself and shows a positive relationship as expected. In short, a higher deal size and more available cash expands the range of investment opportunities for the SPAC founders, both in number and in quality, and also attracts more investor and media attention.

Regression (2) does not consider the size of the issue to isolate the reputation variable. Relative to the results of regression (1), all relationships are maintained. Now, the variable of multiple lead is now significant, exhibiting a positive relationship with the expected return at the announcement.

The main variable of this regression is the reputation score of the leading underwriters. Although it shows a positive relationship, it is not significant (p -value=13,38%). However, this insignificant can be critically analyzed. Since the model is applied to SPACs that completed their IPO and made an announcement at several points in time, not adjusting the variable for fixed year effects and/or market evolution, means that an underwriter with a score of 60 in 2012, a time where the SPAC market was very quiet, is considered to have the same competences as an underwriter with score of 60 by the end of 2020, a much more active market with big underwriters from the overall IPO market. However, this model aimed to analyze the overall evolution of the SPAC market and give insights of the possible relationships that may be present. Unfortunately, due to the lack of activity in certain periods, controlling for fixed year effects is not accurate. Before applying a possible solution for this problem, an analysis of the effect of size should help to understand the evolution of the market.

Introducing the reputation variable in simultaneous with size, regression (3), although it can help control for the evolution of the market, there is still the same problem surrounding the underwriter rank variable, as the model still considers underwriters with the same score, in different points in time, to have the same competences. Moreover, these variables are also correlated - higher reputation underwriters typically subscribe to the biggest SPAC IPOs – which leads to both variables being insignificant at all levels of significant. The remaining variables

As explained before, controlling regression 1 by the IPO size does not lead to any significant results. However, by creating another variable it is possible to control for the size of the issue and also the evolution of the market in terms of the accuracy of the rank score. This

variable is the multiplication of the leading underwriter team rank with the natural logarithm of the deal size: $MWLeadRankSize$.

The introduction of this variable (4) leads to a very interesting relationship. Besides controlling for certain problems, it also establishes limits to the changes in deal size and/or the rank of the leading underwriters. For example, it is plausible to consider that an hypothetical increase in the deal size does not have the same impact in the expected annualized returns of SPACs subscribed by high reputation underwriters as it does for SPACs subscribed by low reputation investment banks. In short, a large SPAC IPO for a low reputation underwriter may be a much better sign than a high reputation underwriter subscribing to a very large SPAC issue.

$$(4) \quad WINANNRET10 = C(1) + C(2) * MW_LEAD_RANK + C(3) * MWLEADRANKSIZE + C(4) * LN(SIZE) + C(5) * NB_UNDERWRITERS + C(6) * FEESTRUCTURE + C(7) * AMOUNT_IN_TRUST + C(8) * DILUTION + C(9) * TOTALFEE + C(10) * MULTIPLE_LEAD + C(11) * LEAD_PERCENTAGE + C(12) * COUNT$$

In general, the remaining variables maintain their relationships. The number of underwriters, fee structure and lead percentage remain insignificant. Dilution maintains its significant negative relationship, similar to total fee and amount in trust. Multiple lead does exhibit a positive relationship but it is only significant at 10%. Once again, the “hype” around the market shows a positive and very significant relationship.

Although both variables are positively related to the expected annualized return at the announcement (size is significant at all levels of significance and the rank is significant at both 5% and 10%), the reputation-size relationship with the expected annualized return at the announcement seems to establish the hypothesized limits. Figure 9 helps to understand that the size effect (i.e. increase the size to increase the expected annualized returns at the announcement) is generally dominant over the rank effect (i.e. increase the rank of the leading underwriters to increase the expected annualized returns at the announcement). In a more specific approach, as hypothesized, the size effect is much stronger for SPACs underwritten by low reputation underwriters.

