SPACS' DIRECTORS NETWORK: CONFLICTS OF INTEREST, COMPENSATION, AND COMPETITION*

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Abstract

We construct a director network for 972 SPACs that raised $271 billion from investors. First, we show that SPAC's investors receive lower returns and redeem more shares when directors sit on the board of another SPAC that IPOed later but found a target earlier. Second, we show that conflicted directors inefficiently allocate some targets to younger SPACs. Third, we study theoretically and empirically how new SPACs use compensation to compete for existing SPACs' directors. Overall, decisions of SPACs' investors, directors, and sponsors raise serious corporate governance concerns and suggest that there is a need for stronger legal protection of investors.

JEL Codes: G23, G34, G38, L14

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1 Introduction

Special Purpose Acquisition Company (SPAC) IPO volumes have surged in recent years (see Figure 1). In 2020-2021, SPAC IPO volume reached more than $200 billion. Merging with a SPAC has become an important mechanism for private companies to go public. Since 2010, 417 SPACs merged or announced a merger with private firms. These mergers created public firms with an aggregate pre-money valuation of $743 billion. At the end of 2021, 534 SPACs were still searching for a target. If all of them merge, the aggregate pre-money valuation is expected to be another $950 billion.

SPAC's directors play a critical role in a SPAC's success. The main role of SPAC's directors is to find a target company within a two-year period from the IPO date.[1] SPAC's directors hold SPAC's shares and benefit significantly from a successful merger. On the other side, if a SPAC fails to merge within the two-year period, then it liquidates, the money is returned to the investors, and the value of the directors' shares goes to zero. Even though directors have incentives to find the best target company for a given SPAC, a conflict of interest can exist when directors sit on the board of more than one SPAC. Conflicted directors might inefficiently allocate a prospective target to the younger SPAC even though this SPAC has more time to find another target than the older SPAC.

Does this conflict of interest exist? Do investors suffer from it? Do SPAC's sponsors generate the conflict on purpose? In this paper, we address all these questions and derive implications for the strength of investors' legal protection when they invest in SPACs. We perform the analysis in four stages. First, we construct a novel dynamic network of SPACs' directors and propose measures of a director's conflict of interest. Second, we study the role of SPAC's board connections to other SPACs on SPAC's performance when it raises money and merges with a target. Third, we study the decision problem of a conflicted director who trades off between the economic benefits of offering a potential target company

[1] About 50% of SPACs' target companies are unicorns (private companies with above $1B valuation), what makes SPAC directors more similar to unicorn hunters than directors of a traditional company.

to one of her SPACs, and each SPAC's risk of liquidating without a merger. Lastly, we study theoretically and empirically how SPAC's sponsors choose conflicted director's compensation to outcompete other SPACs in search for lucrative targets.

Ex-ante, the net benefit of allowing a director to sit on multiple boards is not clear. On the bright side, directors' reputation, which is built on past success, can boost the company's performance. On the other side, directors do not necessarily represent shareholders' interests even if shareholders elect the board (Shleifer and Vishny, 1997). Interlocked boards introduce a conflict of interest problem when a shared director sits on the boards of companies that compete against each other. In this paper, we empirically distinguish between these two effects, a task that is both important and difficult. Distinguishing them is important because they have different policy implications. In the presence of reputation effects, policies that encourage successful directors to sit on the boards of multiple companies can have substantial effects in elevating each company's performance, as opposed to policies that limit director sharing out of a concern that if the director has a higher stake in one company, it may hurt the other company's shareholders' interests.

Separately identifying the two effects is difficult in the setting of publicly traded companies for several reasons. First of all, any attempt to link the level of the board's connectedness to a company's performance always faces the identification obstacle: the formation of the board interlock network is largely endogenous and correlates with many unobserved firm-level characteristics. Second, sharing a director can generate synergies between competing firms. Thus, the estimated effect is the net effect of the downside of the conflicts of interest and the upside of the synergy benefits. In practice, the two effects are largely mixed together: we rarely see an operating company stop functioning after a director steps down to join another company's board. In consequence, the director's connection to the previous company can also conflict with the current company shareholder's interest.

SPAC's unique institutional setting allows us to overcome these difficulties. First, unlike operating companies, SPACs are "blank-check" companies, which means they have no underlying operating business or assets other than cash and limited investments. As a result, public investors almost solely invest in the ability of the SPAC's management team, specifically its board members. Thus, SPACs provide a perfect experimental field for studying the role board interlock networks play in company performance. Second, to start a SPAC, the directors raise cash from investors through a traditional IPO process. After the IPO, the SPAC has the single mission of searching for a private company to merge with, generally within a two-year time window. If the SPAC fails to find a target before the deadline, it liquidates and, if no extension is granted, the funds are returned to public investors. As a result, SPACs have limited, if any, synergy effects. Lastly, once a target is announced, the "deSPAC" process starts, and the target company and the SPAC go through the standard merger process. Because SPACs are only competing with other SPACs that are also searching for a merger target, a director's reputation from previous, successful SPAC deals can be cleanly separated from their conflict of interest problem from competing SPACs.

Our first contribution is to separately quantify how a shared director's reputation and conflict of interest affect SPACs' performance using a corporate board network based on SPAC-level panel data that we gathered from 2010 to 2021. To construct the corporate board network, we need to know each SPAC's board composition at the time of its IPO. We obtain the SPAC management teams' identities by web-scraping the 424-B4 and 424-B3 filings from EDGAR. To study SPACs' board composition and director credentials, we then hand-collect the SPAC directors' biographical information from Capital IQ and hand-match it with the SPAC sample. Our final sample contains information on 972 SPACs with 5,072 individual directors and officers from 2010 to 2021. To the best of our knowledge, this is one of the most comprehensive datasets on SPACs in general and of SPACs' complete board member information.

We first show that a SPAC performs better during the IPO stage if its directors have a higher reputation from previous successful deSPACings. We find that the IPO returns and proceeds increase with the directors' reputations. Specifically, a one standard deviation increase in *Reputation* increases the exercised overallotment amount by 2.4 million dollars (8.3% of the sample mean), and increases the SPAC's first-day return by 0.26 percentage points (14.2% of the sample mean). To measure the potential conflict of interest of a SPAC's board we compute the average number of connections SPAC's directors have to other SPACs that are also looking for a target. We find no relationship between IPO returns or proceeds and the conflict of interest measure, likely because concurrent connections can both benefit and hurt SPAC's chances to find a target.

We next study the decisions of the investors at the time of deSPACing. We find that investors understand that connected directors are conflicted in the allocation of targets and react whenever they see that connected SPACs that IPOed later merge earlier. Specifically, SPAC's returns decrease and redemptions increase with the number of directors' connections to younger SPACs that have successfully deSPACed. Quantitatively, one standard deviation increase in the number of these connections is associated with a 6.09 percentage points (13.14% of the sample mean) redemption rate increase, and 12.42 percentage points (67.87% of the sample mean) lower deSPACing returns. Interestingly, there is no significant negative reaction from investors when connected directors allocate targets to SPACs according to the order of their IPOs.

Using a simple model, we show that a conflicted director's "skin in the game" plays an important role in the allocation of targets. Logistic regression results suggest that if a director receives one standard deviation more shares from the entrant SPAC, the estimated probability of the entrant finding a target before the incumbent increases by 3.1 percentage points, holding all other variables constant at their average values. The incumbent's deSPACing return is expected to decrease by 2.57 percentage points (14.0% of its sample mean). In contrast, if the incumbent compensates the director with one standard deviation more shares, the entrant's chance of first finding a target decreases by 9.4 percentage points, and the incumbent benefits from 7.79 percentage points higher post-merger returns

(43% of the sample mean). Another implication from the model suggests that the director is less willing to misallocate a target when the entrant has more time before liquidation. If a director chooses to join an entrant that has a liquidation deadline one standard deviation closer to that of the incumbent, the incumbent is 17.2 percentage points less likely to find a target before the entrant, leading to an expected loss of 14.25 percentage points (78% of the sample mean) in post-merger returns.

Our model also provides insights on the entrant's strategic choice of compensating SPAC directors. On the one hand, when the cost of competing with the incumbent is affordable, i.e., the director's compensation from the incumbent is relatively small, and the two SPACs' liquidation deadlines are relatively close, then the entrant compensates the director with shares proportional to what she receives from the incumbent. The average marginal proportion is more than one and increases with the deadline difference. By doing so, the entrant endogenously induces the director to allocate a target to the entrant at the expense of the incumbent's investors. Such misallocation is inefficient because the planner would allocate a target to the SPAC that has the least time left to find another target. On the other hand, when competing with the incumbent is too costly, the entrant offers the bare minimum compensation to the director and waits for future targets. We find empirical support for the model's predictions. When affordable, for each share the director receives from the incumbent, an average entrant needs to compensate the director 1.71 shares to bias the director's preference. If the entrant SPAC is one standard deviation younger than the average, the compensation ratio increases to 4.55. In contrast, when the director is highly compensated by the incumbent, or when the entrant is too young compared to the incumbent, it becomes too costly for the entrant to compete with the incumbent. Under such circumstances, we find the entrant almost always compensates the director with around 50% of the shares she receives from the incumbent.

Related literature. The role played by directors is one of the most important questions in the corporate governance literature (Shleifer and Vishny, 1997). Extensive research studies board interlocks, in which the same director sits on the boards of multiple companies.[2] Levit and Malenko (2016) show that directors' desire to be invited to other boards creates strategic complementarity of corporate governance across firms. In a recent work, Cai et al. (2022) show that incumbent directors are more likely to appoint new directors who have connections to the incumbent board. We contribute to this literature by studying interlocks between SPAC boards. Due the nature of SPACs, if interlocked boards introduce a conflict of interest, it should be most pronounced for SPACs. Our paper provides strong evidence for such conflicts, which can have implications for non-SPACs directors behavior as well.

Our paper also contributes directly to the SPACs literature. Klausner et al. (2020) find that the post-merger performance of SPACs is worse than companies that went public through the traditional IPO process. They argue that SPACs suffer from much larger dilution than a traditional IPO, and investors who do not redeem their shares bear the dilution cost. Ritter et al. (2021) find that warrant investors enjoy a much higher return than common share investors. Fortney (2021) puts forward a legal analysis of SPAC directors' compensation and its implications for SPAC's directors under the Delaware law. Our paper contributes to the SPAC literature by linking the director network to SPACs' performance. Moreover, this paper looks at all SPACs that went through the IPO process, including those SPACs that have not gone through the de-SPAC process. Most importantly, our paper is the first to identify the conflict of interest faced by SPAC directors on interlocked boards. We study this problem from three angles: decisions of investors, decisions of directors, and decisions of sponsors. The results suggest that a policy to restrict interlocked boards in SPACs will boost investors' protection.

This paper also relates to the literature that studies incentives in the financial industry. Del Guercio et al. (2018) show that mutual funds whose managers also manage hedge funds significantly underperform their peers because of the managers' conflict of interest. Egan

[2]See e.g. Pfeffer 1972, Palmer 1983, Westphal and Zajac 1997, Mizruchi 1989, Fich and White 2005, Larcker et al. 2013, Chiu et al. 2013, Renneboog and Zhao 2014, Faleye et al. 2014, Akbas et al. 2016, Garcia-Bernardo and Takes 2018, and Cheng et al. 2019.

et al. (2017) show that brokers' conflicting interests can result in dominated bonds allocated to investors' portfolios. Egan et al. (2019) study the prevalence of misconduct in the financial industry. Chalmers and Reuter (2020) show how the conflict of interests affects financial advice about portfolio allocation. Our paper contributes to this literature by showing that SPAC directors' incentives result in losses to unsophisticated investors who trust directors to act in their best interest.

2 SPACs Director Network and Performance

In this section, we analyze how a SPAC's performance during the IPO and the deSPACing stages is related to the connections that its board members have to other SPACs. We present the data, the methodology, summary statistics, and results of the empirical analysis.

2.1 Data

One of our contributions is to create one of the most comprehensive SPACs databases that are currently available. In total, we have 972 SPACs that either merged (271), announced a target (146), are still looking for a target (534), or were liquidated (21). The SPAC data come from two commercial SPAC databases: SPAC Research[3] and PrivateRaise's SPAC Search[4], which include all SPACs that register an S-1 filing with the Securities and Exchange Commission (SEC). The data show information about individual SPACs collected via public filings, including the deal structure, the timeline of key events, as well as the de-SPACing outcomes. We exclude SPACs that are traded in the Over-the-Counter (OTC) markets due to potential unobserved differences between SPACs traded in major exchanges and OTC markets. We further supplement our data sample with SDC Platinum's new issue database, which provides information about the exercise of the over-allotment option during the SPAC's

[3]https://www.spacresearch.com/
[4]https://www.privateraise.com/

IPO process. We further hand-collect historical pricing data for each SPAC from Bloomberg. The 972 SPACs in the sample went through the IPO process in the United States between January 2010 and December 2021.

To construct the corporate board network, we need to know the board composition of each SPAC at the time of the IPO. We obtain the SPAC management team's identities by web-scraping the 424-B4 and 424-B3 filings from Edgar. For each SPAC, Edgar provides the name, age, and position of the SPAC manager. We match Edgar's SPAC management team to our SPAC sample using the Central Index Key (CIK). Our final sample contains information on 972 SPACs and 5,072 individuals between January 2010 and December 2021. This is the base sample we use in our tests. To the best of our knowledge, ours is the first paper to use web-scraped data for the SPAC's complete board member information from SEC filings 424-B4 and 424-B3.