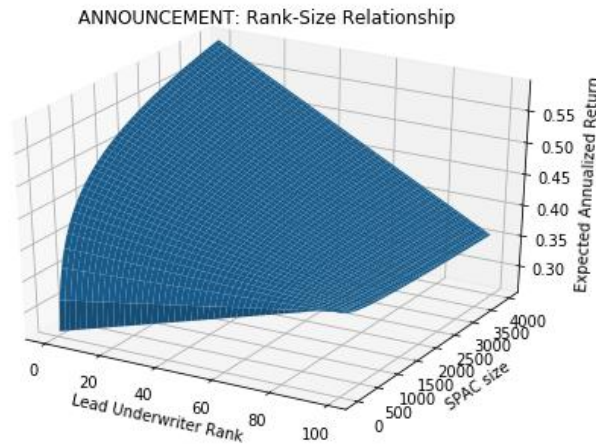


Figure 9 : Rank-Size Relationship
Full Sample. 495 Observations

Note that the regressions above target the whole market, which includes the evolution of several parameter throughout the years. Now, to understand if the relationships are maintained in the current SPAC market, the following regressions will be applied to the SPACs issued during 2020 that have made an announcement, a total of 136 companies. (Table 7)

Table 7: Results of Regressions 1, 2 and 4 applied over the Winsorized Announcement Returns @ 10%
2020 Sample. 136 Observations

	Regression 1b	Regression 2b	Regression 4b
MW Lead Rank		0.0024**	0.0211**
MWLeadRankSize			-0.0035*
Ln(Size)	0.1015*		0.2241**
#_Underwriters	-0.0299	-0.0261	-0.0294
Fee Structure	-0.1900	-0.1644	-0.2130
Amount in Trust	-1.9297	-0.3741	1.3867
Dilution	-0.0176	-0.0319	0.0633
Total Fee	3.9891	4.096	4.0177
Multiple Lead	0.1368*	0.1839**	0.1536*
Lead Percentage	0.0059	-0.0278	-0.0214
C	1.8157	0.6984	-2.2345
R-squared	0.0858	0.0897	0.125
F-Statistic	1.4903	1.5648	1.7887*

First, it is important to establish that the current market is much more stable in most of the analyzed variables: there are “standard” values for the amount in trust (100%), the total fee (3,5%) and the fee structure (64% of fees are deferred). Moreover, dilution is much lower than the levels observed before, as units commonly offer a single warrant that offers the right to buy half or a third of a warrant. Second, the SPAC underwriting market is much more competitive: the biggest underwriters of the overall IPO market are now present in this segment and there is a large amount of other active investment banks. This leads to a more accurate measure of the ranking score that may now accurately measure the competences of the underwriters. Finally, due to the high number of deals in the past year, the count variable will not be applied since that increment is not an accurate representation of the already large “hype” surrounding the market.

Therefore, we can apply the regressions above to the 2020 sample. The application of regression 1 to this sample - regression 1b, that only contains the rank variable is not significant at any level. Besides the rank and the multiple lead dummy, the variables that were significant in the overall models are now stable and therefore do not contribute to the quality of the model. Rank, significant at 5%, and the multiple lead dummy, significant at 10%, both present positive relationships. The application of regression 2 to this sample, now regression 2b, remains insignificant. Once again, only the size and the multiple lead dummy are the only significant variables, but only at a 10% significance level.

Now, using the results of both 1b and 2b regressions and combining the presented relationship above, it is possible to create a more specific and simpler model for this sample: regression (5) and Table 8.

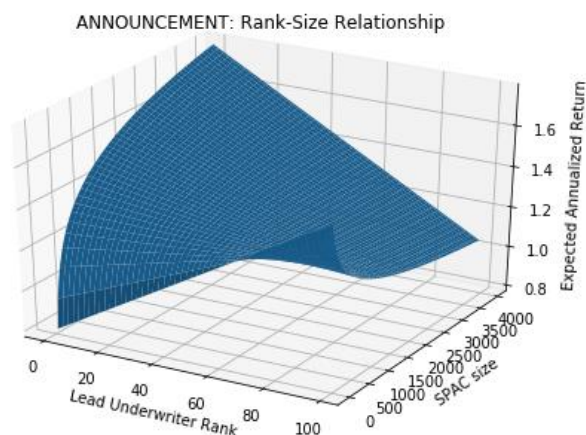
$$(5) \quad WINANNRET10 = C(1) + C(2) * MW_LEAD_RANK + C(3) * MWLEADRANKSIZE + C(4) * SIZE + C(5) * NB_UNDERWRITERS + C(6) * MULTIPLE_LEAD$$

Table 8: Results of Regression 5 applied over the Winsorized Announcement Returns @ 10%
2020 Sample (136 Obs), 2019 Sample (53 Obs) and 2007 Sample (63 Obs)

Year	2020	2019	2007
MW Lead Rank	0.0202**	0.0168**	0.008**
MWLeadRankSize	-0.0033*	-0.0035**	-0.0017**
Ln(Size)	0.2147**	0.2957***	0.1384***
# Underwriters	-0.0293	0.0363	-0.0021
Multiple Lead	0.1474**	-0.0977	-0.0772
C	-0.7027	-1.3106***	-0.5852***
R-squared	0.121	0.217	0.196
F-Statistic	3.60***	2.60**	2.77**

This regression simply cuts the variables that are known to be stable in the current market. This now significant model (even at 1%), that only considers characteristics of the underwriter syndicate in detriment to other variables that are stable in the current market, once again leads to the established relationship of size-rank. Both rank and size are significant at 5% and are positively related to the expected return, the rank-size variable, significant at 10% (p-value=5,55%) introduces the hypothesized limits. Comparing the Figures 9 and 10, the relationship seems to have slightly change. However, it is important to understand that high reputation underwriters do not commonly subscribe to small IPOs, usually subscribed by their lower reputation counterparts. So, the notable differences in the graph (i.e. the spike in high rank – low size quadrant) do not commonly occur. There is also a significant (at 5%) and positive relationship of the multiple lead dummy and the negative relationship of the number of underwriters (p-value=10,04%).

Figure 10 : Rank-Size Relationship.
2020 Sample. 136 Observations



Contrarily to the models applied over the general data, the models that use the sample of the SPACs issued in 2020 are not heteroskedastic as the main reason for the heteroskedasticity in the previous models was the considerable deviations relative to the 2020 observations. Applying the regressions to a singular year, where the expected return and other variables are much more stable does not lead to heteroskedastic models.

This variation of the regression can also be applied to other years. However, in most cases, there is not enough activity to have a consistent model. Hopefully, the current SPAC wave will provide enough data to continue testing the presented hypothesis and results.

8.2. Merger Returns

In a similar fashion to the announcement returns, the computed annualized returns for the merger event also exhibit outliers that strongly change the significance and accuracy of the model

First, it was expected, and it is confirmed, that these models (Table 9) would be weaker than when applied to the announcement, as more time as passed and more factors, especially regarding the details of the deal, grow their importance. Moreover, the models regarding the announcement have much more observations: besides a couple of cases, almost every SPAC makes a target announcement but not all of them have actually completed the proposed business combination; also, although around half the SPACs issued in 2020 have made a target announcement, not even 20% of them have actually completed their merger, as they are still in negotiations. This latter reason also excludes the opportunity to accurately fit a model to a sample of SPACs issued in 2020 as it was fitted for the announcement returns.

Table 9: Results of Regressions 1, 2 and 4 applied over the Winsorized Merger Returns @ 5%
2020 Sample. 136 Observations

	Regression 1 c	Regression 2c	Regression 4c
MW Lead Rank		0.0004	0.0116**
MWLeadRankSize			-0.0022**
Ln(Size)	-0.0144		0.0907
#_Underwriters	-0.0009	-0.0013	-0.0067
Fee Structure	0.1869	0.1674	0.2652
Amount in Trust	-4.3166***	-3.9930***	-3.4464***
Dilution	-0.1400**	-0.1193*	-0.13457**
Total Fee	-3.991	-3.7039	-3.5812
Multiple Lead	0.1567*	0.1579*	0.1688**
Lead Percentage	0.0375	0.0205	-0.0641
Count	0.0045***	0.0044***	0.0046***
C	4.5031***	4.0848***	3.1231**
R-Squared	0.213	0.213	0.230
F-Statistic	7.98***	7.98***	7.13***