To study the SPACs' board's composition and sponsors' credentials, we hand-collect biographical information on current and prior boards of directors and senior company officers from Capital IQ. Specifically, we collect the name, age, gender, the director's current and past roles and the start and end years for every company at which they served, a binary variable indicating whether the individual serves (served) on the board of directors in the current (past) employment position, all the graduate and undergraduate degrees they received, and the institutions that granted the degrees. We group the degrees into four categories: (i) JD/MD (Juris doctorate or medical doctorate degree), (ii) MBA (Master of Business Administration), (iii) Master (Master of Arts or Master of Science), and (iv) Bachelor (general undergraduate). We group the work experience into three categories: (i) CEO_Public (chief executive officer at a public company), (ii) Investment_Banking (board director at an investment bank), and (iii) VC_PE (board director at a venture capital or private equity firm). We then manually match each individual in the SPAC's management team to individuals in Capital IQ.

To the best of our knowledge, the result is the most comprehensive database on SPACs, their performance, their investors, and their boards.

2.2 Methodology

A SPAC's life cycle can be generally divided into two fairly independent periods: pre-merger and post-merger. We define the pre-merger period as the time window from the SPAC IPO to the day before the target announcement. Accordingly, the post-merger period is defined as the time period from the target announcement day to the day when the business combination is closed.

2.2.1 IPO performance measures

We measure a SPAC's IPO outcome in two ways. We first look at the exercised overallotment option. As in a traditional IPO, the underwriter has an overallotment option (also known as the "green shoe") to purchase from the SPAC within 30-45 days, an additional 15 percent[5] of the SPAC units sold in the IPO at the offer price. This option allows an underwriter to sell 15 percent more units at the initial public offering to provide buying support in case of higher demand without becoming exposed to excessive risk. If the offering is strong and the SPAC unit price rises, underwriters can exercise the option and purchase the additional 15 percent of units at the offer price (receiving an additional fee) to cover their short position. When the SPAC offering is weak and the price drops, instead of exercising the option, the underwriter purchases back the extra shares issued in the market. Thus, the exercised overallotment amount will be higher if the issue is "hot", and greater usage of the overallotment option predicts a better SPAC IPO performance. Using a sample of 306 Nasdaq IPOs from September 1996 to July 1997, Ellis et al. (2000) show that the average exercised overallotment is 9.5 percent. In comparison, the average exercised overallotment

[5]The NASD (National Association of Securities Dealers) sets a limit of 15 percent on the overallotment option.

is 11.4 percent, evidence that the SPAC IPO market is relatively "hot".

The second measure of SPAC's IPO performance that we use is the issue's listing-day return. The IPO literature consistently documents a systematic increase from the offer price to the first-day closing price[6]. The average listing-day return for our SPAC sample is 1.83 percent. In comparison, Ritter and Welch (2002) shows the average first-day return is 18.8 percent in a sample of 6,249 IPOs from 1980 to 2001. Thus, the underpricing in a SPAC IPO is much smaller than that in a traditional IPO.

2.2.2 DeSPACing performance measures

Once the SPAC has completed its IPO process, the SPAC's management team is responsible for seeking out a private company to merge with, typically within a two-year time frame. A SPAC's IPO prospectus usually illustrates the industry that is the SPAC's main focus. The general investment strategy is to target sectors in which the management team has experience. Figure 2 plots the distribution of SPACs' IPO target sectors, and the sectors of the post-merger companies. Apart from the "general" sector, technology, healthcare, and consumer/retail are the 3 most common IPO target sectors. Technology and healthcare remain the two most popular sectors of target companies, and the automotive industry is third.

Both Nasdaq and NYSE rules require that at least 90% of the gross proceeds from a SPAC offering and the sale of the private placement units must be deposited in a trust account and can only be released to either paying for the redemption of any public shares or to close the business combination. Once a target is announced, public investors usually have the right to vote to approve the deal. If approved, the SPAC proceeds to merge with the target company. Otherwise, the SPAC must return to the target searching stage and face the liquidation risk if it fails to find a new target and cannot complete the merger before

[6]For a review of IPO underpricing theory, refer to Ritter and Welch (2002); Ellis et al. (2000)

the deadline. On average, conditional on finding a target, the target announcement date is more than a year (392 days) away from the liquidation deadline. Regardless of the voting decision, public investors can choose to redeem their SPAC shares while they keep their warrants, if any, at the offer price plus any interest that accumulates in the trust account. A higher redemption rate is linked to a higher liquidation risk: the money left in the trust account may not be sufficient to meet the minimum cash requirement needed to complete the merger process. The redemption rate thus serves as one of our key measures for the SPAC's post-merger performance. In our sample, the average redemption rate is 46 percent, in contrast to the 73 percent documented in Klausner et al. (2020), where the 2019-20 merger cohort is used. In addition to using the money raised in the public offering to complete the merger deal, the SPAC can also raise money through private placement from large private investors (hedge funds, mutual funds, investment banks, etc.). Such deals are referred to as Private Investment in Public Equity (PIPE) deals. These PIPE investors often have material non-public information from the SPAC about the target the SPAC is looking to acquire prior to its announcement. On average, a PIPE deal contributes 207 million dollars to the merger deal.

In addition to the redemption rate, we also look at the SPAC's shareholder return to measure the SPAC's post-merger performance. We follow the methodology used in Klausner et al. (2020) by first defining the redemption price, which is the price at which the SPAC trades the day before the merger is announced. Using that price, we then calculate the post-merger returns for each SPAC as follows:

$$\textit{Post-merger return} \coloneqq \frac{\textit{Business Combination Closing Price}}{\textit{Redemption Price}} - 1,$$

2.2.3 Construction of the director network

We focus on the network of interlocking directors who connect SPACs, which we also referred to as the board interlock network. We define the SPAC director network as a directed graph g, in which each SPAC is a node, and a SPAC has an out-edge to another SPAC if the two share at least one board member or director. Figure 3 plots the distribution of the number of connected board members at the time of the IPO. 197 out of 972 (20.3%) SPACs are not connected to other SPACs. 133 SPACs shared one director with other SPACs, and 72 SPACs shared two directors with other SPACs. To study the SPACs' IPO performance and deSPACing performance, we construct two sets of network measures. Below we discuss each measure in turn.

2.2.4 IPO network measures

In order to examine how a SPAC's board network affects its IPO performance, we first look at the subset of SPACs that IPOed before the focal SPAC did and count how many of them share at least one director with the focal SPAC (*Network Degree*). This measure reflects the aggregate level of connectivity when the SPAC goes public. For example, if SPAC A shares at least one director with five other SPACs, it would have a *Network Degree* of five. Figure 4 depicts the SPAC director network using the full sample. The node size is proportional to the SPAC's IPO proceeds, and how red the edge color corresponds to the edge weight, which equals the number of directors who also sit on the board of another SPAC. The figure is deliberately constructed to put connected SPACs close to the center of the graph. Figure A.1 in the appendix plots the evolution of the SPAC's director network from 2017 to 2021.

Network Degree serves as a simple connectivity measure. However, it is not clear whether connecting to another SPAC is beneficial to the SPAC's performance. A SPAC's key purpose is to find a target company with which to merge within a limited time frame. A director's previous successful SPAC experience can be highly valuable, given the fact that SPACs have only become popular in the past two years, and that many of the newly entered sponsors and public investors are not familiar with how exactly the SPACing process works. At the same time, directors who connect competing SPACs that are searching for targets at the same time could face a conflict of interest. When the shared director is aware of an acquisition opportunity, the new SPAC may be precluded from procuring it if the director decides to present it to one of the competing SPACs with which they are affiliated. To separate the two channels, we split *Network Degree* links into two types. We define the interlock as a *Reputation* link if the other SPAC either announces a target or successfully merges with one, and a *Conflict* link if the other SPAC is also searching for a target.

Figure 5 illustrates the construction of the IPO network measures. At the time of its IPO, SPAC A can share a director with three different types of SPACs. First, SPAC B represents SPACs that are either undertaking or have completed the deSPACing process. Second, SPAC C represents SPACs that both IPOed and found a target before SPAC A. And third, SPAC D represents SPACs that IPOed before but found a target after SPAC A. *Network Degree* counts the total number of links to SPACs B, C, and D. *Reputation* is measured by the number of links to SPAC B, while *Conflict, IPO* measures the total number of links to SPACs C and D. We call SPACs C and D "incumbent" SPACs as they were searching for targets before SPAC A had an IPO. In addition, we refer to links to SPAC C as *Incumbent, Announced* because SPAC C had already announced a target when SPAC A was searching a target. Links to SPAC D are *Incumbent, Searching* because SPAC D was still searching for a target when SPAC A found one. As there is no target searching outcome as yet when SPAC A goes public, we do not differentiate between links to SPACs C and D for the IPO network measures.

2.2.5 DeSPACing network measures

Next, we study how the SPAC's deSPACing (post-merger) performance is related to the board interlock network by looking at how connected a SPAC is by the time it finds a target. We again split the connections into *Reputation* and *Conflict* based on whether the other SPAC either announced or successfully merged with a target before the focal SPAC's IPO date. The advantage of looking at the DeSPACing outcome is that we observe the status of all the connected competitors. Specifically, we know whether the connected SPAC finds a target ahead of the focal SPAC. We also observe whether the competing SPAC is an incumbent (it had an IPO ahead of the focal SPAC), or an entrant (its IPO came after that of the focal SPAC). Accordingly, we split the *Conflict* links into four categories: (i) Incumbent, Announced; (ii) Incumbent, Searching; (iii) Entrant, Announced; (iv) Entrant, Searching.

Figure 6 gives an illustrative example of the construction of the deSPACing network measures. In addition to the links to SPACs B, C, and D, we observe the links to two "entrants" of SPACs E and F, which both IPOed after SPAC A. We term links to SPAC E as *Entrant, Announced* because SPAC E has already announced a target when SPAC A finds one. We refer to links to SPAC F as *Entrant, Searching* because SPAC F was still searching for a target when SPAC A announced the merger. *Conflict, DeSPACing* counts the total number of links SPAC A has to SPACs C, D, E, and F.

2.3 Descriptive Statistics

Table 1 presents the summary statistics for the matched sample of SPACs' management teams from January 2010 to December 2021.

We first look at how connected a SPAC is to the board interlock network using different network measures. At the offering stage, the average SPAC links to 0.87 other SPACs through shared directors. Of these links, 0.56 of them are categorized as *Reputation* links and 0.31 links are *Conflict* links. At the deSPACing stage, a SPAC is connected to 0.48 other SPACs that may have a conflict of interest. 0.07 of these SPACs find a target before the focal SPAC does, including 0.05 incumbents and 0.02 entrants. Of the remaining 0.41 connected SPACs that were still searching for a target, 0.29 of them are incumbents and 0.12 are entrants.

An average SPAC raises 279 million US dollars through its IPO process, which includes a base amount of 251 million dollars, and an exercised overallotment option of 29 million dollars. The average IPO investor earns a 1.83% first-day return. As for the average post-merger outcomes, when a SPAC announces a target, it is roughly 13 months away from its liquidation deadline. After the target announcement, 46 percent of SPAC shareholders choose to redeem their shares. Meanwhile, PIPE investors put a sizeable commitment of 207 million dollars on average for each merger deal. The overall average post-merger return is 18.30 percent.

The average characteristics of SPAC management teams are as follows. A SPAC's board contains roughly 5 directors, with an average age of 54 years old. The management team also has one more senior officer. About 16 percent of SPAC directors are female and 17 percent are(were) chief executive officers in a publicly-traded, non-SPAC companies. 7 percent are(were) directors in investment banks, and 14 percent serve(served) in that role in venture capital or private equity firms. In terms of educational background, 13 percent of directors hold a JD/MD degree, 38 percent have a Master's in Business Administration (MBA) degree, 19 percent of directors have a general master's degree, and over 81 percent of directors have a bachelor's degree.

2.4 IPO Performance

To study how investors react to conflicted directors we study the SPAC's performance at the time of its IPO and deSPACing stages. For the IPO stage, we use the following regression at the SPAC level:

$$\texttt{IPO performance}_{i,t} = \beta_0 + \beta_1 \texttt{IPO network measures}_{i,t} + \gamma \texttt{Controls}_{i,t} + \delta_t + \epsilon_{i,t}, \quad (1)$$

where i and t index the SPAC and IPO quarter, respectively. We focus on two SPAC performance variables: the overallotment amount that is exercised, and the listing-day return. *IPO network measures*$_{i,t}$ are the network measures described in the previous section. *Controls*$_{i,t}$ includes measures of the SPAC IPO and the board characteristics, such as the board size, the number of officers, the average age of the board, the ratio of female directors to the total number of directors, and the board's average working experience and education level. The inclusion of time (δ_t) fixed effects conditions out common factors that influence the SPAC's performance in each quarter. We estimate Eq. (1) using ordinary least squares, with robust standard errors clustered at the quarter level.

We present the estimation results for *Overallotment* from Eq. (1) in Table 2. In all specifications, we control for the logarithm of the SPAC's IPO base proceeds to compare SPACs that are seeking the same amount of investment during their IPOs. In column (1) of Table 2, we find that the director's reputation from previously successful SPACs is associated with a significantly larger overallotment amount. In addition, directors' potential conflict of interest does not affect the SPAC's overallotment amount.

In column (2), we show that our results are not driven by the number of other SPACs that are outside of the interlock network. Specifically, we add two network control variables, *Reputation(Control)* and *Conflict, IPO(Control)*, which count the number of past successful SPACs and concurrently competing SPACs that do not share a same director with our SPAC of interest.

In columns (2) to (5), we show that our results are robust by gradually including different sets of control variables and fixed effects. Column (3) adds the size of the board, the number of officers, and the board member's characteristics. Column (4) includes underwriter fixed effects to control for the potential matching between a well-connected director and a reputable underwriter[7]. Column (5) adds the SPAC's IPO sector fixed effects to absorb time-invariant differences across SPACs that target different sectors.

The estimated coefficients on *Reputation* and *Conflict, IPO* remain robust across all specifications. Quantitatively, column (5) shows that a one standard deviation increase in *Reputation* links increases the exercised overallotment amount by 2.40 million dollars, which equals 8.3% of the sample mean.