The application of regression 1 to this data does not lead to the same significant relationship verified in the announcement regressions. This can be due to the lack of recent observations that increase the diversity of size issues in the sample. Applying regression 2 to the winsorized annualized merger returns at 5% (regression 2c), leads to overall similar results. The number of underwriters is highly insignificant, similar to the percentage that the lead underwriters subscribe relative to the total IPO. Now that the SPAC has completed a business combination and as to pay the deferred fee, the fee structure should not have a considerable impact over the expected return, which is in line with the verified insignificance. The amount in trust remains significant and exhibits a negative relationship with the expected return. Once again, that result was not expected. As for dilution, similar to the announcement returns, it is significant (at 10%) and negatively related. Once again both the count (significant at all levels) and the multiple lead dummy (p-value=5.18%), point to positive relationships with the expected return.

Nevertheless, applying regression 4 to this data set, leads once again to interesting results. The model is significantly better than the others and most of the conclusions, regarding variables other than rank and size, still hold. As for the relationship that was established at the announcement, rank, size and the possible limits that exist, the rank score is highly significant (p-value=1,12%) as well as the rank-size variable (p-value=2,58%). However, the overall relationship cannot be presented as completely significant due to the size insignificance.²

² Using the same variables of regression 4, the study of the speed of the several time periods of the SPAC life (fill time, time to announcement, negotiation time and the full IPO to business combination time) can be discussed. Implicit in the computation of the returns, this speed is account in the models above. If we try to estimate the time of these processes there is evidence that the increase of underwriter reputation may signal more efficient processes, reflecting the expected consequences from the underwriter theories of social network that high reputation underwriters with high centralization are more efficient in their information treatment (acquisition and dissemination).

8.3. Probit regression

Besides the actual returns in both major events, it is also important to understand if the underwriter rank is a significant factor of the completion, or not, of the business combination. A probit regression (Table 10) that includes all the variables, including the rank-size relationship, shows that the rank is not relevant, at all, for the completion of a business combination. Only the variables related to the fees and the amount in trust are significant: a SPAC that pays higher fees to its underwriters has a smaller chance of completing its merger. Also, a fee structure with more deferred fees points to a higher chance of completing the proposed merger, which is in line with the existing conflict of interest that the underwriters face: part of their compensation is dependent on the confirmation of that event. Once again, the amount in trust exhibits the opposite of the expected relationship, as evidence points that a higher amount in trust reduces the change of completing the merger.

Table 10: Results of Probit Regressions.

With and Without the verified Annualized Announcement Return @ 10%

	W/o Return	W/ Return
MW Lead Rank	0.0185	0.0215
MWLeadRankSize	-0.0036	-0.0039
Ln(Size)	0.1582	0.2210
#_Underwriters	0.0097	0.0396
Fee Structure	-1.6347**	-1.4284*
Amount in Trust	18.5136***	17.4500***
Dilution	0.1045	0.5605**
Total Fee	41.9310***	35.3734***
Multiple Lead	0.1133	0.2375
Lead Percentage	-0.4757	-0.5378
Count	-0.0005	0.0003
WinAnnRet10		4.1620***
C	21.4361***	20.6295***
R-Squared	0.1046	0.2128
LR Statistic	44.18***	86.63***
# Completed Mergers	302	284
# Liquidations	90	88

However, the overall model is weak, and most variables do not seem to help explain the completion of the SPAC objective. This was already expected. First, there is a small amount of data in a still evolving market: only 90 SPACs, of the 392 that fit the criteria, have liquidated. Second, SPAC literature states that throughout the years, underwriters and founders have pushed to the completion of value destroying mergers in order to receive their fee (Jenkinson and Sousa, 2011). Therefore, even SPACs underwritten by low reputation underwriters are, on average, expected to complete a business combination.

However, if we conduct this estimation at another moment in time, namely after the announcement of the target company, we can introduce a new variable: the annualized return. This model, now with a smaller amount of data (some SPACs did not have accurate prices available), is now much more powerful. As expected, a higher annualized return at the moment of the announcement increases the probability of the conclusion of the business combination.

9. Conclusion

Combining with other strategies from the founders and initial sponsors, the underwriters have changed their approach to the SPAC market. The main players in the overall IPO market have now entered this segment and sedimented the then trend that is now commonly seen in the market: 2% Upfront fee and 3,5% Deferred fee to a total of 5,5% of underwriting commission as well as commonly serving as advisors - the lead underwriters of the issue - in the negotiations that may lead to business combination.

As for their reputation, when considering all the evolution of the SPAC market and individual years, we can see that a higher underwriter rank score by itself increases the expected SPAC return in both main events of the SPAC cycle, the announcement and the merger. However, the data also shows that high reputation underwriters subscribe to larger issues. As a larger deal size by itself also leads to a higher expected return, when considering an interaction with the underwriter rank, it is possible to understand that there may be limits to both increases. Up until certain values, both increases lead to higher expected returns. However, after mid levels of reputation, increasing the deal size does not lead to higher expected returns contrarily to low reputation levels as subscribing to larger deals increases the expected return. It is also worth noting that multiple lead underwriters, relative to a single book-runner, also shows a positive relationship with the annualized returns verified at the announcement.

Finally, since this study aims to introduce the role of the underwriters in the SPAC market as well as discussing the overall market evolution, the inclusion of other variables related to external characteristics (i.e. industry, founders, etc) and the inclusion of more data from the current SPAC wave may improve the presented model.

10. Appendix

10.1. Market Activity and IPO Size

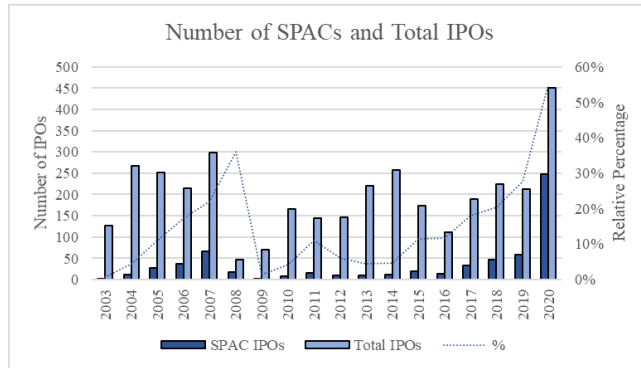


Figure 1A: Number of SPACs , Total IPOs* and relative percentage

Source: SPAC Analytics, January 2021; *IPOs larger than 40 Million

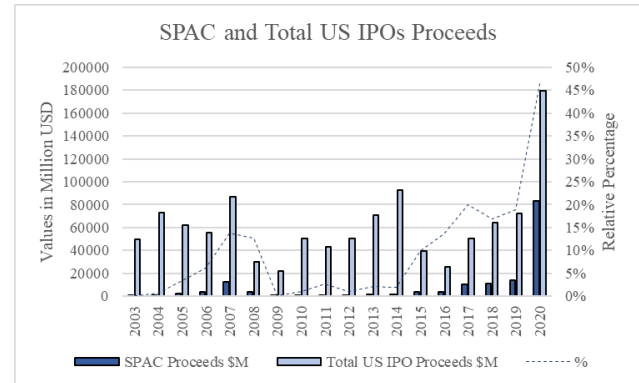


Figure 2A: SPACs and Total IPOs Proceeds in million USD

Source: SPAC Analytics, January 2021; *IPOs larger than 40 Million USD

Year	State					Total
	1 (Completed IPO)	2 (In Negotiations)	3 (Completed Merger)	4 (Liquidated with Announcement)	5 (Liquidated without announcement)	
2003			1			1
2004			10	2		12
2005			24	4		28
2006			19	18		37
2007			32	34		66
2008			11	6		17
2009			1			1
2010			3	4		7
2011			12	3		15
2012			6	3		9
2013			8	2		10
2014			8	3		11
2015			17	3		20
2016			9	4		13
2017		1	28	3	1	33
2018		2	43	1		46
2019	4	19	35		1	59
2020	105	103	35			243
Total	109	125	302	90	2	628