We next show the estimation results for *Listing-day return* from Eq. (1) in Table 3 using the same set of control variables as in Table 2. We find that the SPAC's IPO units gain more on the first day of trading when the SPAC's directors are more reputable, i.e., the directors sit on the board of SPACs that successfully found targets. In addition, there is no significant relationship between the listing-day returns and the number of concurrent connections to other SPACs. The results are robust across all specifications.

With a full set of controls, Table 3, column (5) shows that a one standard deviation increase in *Reputation* links increases the SPAC's first-day return by 0.26 percentage points, a significant increase equal to 14.2% of the sample mean. Given that SPACs' shares are usually sold at a fixed price of $10 regardless of the reputation of the directors, the only adjustment that can happen is in the quantity, which is why we see higher over-allotment and higher listing-day return for SPACs with more reputable directors.

We conclude that at the time of the IPO, investors do not react to conflicted directors, probably because the conflict is bi-directional. Only after a prospective target is allocated

[7]See Table A.1 for top book-runner SPAC IPO underwriters.

to the connected SPAC, then investors know that the conflict was not in their favor. We do find that connections to other SPACs that deSPACed already are beneficial as they signal investors about directors' ability and access to the deal flow. Next, we study investors' decisions at the stage when a SPAC announces a target and returns to investors who do not redeem the shares on the announcement but wait until the merger takes place.

2.5 DeSPACing Performance

We now turn our attention to the deSPACing outcomes by estimating the following regression at the SPAC level:

$$\begin{aligned} \texttt{DeSPACing performance}_{i,t} = & \beta_0 + \beta_1 \texttt{DeSPACing network measures}_{i,t} \\ & + \gamma \texttt{Controls}_{i,t} + \delta_t + \epsilon_{i,t}, \end{aligned} \tag{2}$$

where i and t index the SPAC and the target announcement quarter, respectively. The dependent variable, *DeSPACing performance*$_{i,t}$, include the SPAC's redemption rate and its deSPACing return. *DeSPACing network measures*$_{i,t}$ include the deSPACing network measures constructed earlier. In addition to the board characteristics, *Controls*$_{i,t}$ also includes the logarithm of the SPAC's total IPO proceeds to control for differences across SPACs of different sizes. In addition, SPACs that are closer to the liquidation deadline may be more desperate to find a target and thus have less bargaining power against the target company in deal negotiations. We control for the number of days to the liquidation deadline using the variable *Days left*. The inclusion of the IPO target sector, the merger sector, and time fixed effects conditions out time-invariant differences across SPACs targeting different sectors and those across target companies in different sectors, as well as time-varying factors at the announcement quarter level. We estimate Eq. (2) using ordinary least squares, with robust standard errors clustered at the target announcement quarter level.

We first explore how SPAC investors' redemption decision changes when the SPAC's directors have connections to other SPACs of different types. In column (1) of Table 4, we find that a director's past success prior to the SPAC's IPO does not affect the redemption rate at the DeSPACing stage.

Next, we consider whether the redemption rate varies with the degree of the investor's concern about a director's conflict of interest. *Conflict, DeSPACing* indicates the number of connected SPACs with a target searching period that overlaps with that of the focal SPAC. *Announced* signifies those SPACs that find a target ahead of the focal SPAC. We then estimate Eq. (2) after adding *Conflict, DeSPACing* and *Announced*.

The estimation results are in column (2) of Table 4. In that column, we find that the redemption rate is increasing in the number of connected SPACs that are able to find a target ahead of the focal SPAC, and it is decreasing in the number of connected SPACs that are not. Specifically, we find that the redemption rate is reduced by 10.12 percentage points if the SPAC is able to find a target before a connected SPAC does, which is 16.15 percentage points lower than if the connected SPAC finds a target more quickly than the focal SPAC. Overall, Table 4, column (2) shows that the redemption rate is higher when the connected SPAC announces a target before the focal SPAC does, potentially because the director faces a higher conflict of interest.

We then dig more deeply into the investor's concern about SPAC directors' conflicts of interest. We separate connected SPACs into incumbents and entrants by comparing their target announcement dates relative to that of the focal SPAC. Our rationale is that investors would be more worried about the deal's quality if they observe an entrant finding a target ahead of the SPAC in which they are investing; they would be less worried if the announcement comes from an incumbent.

In Table 4, column (3), we estimate Eq. (2) after replacing *Announced* with *Incumbent, Announced* and *Entrant, Announced*. We find that the redemption rate increases by 40.61

(6.09) percentage points when investors observe one more (one standard deviation more) entrant SPAC announcing a target ahead of the SPAC they invested, which equals 87.60% (13.14%) of the sample mean. The reaction is much smaller and not statistically significant when the announced SPAC is an incumbent. The F test result shows that the two estimated coefficients are statistically different at the 1% confidence level.

In Table 4, column (4), we look at the opposite side of this coin by estimating Eq. (2) after replacing *Announced* with *Incumbent, Searching* and *Entrant, Searching*. We find that investors redeem less when the SPAC finds a target ahead of other connected SPACs, and that effect is more significant if the connected SPAC is an incumbent rather than an entrant, although the two estimated coefficients are not statistically different. In particular, investors redeem 16.91 (12.01) percentage points fewer when one additional (one standard deviation more) incumbent is still searching at the time of the focal SPAC's target announcement date, and 14.68 (6.31) percentage points less when one additional (one standard deviation more) entrant is searching. Overall, columns (3) and (4) of Table 4 show that investors redeem more when the director's conflict of interest problem is more severe.

Lastly, we explore how investors' attitude changes with the directors' conflicts of interest by directly examining a SPAC's return during the DeSPACing period using the same specifications as in Table 4. We present the results from this exercise in Table 5.

In Table 5, column (2), we find that a SPAC's deSPACing return lowers by 7.39 percentage points with one standard deviation increase in the number of connected SPACs that find a target ahead of the focal SPAC, which translates to 40.38% of the sample mean.

In Table 5, column (3), we find that this effect is due almost solely to connected SPAC being an entrant. With one standard deviation more entrants finding a target ahead of the focal SPAC, its return decreases by 12.42 percentage points, which equals 67.87% of the sample mean. On the contrary, the earlier announcement from the incumbent genders no investor reaction. In addition, the two estimated coefficient are statistically different at the

5% confidence level.

In Table 5,column (4), we redirect our focus to the decomposition of connected SPACs that are still searching for a target when the focal SPAC announces its own target. The SPAC's return increases by 31.72 percentage points (173.33% of the sample mean) when the number of connected incumbents that are not able to find a target before the focal SPAC increases by one standard deviation. However, the estimated effect is small and statistically insignificant when entrants find a target after the focal SPAC, and the two estimated coefficients are statistically different at the 1% confidence level.

Overall, the deSPACing stage of the analysis shows that investors understand that a conflict of interest exists when directors sit on the board of another SPAC and the focal SPAC deSPACs before the current SPAC. They redeem more shares when the competitor SPAC IPOed later than their SPAC but deSPACed earlier. The deSPAC returns are significantly negative in this case, suggesting that investors who do not redeem face significant losses from this potential conflict of interest. In the next section, we study the decision of the directors do see whether there is any evidence that they allocate targets to younger SPACs when they have more economic benefit from this allocation.

3 Directors and Sponsors' Decisions

We find a better merger outcome for entrant SPACs if they share directors with incumbent SPACs. This outcome difference is larger if the entrant SPAC finds a target before the incumbent SPAC. In this section, we build a model in which the director's conflict of interest is endogenously generated by the entrant's strategic choice of compensation. The model makes two unique predictions. First, the conflicted director is more likely to allocate the only available target to the entrant when she holds (i) more shares in the entrant, (ii) fewer shares in the incumbent, or (iii) the entrant is close to liquidation. Second, the entrant strategically chooses the level of compensation based on the number of incumbent shares the director holds to induce the director to prioritize it. We then provide empirical evidence that aligns with the model predictions.

3.1 A Model of Director's Compensation

3.1.1 Model Setup

Consider an incumbent SPAC and an entrant SPAC share one same director. Both the SPACs and the director are risk neutral and have common discount rate $r = 0$. We model the entrant's decision of compensating the director at the time of the entrant's initial public offering.

Targets We assume an exogenous process of homogeneous targets. Per unit of time, the director receives targets at the rate λ. When a target arrives, the director decides whether to propose it to a SPAC. A SPAC liquidates and loses its share value if it fails to merge with a target before the deadline. We assume both SPACs can only find targets through the shared director. Clearly, it is optimal for a SPAC to accept a target when receiving a director's proposal. Without loss of generality, the post-merger share price is normalized to 1.

Figure 11: Timeline

Timeline Figure 11 represents the time flow of our model, which consists of events occurring in the following order:

1. At time 0, the incumbent SPAC goes through the initial public offering process, and the director starts searching for a target with the arrival rate λ;

2. Receiving a target, the director can propose it or not. If the director proposes a target

	$T = I$	$T = E$
The director's payoff	$S_I + \pi_{t_2,t_3}$	S_E
The entrant's payoff	$[1 - e^{-\lambda(t_3-t_2)}](S - S_E)$	$S - S_E$

Table 11: The Payoff Structure

to a SPAC, the SPAC merges with the target and exits the game;

3. At time t_1, the entrant SPAC gets publicly listed;

4. At time t_2, if the director has at least two targets, then the game ends, and both SPACs merge with a target; if the director has no target, then the incumbent liquidates[8], and the game continues; if the director has only one target, and chooses to propose it to the entrant, then the incumbent liquidates, the entrant merges with the target, and the game ends; if the director has only one target, and chooses to propose it to the incumbent, then the incumbent merges with the target, and the game continues.

5. At time t_3, the entrant SPAC liquidates if no target is proposed to it.

The director's decision making and the payoff structure From the discussion of the timeline we know that the director only needs to decide in the situation where she has only one target up until t_2. If the director chooses to propose the target to the incumbent, she receives S_I from the number of shares she holds in the incumbent (S_I), plus a continuation value of $\pi_{t_2,t_3} = [1 - e^{-\lambda(t_3-t_2)}]S_E$ from the number of entrant shares she holds (S_E), and the entrant receives $\pi^E_{t_2,t_3} = [1 - e^{-\lambda(t_3-t_2)}](S - S_E)$, where S is the total number of entrant's founder shares. If the director chooses to propose the target to the entrant, the incumbent liquidates and she receives S_E solely from the shares she holds in the entrant, and the entrant receives $(S - S_E)$. Table 11 represents the director's decision making at t_2 and payoffs accordingly.

[8]Empirically we rarely see liquidations. Instead, SPAC sponsors have incentive to merge with a low-quality target to avoid liquidation. One could interpret liquidation in our model as merging with a low-quality target, which is always available.

3.1.2 Equilibrium Concept

We focus on the subgame perfect equilibrium of the extensive game. There is perfect information in our game since each player, when making any decision, is perfectly informed of all the events that have previously occurred. We begin by defining the notion of the game.

Definition 1. *An extensive game with perfect information that models the entrant and the director's decisions is $< N, H, P >$, which has the following components.*

- *A set of players $N = \{entrant, director\}$;*
- *A set H if finite sequences that consists of histories $\emptyset$, (S_E);*
- *The entrant makes the first move, $P(\emptyset) = entrant$, and the director makes the second move, $P(h) = director$ for the history $h \neq \emptyset$.*

Next, we characterize the players' strategies. The entrant has only one action in the game: choosing the number of shares to compensate the director. Hence, his strategy can be characterized by (S_E). The director also has only one action in the game: whether to propose a target to the incumbent or the entrant. Therefore, her strategy can be characterized by $(T \in \{E, I\})$. Below we define the equilibrium concept used throughout the paper.

Definition 2. *A subgame perfect equilibrium with perfect information is a strategy profile s^* in $\mathcal{T}$ such that for every player $i \in N$ and every history $h \in H$, the strategy profile $s^*|h$ is a Nash equilibrium of the subgame $\mathcal{T}(h)$.*

3.1.3 Model Solution

We start with analyzing the director's problem.

Lemma 1. *In equilibrium, the director proposes projects to both the incumbent and the entrant if she has at least two targets up until t_2; if she has no project up until t_2, the incumbent liquidates and she keeps searching for a target for the entrant up until t_3.*

Lemma 1 implies that we only need to consider the situation where the director only has one target up until t_2. In that case, the director's problem can be represented by,

$$\begin{aligned}
&\max_{T\in\{I,E\}} \mathbb{E}[\pi] \\
s.t.\quad &\mathbb{E}[\pi|T=I] = S_I + [1-e^{-\lambda(t_3-t_2)}]S_E \\
&\mathbb{E}[\pi|T=E] = S_E,
\end{aligned}$$

Proposition 1. *In equilibrium, at t_2, when the director only has one target, and $S_E \geqslant e^{\lambda(t_3-t_2)}S_I$, $T^*=E$, else, $T^*=I$.*

Proof. See appendix. □

The intuition behind Proposition 1 implies that the director needs to make a decision at t_2 when she only has one target, and she is more likely to allocate the target to the entrant if she receives more compensation from the entrant, less from the incumbent, and when the entrant still has plenty of time remaining to search for a new target.