Table 1A: Description of state of each SPAC. Data collected until the 6th June

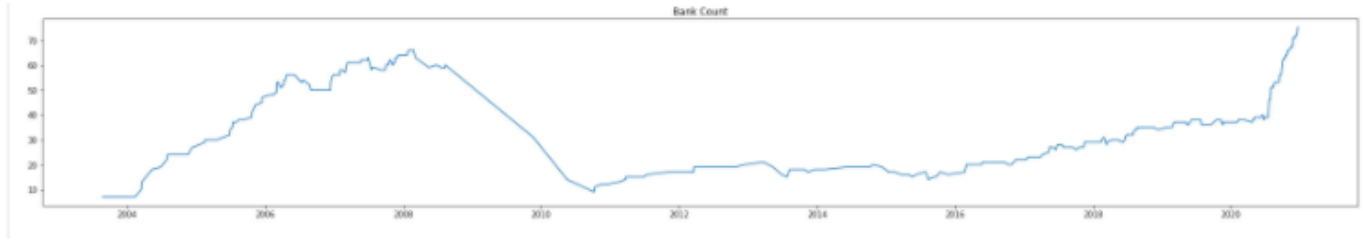


Figure 3A : Number of banks with activity in the SPAC market in the previous 2 years

10.2. Market Share Quantiles

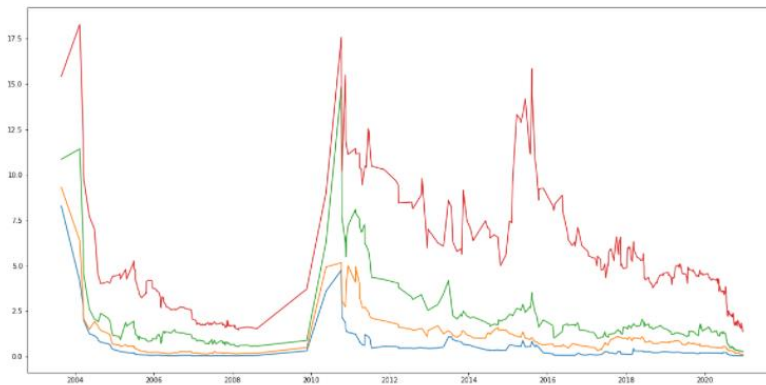


Figure 3A : SPAC Underwriting Market Share Quantiles

Quantiles: 20%,40%,60% and 80%

10.3. Ranking System

Top 5%	10
Top 5-10%	9
Top 20%-30%	8
Top 30%-40%	7
Top 40%-50%	5
Top 50%-60%	4
Top 60%-70%	3
Top 70%-80%	2
Top 80%-100%	1

Table 2A: System of the Quantile based Underwriter Reputation Ranking

10.4. Covariance Matrix

Count	Lead Percentage	Multiple Lead	Total Fee	Dilution	Amount in Trust	Fee Structure	#Underwriters	Ln(Size)	MWLeadRankSize	MW Lead Rank	WinAnnRet 10	Covariance Correlation
											0.092158	WINANNRET10
											1	
										970.0121	0.25163	MW_LEAD_RANK
										1	0.026614	
									28439.42	4961.479	4.404353	MWLEADRANKSIZE
									1	0.944631	0.086031	
								0.794475	68.25437	5.245937	0.08154	SIZE
								1	0.454078	0.188971	0.301345	
							2.66048	-0.110498	-28.9287	-4.103545	-0.046704	NB_UNDERWRITERS
							1	-0.076004	-0.105169	-0.080778	-0.094321	
						0.031552	-0.075055	0.086428	1.226485	-0.91919	0.007468	FEESTRUCTURE
						1	-0.25905	0.545882	0.040944	-0.16615	0.138495	
					0.001138	0.004495	-0.014319	0.011361	-0.181752	-0.216643	0.0000676	AMOUNT_IN_TRUST
					1	0.750185	-0.260253	0.377852	-0.03195	-0.206212	0.006602	
				0.249453	-0.011676	-0.059535	0.203521	-0.257406	-15.39685	0.113635	-0.037344	DILUTION
				1	-0.693061	-0.671064	0.249824	-0.578209	-0.1828	0.007305	-0.246294	
			0.000145	0.003893	-0.000271	-0.001063	0.004988	-0.004539	-0.133493	0.032193	-0.000564	TOTALFEE
			1	0.647882	-0.66863	-0.497508	0.254193	-0.423309	-0.065795	0.085915	-0.154324	
		0.194609	-0.000828	-0.060014	0.001364	0.014955	0.134982	0.145463	-0.256047	-1.46991	0.027502	MULTIPLE_LEAD
		1	-0.156042	-0.272379	0.09166	0.19085	0.187592	0.369939	-0.003442	-0.106985	0.205358	
	0.038597	0.0269	-0.000074	-0.042381	0.002095	0.013539	-0.157176	0.057699	5.515281	0.596924	0.010705	LEAD_PERCENTAGE
	1	0.310385	-0.313253	-0.431919	0.316145	0.387973	-0.490492	0.329497	0.166469	0.097556	0.179491	
4188.679	3.771031	6.285281	-0.207205	-13.51409	0.55032	4.63271	-16.09329	23.35052	-307.8203	-305.0907	10.34698	COUNT
1	0.296584	0.220143	-0.266109	-0.418074	0.252078	0.402978	-0.15245	0.404779	-0.028203	-0.151357	0.526633	