Next, we turn to the entrant's problem. Taking the director's choice into consideration, the entrant chooses the optimal level of compensation for the director. The entrant's problem can be represented by,

$$\begin{aligned}
&\max_{S_E} \mathbb{E}[\pi^E] \\
s.t.\quad &\pi^E = S - S_E && \text{if}\quad S_E \geqslant e^{\lambda(t_3-t_2)}S_I \\
&\pi^E = [1-e^{-\lambda(t_3-t_2)}](S-S_E) && \text{if}\quad S_E < e^{\lambda(t_3-t_2)}S_I,
\end{aligned}$$

Lemma 2. *In equilibrium, $S_E^* = e^{\lambda(t_3-t_2)}S_I$ when $S_E \geqslant e^{\lambda(t_3-t_2)}S_I$, and $S_E^*=0$ when $S_E < e^{\lambda(t_3-t_2)}S_I$.*

Proof. See appendix. □

Lemma 2 implies that if the entrant chooses to compete with the incumbent for the only currently available target, he needs to compensate the director with shares proportional to what she receives from the incumbent. In addition, the marginal proportion should increase in the entrant and the incumbent's liquidation deadline different, $(t_3 - t_2)$. Alternatively, if the entrant chooses to wait for future targets, he does not compensate the director. Combining Lemma 1, Proposition 1, and Lemma 2, we obtain a unique equilibrium of the game.

Proposition 2. *The unique equilibrium of the game is characterized by,*

– *if* $S_I \leqslant e^{-2\lambda(t_3-t_2)}S$, $S_E^* = e^{\lambda(t_3-t_2)}S_I$, *the director proposes the target to the entrant if she only has one target up until the incumbent liquidates;*

– *if* $S_I > e^{-2\lambda(t_3-t_2)}S$, $S_E^* = 0$, *the director proposes the target to the incumbent if she only has one target up until the incumbent liquidates.*

Proof. See appendix. □

3.2 Model Implications and Tests

The model provides unique implications on both the director's and the entrant's decisions from Proposition 1 and Proposition 2. In this section, we document our methodology for testing these predictions.

3.2.1 Directors' decisions

The intuition behind Proposition 1 is as follows. A director evaluates both her skin in the game as well as the entrant's continuation value when she makes the decision. On the one side, she leans towards the entrant if she receives more compensation from the entrant and less from the incumbent. On the other side, she feels less pressured to immediately sacrifice the incumbent if the entrant is young enough and still has a lot of time to search for a target.

We use a logit regression to test the above implications. Specifically, we estimate the following empirical model,

$$\mathbb{1}\{\texttt{Entrant}\} = logit(\beta_1 \texttt{Shares}_{entrant} + \beta_2 \texttt{Shares}_{incumbent} + \beta_3(t_3 - t_2) + \mathbf{X\Delta} + \epsilon), \quad (3)$$

where each observation is a triplet of {entrant, director, incumbent}. $\mathbb{1}\{Entrant\}$ is a dummy variables equals to one if the entrant announced the target before the incumbent, and zero otherwise. $Shares_{entrant}$ and $Shares_{incumbent}$ are the number of shares the director receives from the entrant and the incumbent, respectively. $(t_3 - t_2)$ is the number of days difference between the liquidation deadline of the incumbent and the entrant. $\mathbf{X}$ contains a set of control variables that control for the difference between the incumbent and the entrant, as well as characteristics of the director.

According to Proposition 1, we should expect a positive estimation coefficient of β_1 and negative coefficients of β_2 and β_3.

3.2.2 Sponsors' Decisions

The following empirical implications follow from Proposition 2 on the entrant's decision. To compete with the incumbent over the only available target, the entrant needs to compensate the director with enough shares. Specifically, the compensation should be proportional to the shares the director receives from the incumbent. In addition, this proportion needs to be larger when the entrant's continuation value is higher, i.e., when the difference in the liquidation deadlines between the entrant and the incumbent, $(t_3 - t_2)$, is larger.

However, when competing with the incumbent is too costly, i.e., when either S_I or $(t_3 - t_2)$ is too high, the entrant chooses to give the director little or no shares and counts on the director to find another target after the incumbent merges. To capture this non-linear relationship in the competition cost, we define a dummy variable $\mathbb{1}\{Competition\}$, which equals one if both S_I and $(t_3 - t_2)$ is below the 90^{th} percentile, and zero otherwise. This condition assumes that an entrant competes for directors in 80% of the cases and in the remaining 20% of the cases the entrant estimates that the cost of getting a target is too high to even try to compete. It is low because either the incumbent compensated the conflicted director with more shares than 90% of the incumbent SPACs, or the incumbent has higher liquidated risk than 90% of the incumbent connected SPACs.[9]

We can then use $\mathbb{1}\{Competition\}$ to split our sample into two subsamples: (i) $\mathbb{1}\{Competition\} = 1$: entrants who compete with the incumbent; (ii) $\mathbb{1}\{Competition\} = 0$: the rest entrants who waits for future targets. For the first subsample, we expect that the entrant tries to induce a conflicted director to allocate the only available target to him. To do so, the entrant compensates the director shares proportional to shares she receives from the incumbent, which indicates a positive marginal effect of $\frac{\partial S_E}{\partial S_I}$. Moreover, this marginal effect should be increasing in the entrant's continuation value, which is captured by the liquidation deadline difference, $(t_3 - t_2)$, i.e., $\frac{\partial^2 S_E}{\partial S_I \partial (t_3 - t_2)} > 0$.

For the second subsample of $\mathbb{1}\{Competition\} = 0$, competing with the incumbent becomes too costly for the entrant. Thus, we expect to see a small marginal increase in the entrant's compensation as the compensation the director receives from the incumbent increases, and the marginal effect not related to the deadline difference, i.e., $\frac{\partial S_E}{\partial S_I} \approx 0$, $\frac{\partial^2 S_E}{\partial S_I \partial (t_3 - t_2)} = 0$.

We use a triple interaction to capture this nonlinear relationship. Specifically, we estimate the following regression model,

[9]The results are qualitatively similar when we use an 80th percentile or an 85th percentile.

$$
\begin{aligned}
\texttt{Shares}_{entrant} = & \beta_1 \texttt{Shares}_{incumbent} \times (t_3 - t_2) \times \mathbb{1}\{\texttt{Competition}\} \\
& + \beta_2 \texttt{Shares}_{incumbent} \times (t_3 - t_2) \\
& + \beta_3 \texttt{Shares}_{incumbent} \times \mathbb{1}\{\texttt{Competition}\} \\
& + \beta_4 (t_3 - t_2) \times \mathbb{1}\{\texttt{Competition}\} \\
& + \beta_5 \texttt{Shares}_{incumbent} + \beta_6 (t_3 - t_2) + \beta_7 \mathbb{1}\{\texttt{Competition}\} + \mathbf{X\Delta} + \epsilon, \qquad (4)
\end{aligned}
$$

where $Shares_{entrant}$, $Shares_{incumbent}$, and $(t_{-}t_2)$ are defined same as the previous section. $\mathbb{1}\{Competition\}$ is a dummy variable equal to one if both $Shares_{incumbent}$ and $t3 - t2$ are below the 90^{th} percentile, and zero otherwise. $\mathbf{X}$ contains a set of control variables of the entrant and the director's characteristics that may affect the director's compensation.

According to Proposition 2, we should expect a positive and significant estimate of β_1, which suggests that when the competition cost is low, the marginal effect of S_I on S_E is increasing in $(t_3 - t_2)$. On the other side, we expect a zero estimate of β_2, meaning that when the competition cost is too high, $\frac{\partial S_E}{\partial S_I}$ is no longer related to $(t_3 - t_2)$.

3.3 Data and Summary Statistics

We construct a new database of all connected SPAC pairs in our sample, where each SPAC pair consists of two SPACs: an incumbent and an entrant. The incumbent IPOed before the entrant, and the two SPACs share at least one common board member. Thus, each observation in our regression analysis is a triplet of (entrant, director, incumbent).

In addition to the SPAC's characteristics and the director's biographical information, we also need to know the compensation the director gets from the incumbent and the entrant. We complement our data with the director's beneficially owned shares data from the Capital IQ database. The director's compensation data is sparse because shareholders who hold less than 1% of the outstanding common stock shares are not required to report their beneficially owned shares. We fill in these missing values using 1% of the SPAC's founder shares. Our empirical results are robust to other methods including not filling missing values and filling missing values with zeros.

Table 6 provides a summary of this SPAC pair data. In total, we have 197 entrants linked with 205 incumbents through 298 directors, generating 557 triplets of (entrant, director, incumbent). Panel A summarizes the key variables in our model. On average, 60% of entrants found a target earlier than incumbents. Directors receive 0.89 million shares from the entrant and 1.10 million shares from the incumbent. There is a 90 day gap between the liquidation deadline of the incumbent and the entrant. Around 81% entrants face a lower competition cost.

Panel B compares the entrant with the incumbent. Entrants in general raise less cash through the IPO process. The average IPO proceeds for entrants and incumbents are 369 and 435 million dollars, respectively. The incumbent and the entrant have similar board sizes, consisting of 6 directors.

Panel C looks at directors' characteristics. A director on average sits on the board of 1.60 incumbents. *Director's reputation* captures the director's previous experience in helping SPACs find targets. On average, a director sat on the board of 1.36 SPACs that have found a target before the entrant's IPO. Compared to directors in our previous unconditional analysis, an average conflicted director has similar age (54 years old), gender (15% female), and educational level (11% JD/MD, 16% master, 81% Bachelor). In contrast, conflicted directors have more work experience in publicly traded companies and investing businesses. On average, 26% of them used to be/are currently CEOs of publicly traded operating companies, compared to 17% for an average SPAC director. 20% and 25% of them used to serve on the board of investment banking companies and VC/PE companies, compared to 7% and 14% for average SPAC directors. In addition, 42% of conflicted directors hold an MBA degree, where 38% SPAC directors overall hold an MBA degree. The comparison suggests that entrants may target on directors that are more experienced in operating public companies and/or investing in private companies, which aligns with our story since these directors presumably are more capable of finding potential targets.

3.4 Empirical Results

We present estimation results of Eq. (3) in Table 7. The dependent variable, $\mathbb{1}\{Entrant\}$, is a binary variable equal to one if the entrant found a target before the incumbent. Column (1) includes three key explanatory variables: the number of shares the director receives from the entrant, $Shares_{entrant}$; the number of shares the director receives from the incumbent, $Shares_{incumbent}$; and the difference in the liquidation deadlines between the entrant and the incumbent, $(t_3 - t_2)$. The signs on the estimated coefficients align with the model predictions: the director is more likely to first propose a target to the entrant rather than the incumbent if she receives more compensation from the entrant, and less compensation from the incumbent. In addition, when the entrant is much younger than the incumbent, the entrant still has plenty of time to search for a target after the incumbent liquidates, i.e., when $(t_3 - t_2)$ is larger, the director is less likely to prioritize the entrant.

In Table 7, column (2), we control for differences in the two SPACs as well as directors' characteristics that can also explain the relative speed of searching for a target. SPACs that raised more money through the IPO process may search for companies that have a higher evaluation, which presumably takes a longer time to negotiate. Also, having more directors on the board potentially enlarges the pool of target candidates, and increases the efficiency of the screening and negotiation process. Directors' past and current connections to other SPACs can also affect the relative order of finding a target. If a director is currently serving on the board of two incumbents, with enough compensation from the entrant, the director is incentivized to tunnel targets candidates that are suitable for both the incumbents to the entrant. Thus, the entrant is more likely to finding a target first. On the other hand, the director's reputation from previous deals indicates her ability in finding a target. A more reputable director is more likely to find a target than other directors within the same period of time. Thus, an entrant with a more reputable director may be more willing to wait after the director finds a target for the incumbent, rather than competing for the incumbent's target at a high cost. In addition, Column (2) also controls for the director's biographical information, working experience, and educational level.

In Table 7, column (3), we additionally add dummies for the entrant's IPO quarter to control for the difference in the market condition. Column (4) includes the entrant's IPO sector dummies to control for the possible time difference in finding targets in different industries. Fig. A.2 plots the area under the Receiver Operating Characteristic (ROC) curve for specification (4). The area under the curve equals 0.8618, indicating our empirical model's classification accuracy is "excellent", according to the rule of thumb from Hosmer Jr et al. (2013). For all specifications, we cluster standard errors at the director level to allow correlation between the same director's preferences.[10]

In Table 7, column (4), we show that if the director receives one standard deviation more shares from the entrant, the estimated probability of the entrant finding a target before the incumbent increases by 3.1 percentage points (5.2% of the sample mean), holding all other variables constant at their average values. In contrast, if the incumbent compensates the director with one standard deviation more shares, the entrant's chance of finding a target first decreases by 9.4 percentage points (15.7% of the sample mean). On the other hand, if the difference in the liquidation deadlines increases by one standard deviation, the entrant's likelihood of finding a target ahead of the incumbent decreases by 17.2 percentage points (28.6% of the sample mean).

We present the estimation results of Eq. (4) in Table 8. Column (1) includes the key

[10] Results in Table 7 are robust to other clustering methods too, including clustering at the entrant level, at the (entrant, director) level, and at the (entrant, director, incumbent) level.

explanatory variables in the model. The directions of the coefficient estimates align with the implications from Proposition 2.

The positive sign on the triple interaction term, $Shares_{incumbent} \times (t_3 - t_2) \times \mathbb{1}\{Competition\}$, suggests that when the competition cost is relatively low, the entrant compensates the director with shares proportional to what she receives from the incumbent. In addition, the marginal compensation is larger if the entrant is younger and still has plenty of time to search for a new target. In contrast, we find a zero coefficient estimate on $Shares_{incumbent} \times (t3 - t2)$, which aligns with the model prediction that when the competition cost is too high, the entrant chooses to wait for future targets instead of competing with the incumbent for currently available targets. Thus, the entrant no longer needs to consider the relative liquidation risk difference when compensating the director.

In Table 8, columns (2)-(5), we gradually introduce different sets of control variables that may also affect the director's compensation from the entrant. Column (2) controls the characteristics of the entrant and the director. Columns (3) controls for the entrant's IPO underwriter fixed effects to ease the concern that directors may receive a larger compensation due to connections to reputable underwriters. Column (4) and column (5) additionally control for the entrant's IPO quarter and sector fixed effects to absorb unobserved common shocks at the time and industry level. All standard errors are clustered at the director level to allow correlation between the same director's compensations.[11]

Using coefficient estimates from column (5), Figure 7 plots the average marginal effects of $Shares_{incumbent}$ on $Shares_{entrant}$ at different values of $(t_3 - t_2)$. The blue (red) line plots for the subsample where the competition cost for inducing the director to prioritize the entrant is relatively low (high). It is clear that when the entrant competes with the incumbent, the marginal compensation is larger when the entrant is younger, i.e., when $(t_3 - t_2)$ is larger. In terms of economic magnitudes, the level of marginal compensation increases from 1.71

[11] Results in Table 8 are robust to other clustering methods too, including clustering at the entrant level, at the (entrant, director) level, and at the (entrant, director, incumbent) level.

to 4.55 as $(t_3 - t_2)$ increases from average to one standard deviation above average. In other words, for each share the director receives from the incumbent, an entrant needs to compensate the director 1.71 shares to compete with an incumbent of average liquidation risk, and 4.55 shares if the incumbent's liquidation risk is one standard deviation higher than average. When the competition cost is too high, the marginal effects stay largely constant at around 0.5 as $(t_3 - t_2)$ changes.

4 Conclusion

SPACs have become one of the major players in bringing private firms public. Private firms can benefit from a fast listing on major stock exchanges by merging with SPACs. In this paper, we show that the board of directors plays a crucial role in SPAC's performance both when it raises the funds and when it deSPACs. Ideally, each SPAC's board member devotes his best effort to find a target company for the SPAC that would create the best value for SPAC's investors. We show that this is not always the case. We document that the same board member can sit on multiple SPAC boards. That creates a conflict of interest because a board member needs to decide which SPAC should get a promising target. The efficient allocation rule is to allocate a target to the SPAC with the highest liquidation risk. We find that directors do not follow this rule. They are more likely to allocate a target to a younger SPAC when they have a higher economic interest in this merger.

Investors are negatively affected by this conflict of interest. We see that the older SPAC's redemption rate is higher, and the returns are significantly lower when a younger connected SPAC deSPACs first. However, for the misallocation to take place it is not sufficient for a director to have more shares in the young SPAC than in the older SPAC because the older SPAC has a higher liquidation risk than the younger SPAC. Therefore, young SPAC's sponsors should compensate conflicted directors for this extra liquidation risk if they want to get the target first. We theoretically and empirically show that when old SPAC's directors are not highly compensated, or the liquidation risk is not too high, young SPACs endogenously generate a conflict of interest for these directors. For directors who are already highly compensated or when the liquidation risk is very high, young SPACs prefer to wait for their turn to get a target because competition is too costly.

These results have an important policy implication. Regulators should reconsider allowing board members to sit on multiple SPACs' boards concurrently. SPACs are special because they usually do not introduce any synergy from the merger. Therefore, the competition between them is more severe and as such, the conflict of interest is especially strong.

Our results can also educate corporate governance regulation beyond SPACs. If board members sit on the boards of similar companies, the same conflict of interest considerations are likely to play a role in which company is going to benefit from the potential M&A opportunity that a board member identifies.

5 Figures

Figure 1: Exponential growth in SPACs

This figure reports the number of SPACs, and IPO proceeds of SPACs operating companies during January 2010 to December 2021. Proceeds exclude overallotment options and is in billion dollars.

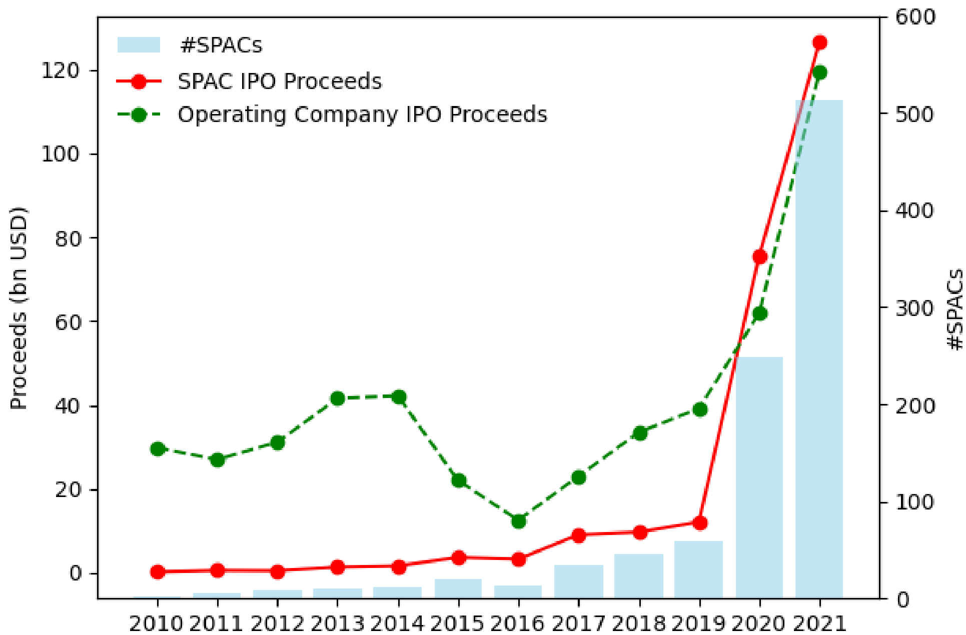


Figure 2: Distribution of the SPAC's Target Sector at IPO

This figure reports the percentage distribution of sectors targeted at IPO, and sectors of post-merger companies of SPACs that filed original S-1 filings during January 2010 to December 2021.

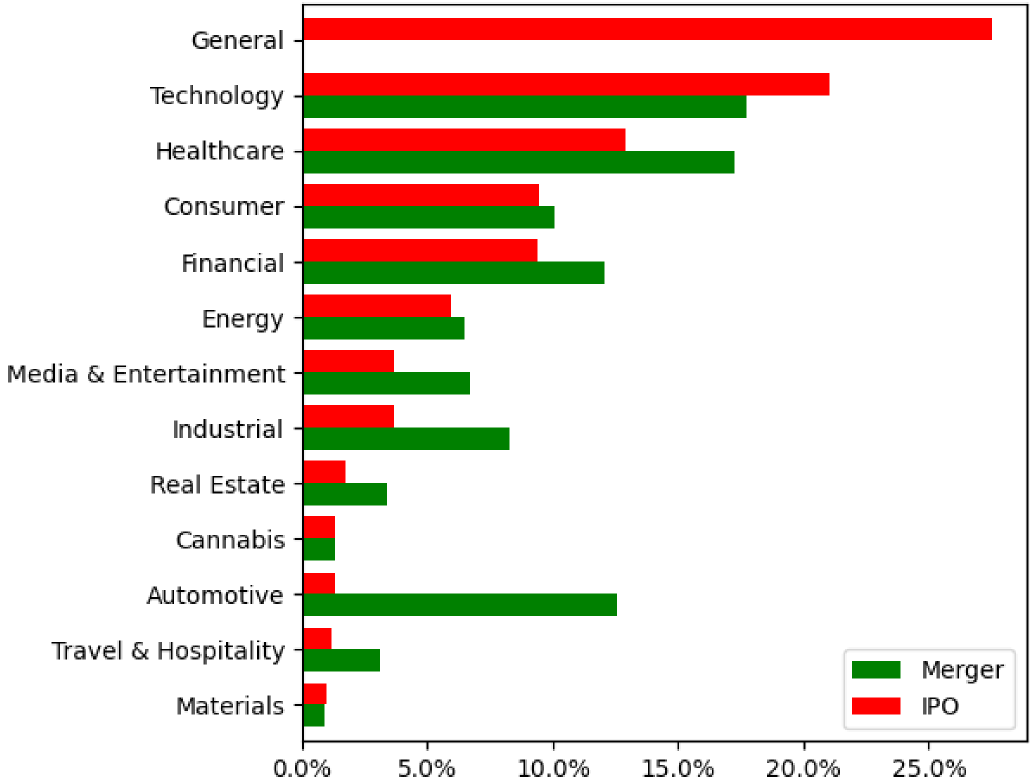


Figure 3: Distribution of Network Degree at IPO

This figure reports the histogram of *Network Degree* at IPO for SPACs that filed original S-1 filings during January 2010 to December 2021.

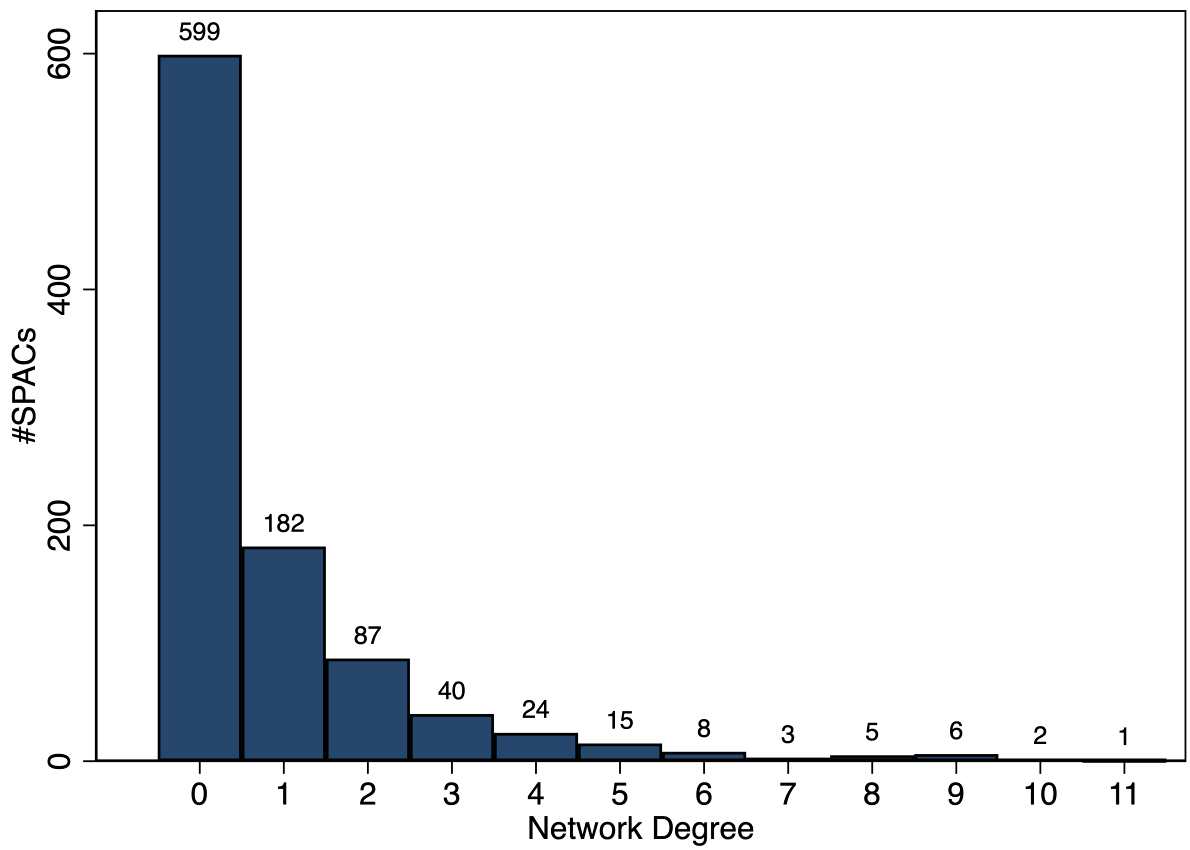


Figure 4: Network Visualization at December 2021

This figure shows the board interlock network for SPACs that filed original S-1 filings during January 2010 to December 2021. Each node is a SPAC, node size is proportional to the SPAC's IPO proceeds. A SPAC is connected to another SPAC through interlock. The more purple the edge is, the more board members are connected.

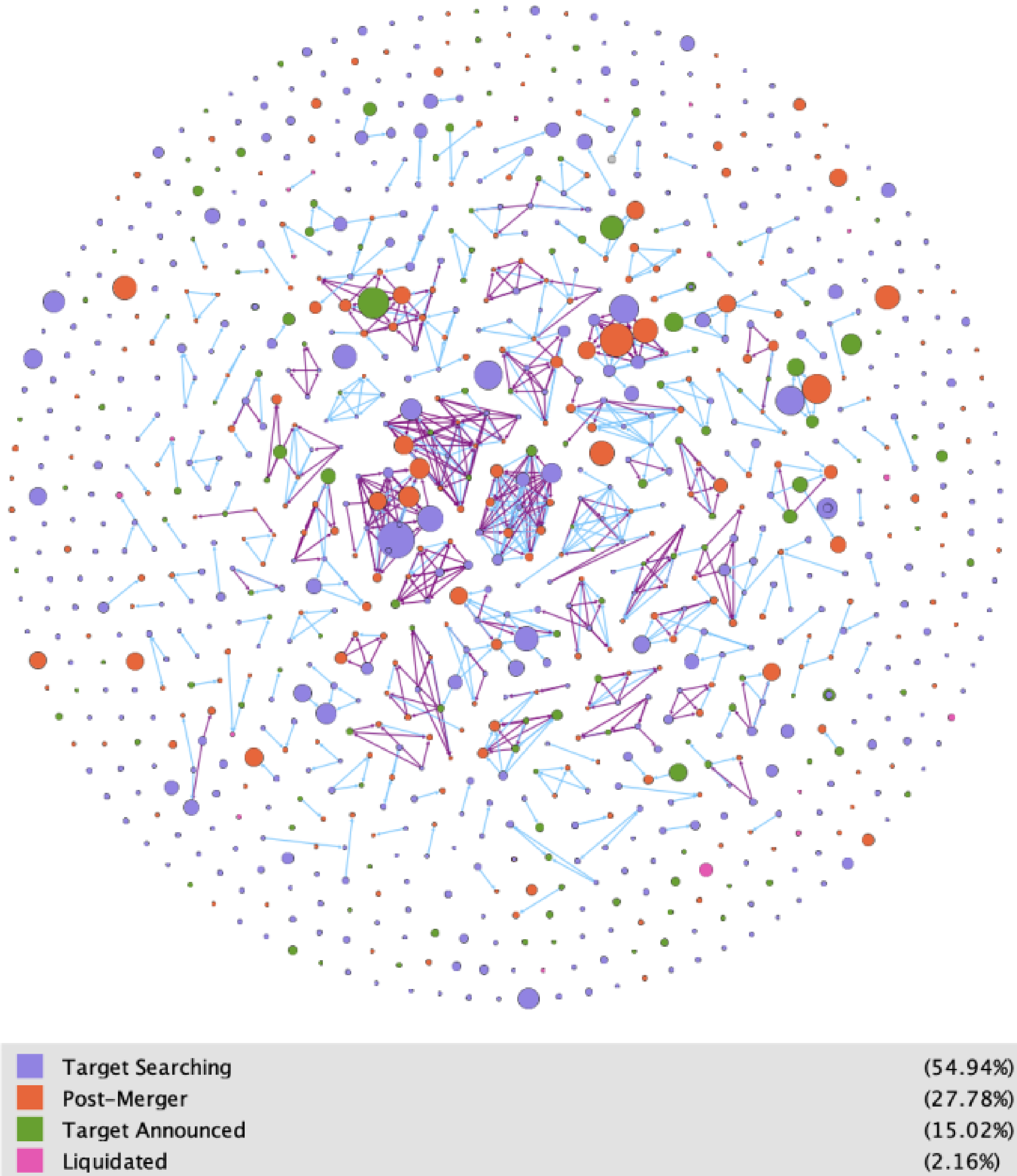


Figure 5: IPO Network Measures

This figure illustrates the network measures related to a SPAC's IPO performance.