Table 2A: Covariance Matrix with Announcement Returns. 495 Observations

10.5. Distribution of returns per year of IPO

YEAR_IPO	WinAnnRet10			WinMerRet5		
	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.
2003	55.80%	NA	1	85.18%	NA	1
2004	24.84%	20.43%	9	28.55%	26.20%	7
2005	20.27%	28.40%	24	22.35%	22.88%	20
2006	16.65%	27.26%	31	18.32%	39.83%	15
2007	4.08%	14.03%	63	7.25%	36.32%	28
2008	1.50%	4.90%	17	6.76%	25.28%	8
2009	3.60%	NA	1	-0.46%	NA	1
2010	3.16%	5.57%	7	10.16%	10.77%	3
2011	2.20%	4.60%	15	0.01%	9.43%	10
2012	2.25%	2.02%	8	2.94%	8.78%	5
2013	5.53%	4.56%	9	12.36%	17.72%	7
2014	3.54%	2.78%	11	-2.63%	16.58%	8
2015	3.11%	3.13%	20	4.86%	14.27%	17
2016	13.34%	13.25%	13	22.08%	42.54%	9
2017	7.78%	5.01%	31	2.54%	19.11%	24
2018	13.04%	12.78%	46	18.88%	32.95%	43
2019	18.11%	17.15%	53	40.90%	52.81%	35
2020	52.36%	36.63%	136	97.44%	69.62%	34
All	22.00%	30.39%	495	26.45%	48.66%	275

Table 3A: Average Annualized Winsorized Returns at the Announcement and at the Merger

10.6. Applying the models to other variations of the return

These models were also applied to other return variables regarding the announcement event. If the model is applied to the non-winsorized announcement returns, due the large number of outliers as well as their magnitude, it becomes extremely weak. However, if we only consider the annualized returns that are within acceptable limits, for example 100%, the model exhibits the similar results to the models presented above.

10.7. Note for the possible efficiency of the ranking systems based on quantiles in the future

The dominance of a small number of underwriters over SPAC issues leads to a weak differentiation of reputation in the mid and lower ends, even with a slight control in the ranking system: there is a large number of underwriters with similar market shares, below average, that

may differ several points in the attributed rank. If the market becomes more competitive and more equally distributed this ranking system may be viable. By looking at similar regression we see that all other results maintain, but the reputation variable becomes insignificant in all models.

10.8. Other findings

Moreover, SPACs that are subscribed by high reputation IB are quicker to fill for their IPO, to make an announcement and to complete their business combination/quicker negotiations, reflecting the expected consequences from the underwriter theories of social network that high reputation underwriters with high centralization are more efficient in their information treatment (acquisition and dissemination).