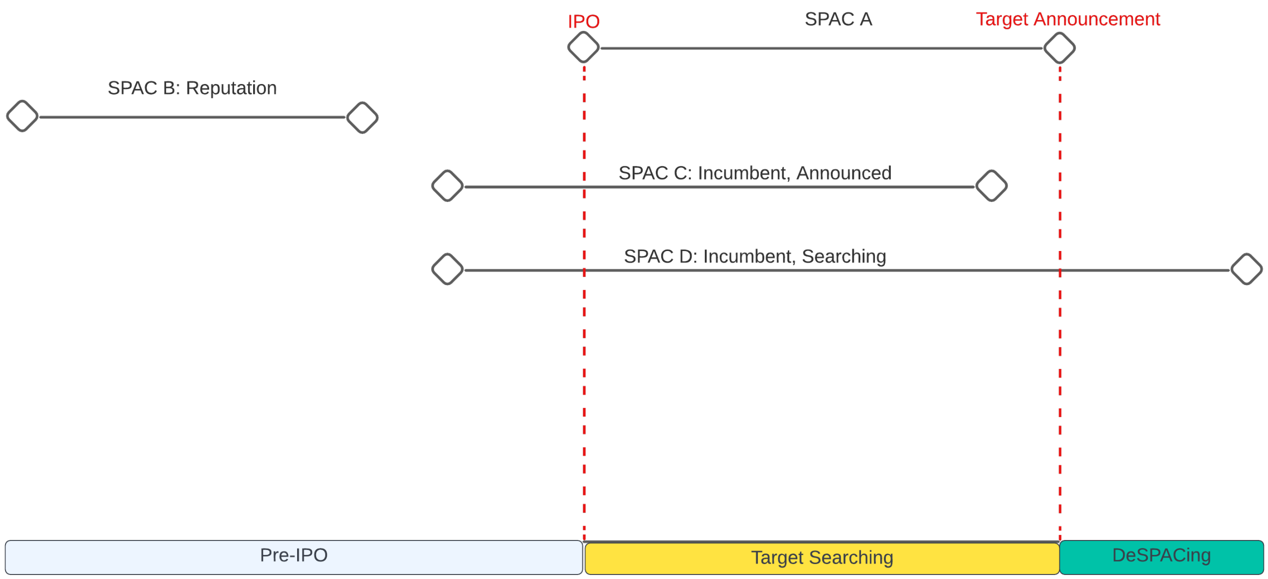


Figure 6: DeSPACing Network Measures

This figure illustrates the network measures related to a SPAC's DeSPACing performance.

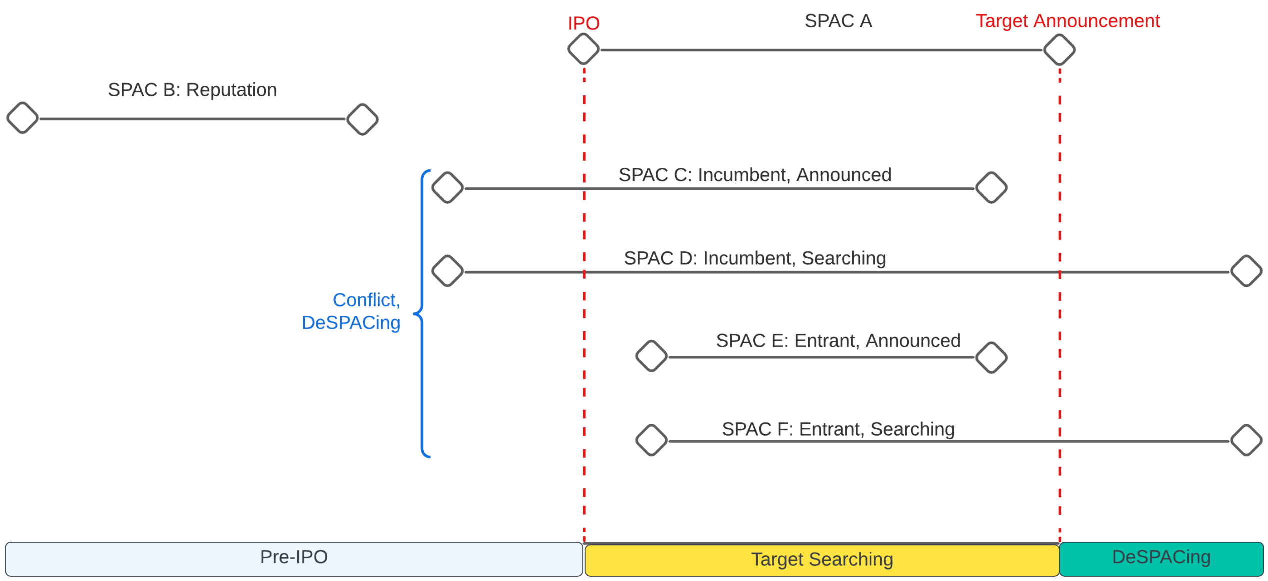
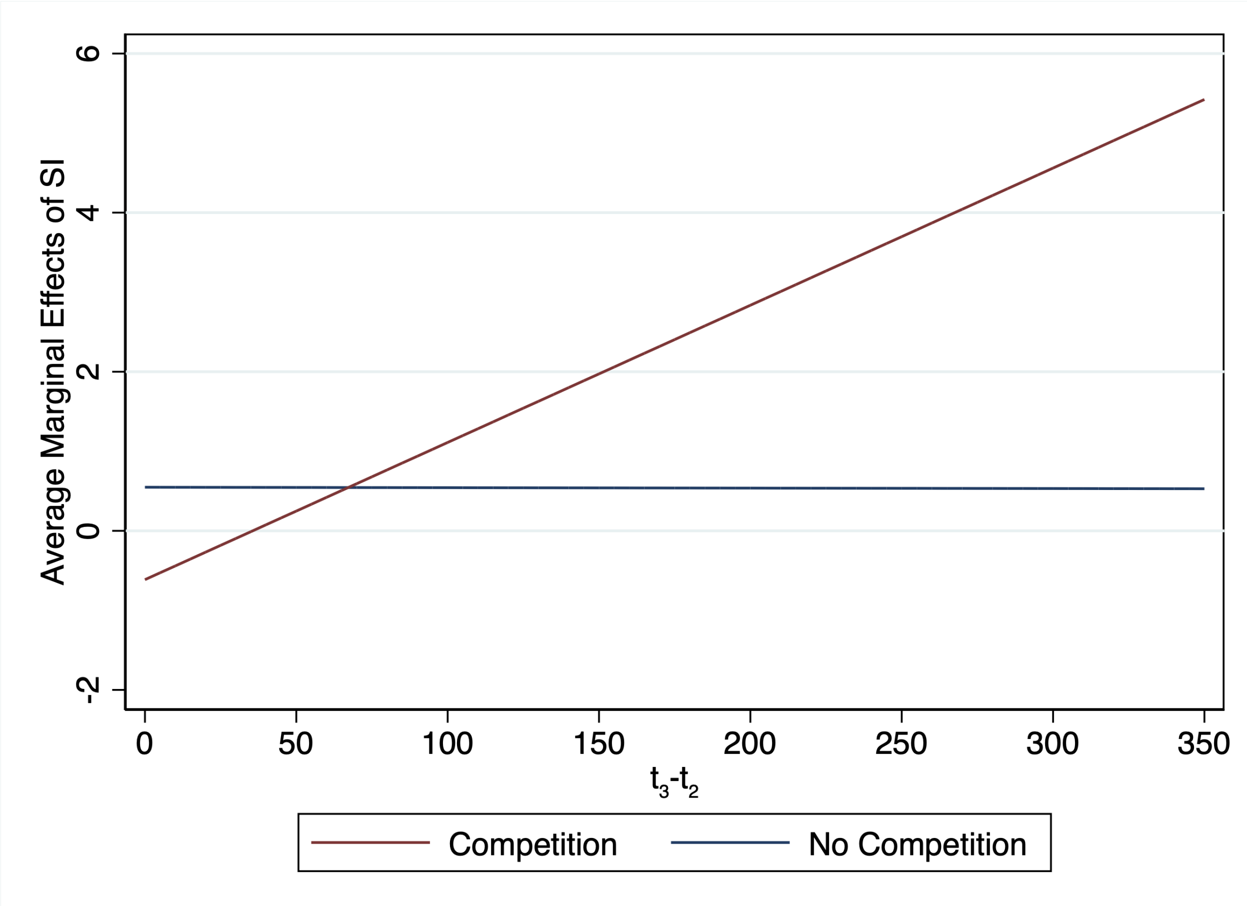


Figure 7: Average Marginal Effects

This figure plots the average marginal effects of the entrant's shares on the incumbent's shares when $(t_3 - t_2)$ is held constant at different values. The red line plots for the subsample where the entrant competes with the incumbent, and the blue line plots for the subsample where the entrant does not compete with the incumbent.



6 Tables

Table 1: Summary Statistics

This table contains summary statistics for SPACs that went through IPO during January 2010 to December 2021. All variables are defined in Table 9.

	Mean	Std.Dev.	P10	P50	P90	Obs.
Network Measures						
Network Degree	0.87	1.60	0.00	0.00	3.00	972
Reputation	0.56	1.09	0.00	0.00	2.00	972
Conflict, IPO	0.31	0.74	0.00	0.00	1.00	972
Conflict, DeSPACing	0.48	0.91	0.00	0.00	2.00	704
Announced	0.07	0.29	0.00	0.00	0.00	704
Incumbent, Searching	0.29	0.71	0.00	0.00	1.00	704
Incumbent, Announced	0.05	0.23	0.00	0.00	0.00	704
Entrant, Searching	0.12	0.43	0.00	0.00	0.00	704
Entrant, Announced	0.02	0.15	0.00	0.00	0.00	704
SPAC Measures						
IPO proceeds (mm USD)	279	227	97	250	460	972
IPO base proceeds (mm USD)	251	209	85	220	420	972
Overallotment(mm USD)	29	26	0	25	52	972
Listing-day return (%)	1.83	3.49	-0.70	0.50	6.00	840
Redemption(%)	46.36	37.20	0.00	52.70	93.50	327
Days left	392	194	135	402	627	429
Post-merger Return (%)	18.30	47.08	-23.53	3.22	80.95	206
SPAC Board Measures						
Board size	5.41	1.40	4.00	5.00	7.00	940
#Officer	1.23	1.09	0.00	1.00	3.00	940
Average age	54.38	6.34	45.93	54.71	62.41	940
%Female	15.94	18.84	0.00	14.29	40.00	940
%CEO_Public	16.66	17.93	0.00	16.67	40.00	932
%Investment_Banking	6.93	13.11	0.00	0.00	25.00	915
%VC_PE	13.73	17.07	0.00	0.00	40.00	915
%JD/MD	12.50	16.79	0.00	0.00	33.33	940
%MBA	37.80	23.11	0.00	40.00	66.67	940
%Master	18.83	19.04	0.00	16.67	42.86	940
%Bachelor	81.13	22.15	50.00	83.33	100.00	940

Table 2: Board Interlock Network and Overallotment

This table contains regression results using data on SPACs that went through IPO during January 2010 to December 2021. For each SPAC, at the IPO date, *Reputation* measures at the time of each SPAC's IPO, the number of other SPACs that (a) have successful merged with a target company, or have announced a target; and (b) shared at least one board member with this SPAC. *Conflict, IPO* measures at the time of each SPAC's IPO, the number of other SPACs that (a) were searching for a target; and (b) shared at least one board member with this SPAC. Robust standard errors are clustered at the quarter level, and are reported in parentheses. *, ** and *** denote p-values less than 0.1, 0.05 and 0.01, respectively. All other variables are defined in Table 9.

	(1)	(2)	(3)	(4)	(5)
	Overallotment(mm USD)				
Reputation	1.356***	1.493***	1.346***	2.351***	2.399***
	(0.452)	(0.464)	(0.403)	(0.582)	(0.570)
Conflict, IPO	-0.223	0.031	0.332	-0.775	-0.998*
	(0.812)	(0.867)	(0.601)	(0.514)	(0.575)
Reputation(Control)		0.017	-0.065	-0.037	-0.024
		(0.078)	(0.051)	(0.075)	(0.072)
Conflict, IPO(Control)		-0.055	-0.035	-0.040	-0.048
		(0.069)	(0.043)	(0.062)	(0.063)
Board size			0.433	0.397	0.471
			(0.395)	(0.590)	(0.623)
#Officer			0.199	0.046	0.207
			(0.574)	(0.650)	(0.706)
Average age			-0.315***	-0.340***	-0.356***
			(0.064)	(0.079)	(0.075)
%Female			-0.040*	-0.030	-0.033
			(0.021)	(0.022)	(0.024)
%CEO_Public			0.154***	0.127***	0.116***
			(0.026)	(0.033)	(0.030)
%Investment_Banking			-0.029	-0.034	-0.028
			(0.034)	(0.030)	(0.031)
%VC_PE			-0.070**	-0.074*	-0.080*
			(0.027)	(0.037)	(0.039)
%JD/MD			0.033	0.025	0.013
			(0.055)	(0.043)	(0.043)
%MBA			-0.002	0.007	0.004
			(0.030)	(0.025)	(0.027)
%Master			0.011	-0.004	-0.011
			(0.020)	(0.024)	(0.024)
%Bachelor			-0.015	-0.011	-0.007
			(0.019)	(0.021)	(0.021)
Log(IPO base proceeds)	25.979***	25.945***	27.353***	29.926***	32.134***
	(3.487)	(3.599)	(4.047)	(4.620)	(4.892)
Quarter FEs	Yes	Yes	Yes	Yes	Yes
Underwriter FEs	No	No	No	Yes	Yes
IPO Sector FEs	No	No	No	No	Yes
Adj. R^2	0.455	0.459	0.464	0.485	0.485
Obs.	970	970	911	911	879

Table 3: Board Interlock Network and Listing-day Return

This table contains regression results using data on SPACs that went through IPO during January 2010 to December 2021. For each SPAC, at the IPO date, *Reputation* measures at the time of each SPAC's IPO, the number of other SPACs that (a) have successful merged with a target company, or have announced a target; and (b) shared at least one board member with this SPAC. *Conflict, IPO* measures at the time of each SPAC's IPO, the number of other SPACs that (a) were searching for a target; and (b) shared at least one board member with this SPAC. Robust standard errors are clustered at the quarter level, and are reported in parentheses. *, ** and *** denote p-values less than 0.1, 0.05 and 0.01, respectively. All other variables are defined in Table 9.

	(1)	(2)	(3)	(4)	(5)
	Listing-day return (%)				
Reputation	0.235***	0.346***	0.342***	0.265***	0.257***
	(0.035)	(0.037)	(0.062)	(0.071)	(0.076)
Conflict, IPO	-0.256	-0.081	-0.040	-0.089	-0.092
	(0.199)	(0.127)	(0.095)	(0.127)	(0.129)
Reputation(Control)		0.015	-0.019**	-0.018**	-0.021*
		(0.018)	(0.008)	(0.008)	(0.010)
Conflict, IPO(Control)		-0.043***	-0.031***	-0.030***	-0.029**
		(0.013)	(0.008)	(0.010)	(0.011)
Board size			-0.040	-0.047	-0.035
			(0.032)	(0.047)	(0.039)
#Officer			0.084	0.045	0.049
			(0.050)	(0.039)	(0.037)
Average age			-0.080***	-0.073***	-0.064***
			(0.017)	(0.012)	(0.015)
%Female			0.005	0.004	0.005**
			(0.003)	(0.003)	(0.002)
%CEO_Public			0.020***	0.022***	0.022***
			(0.005)	(0.005)	(0.004)
%Investment_Banking			-0.001	0.002	0.005
			(0.013)	(0.012)	(0.012)
%VC_PE			-0.002	-0.005	-0.003
			(0.004)	(0.006)	(0.003)
%JD/MD			0.005	0.005	0.001
			(0.006)	(0.007)	(0.007)
%MBA			0.005	0.003	0.004*
			(0.003)	(0.003)	(0.002)
%Master			0.006***	0.004	0.003
			(0.002)	(0.004)	(0.004)
%Bachelor			0.005	0.003	0.002
			(0.003)	(0.004)	(0.004)
Log(IPO base proceeds)	0.483**	0.459*	0.489*	0.065	0.218
	(0.185)	(0.241)	(0.251)	(0.170)	(0.154)
Quarter FEs	Yes	Yes	Yes	Yes	Yes
Underwriter FEs	No	No	No	Yes	Yes
IPO Sector FEs	No	No	No	No	Yes
Adj. R^2	0.148	0.297	0.331	0.342	0.352
Obs.	833	833	784	784	768

Table 4: Board Interlock Network and Redemption

his table contains regression results using data on SPACs that went through IPO during January 2010 to December 2021. A board interlock link is created if at the time of IPO, the SPAC shared a common director with another IPOed SPAC. *Reputation* captures the number of interlock links a SPAC has to other SPACs that had either announced a target, or successfully merged with a target before this SPAC's IPO date *Conflict, DeSPACing* counts the number of links where the two SPACs' target searching periods overlap. *Announced* counts the subset of *Conflict, DeSPACing* links where the other SPAC announced a target before this SPAC. Out of *Announced* links, *Incumbent, Announced* captures the links where the other SPAC IPOed before this SPAC; while *Entrant, Announced* keeps track of links where the other SPAC IPOed after this SPAC. Out of the *Conflict* links where the other SPAC were still searching for a target when this SPAC announced a target, *Incumbent, Searching* captures the case where the other SPAC IPOed before this SPAC; while *Entrant, Searching* keeps track of the links where the other SPACs IPOed after this SPAC. In addition, we define a control variable for each of the above variables, with the only difference that the other SPAC do NOT share a director with the SPAC. Robust standard errors are clustered at the quarter level, and are reported in parentheses. *, ** and *** denote p-values less than 0.1, 0.05 and 0.01, respectively. All other variables are defined in Table 9.

	(1)	(2)	(3)	(4)
		Redeemption(%)		
Reputation	-2.970	-1.725	-1.837	-1.966
	(2.389)	(2.470)	(2.345)	(2.513)
Conflict, DeSPACing		-10.121***	-9.290***	5.390
		(2.782)	(2.429)	(4.436)
Competitor, Announced		16.146***		
		(5.426)		
Incumbent, Announced			6.805	
			(5.470)	
Entrant, Announced			40.606***	
			(5.772)	
Incumbent, Searching				-16.912***
				(5.774)
Entrant, Searching				-14.677**
				(5.260)
Reputation(Control)	-0.024	0.130	0.037	-0.008
	(0.114)	(0.199)	(0.222)	(0.376)
Conflict, DeSPACing(Control)		-0.079	-0.047	0.191
		(0.068)	(0.071)	(0.204)
Competitor, Announced(Control)		0.250		
		(0.217)		
Incumbent, Announced(Control)			0.339*	
			(0.189)	
Entrant, Announced(Control)			0.051	
			(0.284)	
Incumbent, Searching(Control)				-0.185
				(0.179)
Entrant, Searching(Control)				-0.261
				(0.252)
Log(IPO proceeds)	-5.053	-4.897	-5.105	-5.013
	(3.167)	(3.320)	(3.751)	(3.247)
Days left	-0.051*	-0.049*	-0.054*	-0.042
	(0.026)	(0.025)	(0.028)	(0.032)
Quarter FEs	Yes	Yes	Yes	Yes
Merger Sector FEs	Yes	Yes	Yes	Yes
IPO Target Sector FEs	Yes	Yes	Yes	Yes
Board Controls	Yes	Yes	Yes	Yes
p-value for F test				
Incumbent, Announced=Entrant, Announced :			0.0008	
Incumbent, Searching=Entrant, Searching :				0.7170
Adj. R^2	0.361	0.374	0.388	0.369
Obs.	285	285	285	285

Table 5: Board Interlock Network and DeSPACing Return

This table contains regression results using data on SPACs that went through IPO during January 2010 to December 2021. A board interlock link is created if at the time of IPO, the SPAC shared a common director with another IPOed SPAC. *Reputation* captures the number of interlock links a SPAC has to other SPACs that had either announced a target, or successfully merged with a target before this SPAC's IPO date *Conflict, DeSPACing* counts the number of links where the two SPACs' target searching periods overlap. *Announced* counts the subset of *Conflict, DeSPACing* links where the other SPAC announced a target before this SPAC. Out of *Announced* links, *Incumbent, Announced* captures the links where the other SPAC IPOed before this SPAC; while *Entrant, Announced* keeps track of links where the other SPAC IPOed after this SPAC. Out of the *Conflict, DeSPACing* links where the other SPAC were still searching for a target when this SPAC announced a target, *Incumbent, Searching* captures the case where the other SPAC IPOed before this SPAC; while *Entrant, Searching* keeps track of the links where the other SPACs IPOed after this SPAC. In addition, we define a control variable for each of the above variables, with the only difference that the other SPAC do NOT share a director with the SPAC. Robust standard errors are clustered at the quarter level, and are reported in parentheses. *, ** and *** denote p-values less than 0.1, 0.05 and 0.01, respectively. All other variables are defined in Table 9.

	(1)	(2)	(3)	(4)
	DeSPACing Return (%)			
Reputation	-2.443	-1.917	0.083	-4.012
	(4.241)	(4.289)	(5.223)	(4.380)
Conflict, DeSPACing		3.878	2.149	-16.100
		(6.477)	(6.896)	(9.375)
Announced		-25.466**		
		(10.500)		
Incumbent, Announced			-4.257	
			(19.040)	
Entrant, Announced			-82.820***	
			(24.682)	
Incumbent, Searching				44.678***
				(10.314)
Entrant, Searching				11.550
				(13.766)
Reputation(Control)	0.051	0.447	0.524	0.156
	(0.112)	(0.910)	(1.039)	(0.882)
Conflict, DeSPACing(Control)		-0.240	-0.239	0.181
		(0.523)	(0.489)	(0.948)
Competitor, Announced(Control)		0.479		
		(1.209)		
Incumbent, Announced(Control)			0.390	
			(0.929)	
Entrant, Announced(Control)			0.572	
			(1.301)	
Incumbent, Searching(Control)				-0.157
				(1.333)
Entrant, Searching(Control)				-0.342
				(1.479)
Log(IPO proceeds)	-1.237	1.794	4.234	6.989
	(7.791)	(7.488)	(8.386)	(6.534)
Days left	-0.028	-0.043	-0.038	-0.054
	(0.036)	(0.042)	(0.049)	(0.052)
Quarter FEs	Yes	Yes	Yes	Yes
Merger Sector FEs	Yes	Yes	Yes	Yes
IPO Target Sector FEs	Yes	Yes	Yes	Yes
Board Controls	Yes	Yes	Yes	Yes
p-value for F test				
Incumbent, Announced=Entrant, Announced :			0.0264	
Incumbent, Searching=Entrant, Searching :				0.0002
Adj. R^2	0.217	0.210	0.221	0.209
Obs.	148	148	148	148

Table 6: Summary Statistics of Connected SPAC Pairs

This table contains summary statistics for all SPAC pairs that are connected through the board network using SPACs that went through IPO during January 2010 to December 2021. For each SPAC pair, we call the SPAC that IPOed first as "incumbent", and call the other SPAC as "entrant". Panel A reports summary statistics for key variables in our analysis, panel B reports summary statistics for both the entrant and the incumbent's characteristics, and panel C reports summary statistics for the director. $\mathbb{1}\{Entrant\}$ equals one if the entrant finds a target before the incumbent, and 0 otherwise. $Shares_{entrant}$ and $Shares_{incumbent}$ are the number of million shares the director hold in the entrant and in the incumbent, respectively. $(t_3 - t_2)$ is the number of days difference between the incumbent's liquidation deadline and the entrant's liquidation deadline. *#Incumbent* is the number of incumbents. *Director's reputation* is the number of past successfully merged SPACs that the director sat on the board.

	Mean	Std.Dev.	P10	P50	P90	Obs.
	A. Key Variables					
$\mathbb{1}\{\text{Entrant}\}$	0.60	0.49	0	1	1	557
$\text{Shares}_{entrant}$	0.89	2.36	0.03	0.25	1.38	557
$\text{Shares}_{incumbent}$	1.10	3.64	0.03	0.25	1.38	557
t3-t2	90	169	0	61	228	557
$\mathbb{1}\{\text{Competition}\}$	0.81	0.39	0	1	1	557
	B. Entrant and Incumbent's Characteristics					
IPO $\text{proceeds}_{entrant}$	369	306	150	276	563	557
IPO $\text{proceeds}_{incumbent}$	435	365	172	345	690	557
Board $\text{size}_{entrant}$	5.53	1.67	4	5	8	557
Board $\text{size}_{incumbent}$	5.59	1.60	4	5	8	557
	C. Director's Characteristics					
#Incumbent	1.60	1.04	1	1	3	557
Director's reputation	1.36	1.61	0	1	4	557
Age	54.37	10.64	42	54	68	521
Female	0.15	0.35	0	0	1	557
CEO_Public	0.26	0.44	0	0	1	507
Investment_Banking	0.20	0.40	0	0	1	465
VC_PE	0.25	0.43	0	0	1	465
JD/MD	0.11	0.31	0	0	1	557
MBA	0.42	0.49	0	0	1	557
Master	0.16	0.36	0	0	1	557
Bachelor	0.81	0.39	0	1	1	557

Table 7: Probability of Entrant Getting Target Before Incumbent

This table reports logit regression results of the probability of the entrant fighting for a target. $\mathbb{1}\{Entrant\}$ equals one if the entrant finds a target before the incumbent, and 0 otherwise. $Shares_{entrant}$ and $Shares_{incumbent}$ are the number of million shares the director hold in the entrant and in the incumbent, respectively. $(t_3 - t_2)$ is the number of days difference between the incumbent's liquidation deadline and the entrant's liquidation deadline. $\#Incumbent$ is the number of incumbents. *Director's reputation* is the number of past successfully merged SPACs that the director sat on the board. Robust standard errors are clustered at the director level, and are reported in the parentheses. *, ** and *** denote p-values less than 0.1, 0.05 and 0.01, respectively.