10.9. Residual Graphs

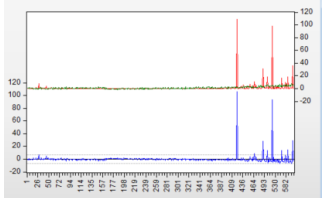
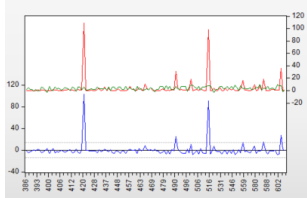
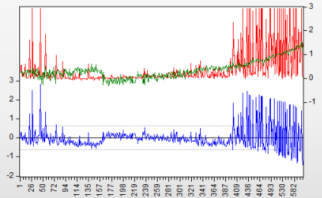
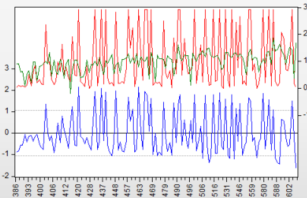
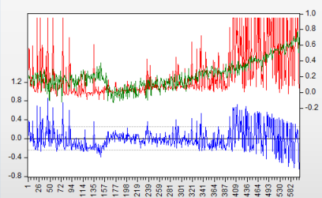
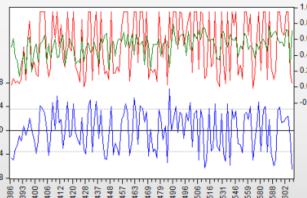
	Full Sample - 495 Observations		2020 – 136 Observations	
Regression 4*	Residuals Graph	S.E. Regression	Resid Graph	S.E. Regression
Ann Ret		6.99		13.53
Win Ann 5		0.62		1.05
Win Ann 10		0.25		0.35

Table 4A: Residual Graphs of Regression 4 Variations for different samples (full and 2020) and for different variables of the Annualized Announcement Return

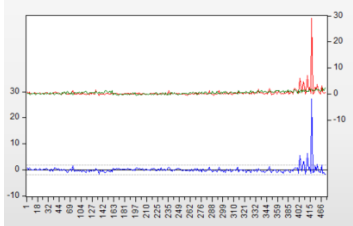
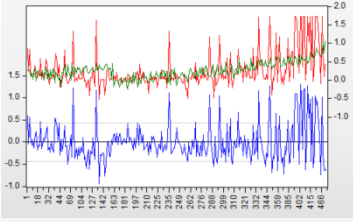
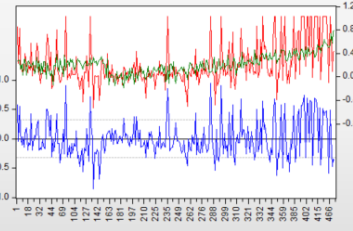
Full Sample – 275 Observations		
Regression 4*	Residuals Graph	S.E. Regression
Merger Ret		1.88
Win Mer Ret 5		0.44
Win Mer Ret 10		0.32

Table 5A: Residual Graphs of Regression 4 Variations for different variables of the Annualized Merger Return

10.10. Underwriter Reputation

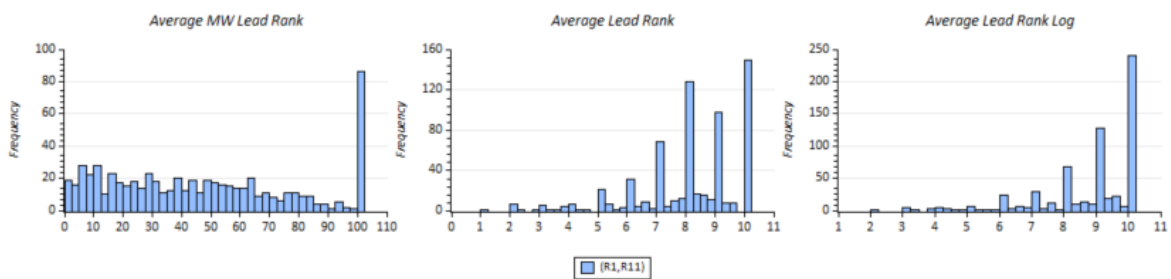


Table 4A: Distributions of the underwriting reputation scores attributed to each lead underwriter/leading team of underwriters
Different Reputation Systems

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