	(1)	(2)	(3)	(4)
		$\mathbb{1}$\{Entrant\}		
$\text{Shares}_{entrant}$	0.039*	0.058***	0.048***	0.063***
	(0.023)	(0.022)	(0.018)	(0.022)
$\text{Shares}_{incumbent}$	-0.037*	-0.087***	-0.104***	-0.125***
	(0.021)	(0.026)	(0.026)	(0.033)
$t_3 - t_2$	-0.004***	-0.004***	-0.004***	-0.005***
	(0.001)	(0.001)	(0.002)	(0.002)
$\text{Log(IPO proceeds)}_{entrant}$		-0.665***	-0.300	-0.134
		(0.240)	(0.256)	(0.300)
$\text{Log(IPO proceeds)}_{incumbent}$		0.232	0.496	0.573*
		(0.280)	(0.323)	(0.328)
$\text{Board size}_{entrant}$		-0.042	0.078	0.117
		(0.116)	(0.140)	(0.154)
$\text{Board size}_{incumbent}$		-0.257**	-0.392**	-0.661***
		(0.129)	(0.159)	(0.195)
#Incumbent		0.739***	0.644***	0.697***
		(0.153)	(0.159)	(0.207)
Director's reputation		-0.098	-0.146	-0.257*
		(0.101)	(0.122)	(0.142)
Age		-0.039***	-0.044***	-0.036*
		(0.014)	(0.017)	(0.020)
Female		-0.097	-0.135	-0.194
		(0.380)	(0.409)	(0.445)
CEO_Public		-0.178	-0.163	-0.259
		(0.294)	(0.291)	(0.308)
Investment_Banking		0.700*	0.652*	0.769*
		(0.373)	(0.389)	(0.395)
VC_PE		0.067	0.234	0.189
		(0.320)	(0.338)	(0.361)
JD/MD		0.562	0.409	0.379
		(0.358)	(0.444)	(0.512)
MBA		0.385	0.220	0.101
		(0.277)	(0.293)	(0.317)
Master		-0.023	-0.282	-0.239
		(0.333)	(0.354)	(0.386)
Bachelor		-0.562	-0.384	-0.109
		(0.405)	(0.446)	(0.430)
Entrant's IPO Quarter Dummies	No	No	Yes	Yes
Entrant's IPO Sector Dummies	No	No	No	Yes
Obs.	557	420	391	367

Table 8: Number of Shares Entrant Gives Director

This table shows regression results on the number of shares the entrant gives the director. $Shares_{entrant}$ and $Shares_{incumbent}$ are the number of million shares the director holds in the entrant and the incumbent, respectively. $(t_3 - t_2)$ is the number of days difference between the incumbent's liquidation deadline and the entrant's liquidation deadline. $\mathbb{1}\{Competition\}$ is a dummy variable equal to one if both $Shares_{incumbent}$ and $(t_3 - t_2)$ are below the 90^{th} percentile, and zero otherwise. Robust standard errors are clustered at the director level, and reported in the parentheses. *, ** and *** denote p-values less than 0.1, 0.05 and 0.01, respectively.

	(1)	(2)	(3)	(4)	(5)
			$\text{Shares}_{entrant}$		
$\text{Shares}_{incumbent} \times (t_3 - t_2) \times \mathbb{1}\{\text{Competition}\}$	0.011**	0.012**	0.016***	0.017***	0.018***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)
$\text{Shares}_{incumbent} \times (t_3 - t_2)$	-0.001	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$\text{Shares}_{incumbent} \times \mathbb{1}\{\text{Competition}\}$	0.290	-0.576	-0.974*	-0.847**	-0.979*
	(0.396)	(0.467)	(0.511)	(0.402)	(0.497)
$(t_3 - t_2) \times \mathbb{1}\{\text{Competition}\}$	0.000	0.000	-0.003	-0.004	-0.004
	(0.006)	(0.007)	(0.008)	(0.009)	(0.009)
$\text{Shares}_{incumbent}$	0.490***	0.431**	0.404**	0.405**	0.396**
	(0.149)	(0.190)	(0.156)	(0.159)	(0.162)
$t_3 - t_2$	-0.002	-0.002	-0.001	-0.001	-0.001
	(0.006)	(0.007)	(0.008)	(0.008)	(0.009)
$\mathbb{1}\{\text{Competition}\}$	-0.745	-0.504	0.102	0.069	0.180
	(2.404)	(2.667)	(2.767)	(2.905)	(3.011)
$\text{Log(IPO proceeds)}_{entrant}$		0.777	0.660	0.865	0.762
		(0.508)	(0.763)	(0.923)	(0.912)
$\text{Board size}_{entrant}$		-0.053	-0.064	-0.070	-0.071
		(0.066)	(0.079)	(0.121)	(0.145)
#Incumbent		0.068	0.100	0.049	0.127
		(0.325)	(0.348)	(0.327)	(0.395)
Director's reputation		0.142	0.221	0.179	0.169
		(0.186)	(0.231)	(0.228)	(0.236)
Age		0.007	0.005	0.004	0.004
		(0.008)	(0.011)	(0.010)	(0.011)
Female		-0.355*	-0.184	-0.183	-0.118
		(0.211)	(0.329)	(0.308)	(0.355)
CEO_Public		0.057	0.056	0.074	0.024
		(0.465)	(0.452)	(0.452)	(0.515)
Investment_Banking		0.324	0.584	0.592	0.775*
		(0.364)	(0.463)	(0.443)	(0.452)
VC_PE		-0.441	-0.188	-0.267	-0.215
		(0.278)	(0.267)	(0.282)	(0.274)
JD/MD		-0.173	0.018	0.068	0.192
		(0.259)	(0.357)	(0.410)	(0.424)
MBA		-0.577	-0.714	-0.711	-0.730
		(0.483)	(0.631)	(0.653)	(0.717)
Master		-0.228	-0.191	-0.241	-0.435
		(0.201)	(0.325)	(0.310)	(0.330)
Bachelor		0.676	0.662	0.678	0.586
		(0.495)	(0.523)	(0.525)	(0.540)
Entrant's Underwriter FEs	No	No	Yes	Yes	Yes
Entrant's IPO Quarter FEs	No	No	No	Yes	Yes
Entrant's IPO Sector FEs	No	No	No	No	Yes
Adj. R^2	0.376	0.402	0.398	0.393	0.382
Obs.	557	471	471	469	462

Table 9: Variable Definition

Variable	Unit	Definition
Network Measures		
Network Degree		Total number of other SPACs that shared a common board member with this SPAC.
Reputation		At the time of each SPAC's IPO, the number of other SPACs that (a) have successful merged with a target company, or have announced a target; and (b) shared a common board member with this SPAC.
Conflict, IPO		At the time of each SPAC's IPO, the number of other SPACs that (a) were searching for a target; and (b) shared a common board member with this SPAC.
Conflict, DeSPACing		The number of interlock links where the two SPACs' target searching periods overlap.
Announced		The number of *Competitor* links where the other SPAC announced a target before this SPAC.
Incumbent, Announced		The number of *Announced* links where the other SPAC IPOed before this SPAC.
Entrant, Announced		The number of *Announced* links where the other SPAC IPOed after this SPAC.
Incumbent, Searching		The number of *Competition* links where the other SPAC IPOed before this SPAC, and the other SPAC was still searching for a target when this SPAC announced a target.
Incumbent, Searching		The number of *Competition* links where the other SPAC IPOed after this SPAC, and the other SPAC was still searching for a target when this SPAC announced a target.
SPAC Measures		
IPO proceeds	Millions USD	Actual gross proceeds raised in the IPO, including any full or partial exercise of the overallotment option.
IPO base proceeds	Millions USD	Base/minimum (excluding overallotment/Greenshoe) amount the IPO is/was seeking to raise.
Overallotment	Millions USD	Dollar amount of the overallotment option that is exercised by the Underwriter(s) in the IPO.
Listing-day return	%	SPAC IPO investors' first-day return.
Redemption	%	Redeemed SPAC common shares as a percentage of total shares issued at IPO.
Days left	Day	The number of days between the SPAC's target announcement date and the liquidation deadline.
DeSPACing Return	%	Percent rate of return from one day before the target announcement to the business closing day.
Board Measures		
Board size		Number of directors.
#Officer		Number of senior officers who do not serve on the board.
Average age		Average age of directors.
%Female	%	Percentage of female directors
%CEO_Public	%	Percentage of directors who is(was) a chief executive officer (CEO) at a public company
%Investment_Banking	%	Percentage of directors who serve(d) on the board of an investment bank.
%VC_PE	%	Percentage of directors who serve(d) on the board of an venture capital (VC) or private equity (PE) firm.
%JD/MD	%	Percentage of directors who hold a Juris Doctor (JD) or Doctor of Medicine (MD) degree.
%MBA	%	Percentage of directors who hold a Master of Business Administration (MBA) degree.
%Master	%	Percentage of directors who hold a master's degree.
%Bachelor	%	Percentage of directors who hold a bachelor's degree.

Continued on next page

Table 9: Variable Definition (Continued)

Variable	Unit	Definition
SPAC Pair Measures		
$\mathbb{1}\{Entrant\}$	Dummy	One if the entrant finds a target before the incumbent, 0 otherwise.
$Shares_{entrant}$	Millions	Number of shares the director holds in the entrant SPAC.
$Shares_{incumbent}$	Millions	Number of shares the director holds in the incumbent SPAC.
$t_3 - t_2$	Day	Number of days difference between the incumbent's liquidation deadline and the entrant's liquidation deadline.
$\mathbb{1}\{Competition\}$	Dummy	One if both $Shares_{incumbent}$ and $(t_3 - t_2)$ are below the 90^{th} percentile, zero otherwise.
$\#Incumbent$		Number of incumbents of which the director is sitting on the board.
$IPO\ proceeds_{entrant}$	Millions USD	Actual gross proceeds raised in the entrant's IPO, including any full or partial exercise of the overallotment option.
$IPO\ proceeds_{incumbent}$	Millions USD	Actual gross proceeds raised in the incumbent's IPO, including any full or partial exercise of the overallotment option.
$Board\ size_{entrant}$		Number of the entrant's directors.
$Board\ size_{incumbent}$		Number of the incumbent's directors.
Director's reputation		Number of past successfully merged SPACs of which that the director sat on the board.
Age		The director's age at the time of the entrant's IPO.
Female	Dummy	One if the director is female, and zero otherwise.
CEO_Public	Dummy	One if the director is(was) a chief executive officer (CEO) at a public company.
Investment_Banking	Dummy	One if the director is serving or served on the board of an investment bank..
VC_PE	Dummy	One if the director is serving or served on the board of an venture capital (VC) or private equity (PE) firm.
JD/MD	Dummy	One if the director holds a Juris Doctor (JD) or Doctor of Medicine (MD) degree.
MBA	Dummy	One if the director holds a Master of Business Administration (MBA) degree.
Master	Dummy	One if the director holds a master's degree.
Bachelor	Dummy	One if the director holds a bachelor's degree.

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Appendix

Appendix A. Proofs

Proof of Proposition 1

Proof. Let $\mathbb{E}[\pi|T = E] \geqslant \mathbb{E}[\pi|T = I]$, we have,

$$
\begin{aligned}
&\mathbb{E}[\pi|T = E] \geqslant \mathbb{E}[\pi|T = I] \\
&\Rightarrow S_E \geqslant S_I + [1 - e^{-\lambda(t_3-t_2)}]S_E \\
&\Rightarrow e^{-\lambda(t_3-t_2)}S_E \geqslant S_I \\
&\Rightarrow S_E \geqslant e^{\lambda(t_3-t_2)}S_I,
\end{aligned}
$$

thus, we have, $T^* = E$ if $S_E \geqslant e^{\lambda(t_3-t_2)}S_I$, else $T^* = I$. □

Proof of Lemma 2

Proof. If $S_E \geqslant e^{\lambda(t_3-t_2)}S_I$, then the entrant's problem becomes,

$$
\begin{aligned}
&\max_{S_E} \mathbb{E}[\pi^E|S_E \geqslant e^{\lambda(t_3-t_2)}S_I] = (S - S_E) \\
&s.t.\ \ S_E \geqslant e^{\lambda(t_3-t_2)}S_I \\
&\Rightarrow S_E^* = e^{\lambda(t_3-t_2)}S_I.
\end{aligned}
$$

If $S_E < e^{\lambda(t_3-t_2)}S_I$, and then the entrant's problem becomes,

$$
\begin{aligned}
&\max_{S_E} \mathbb{E}[\pi^E|S_E < e^{\lambda(t_3-t_2)}S_I] \\
&= \pi^E_{t_2,t_3} \\
&= Pr(\text{at least one target from } t_2, t_3)(S - S_E) \\
&= [1 - e^{-\lambda(t_3-t_2)}](S - S_E) \\
&s.t. \;\; S_E < e^{\lambda(t_3-t_2)}S_I \\
&\Rightarrow S_E^* = 0.
\end{aligned}
$$

□

Proof of Proposition 2

Proof. From Lemma 2, we calculate the entrant's payoffs from competing with the incumbent versus not competing as follows,

$$
\begin{aligned}
\mathbb{E}[\pi^E|S_E = S_E^*, S_E \geqslant e^{\lambda(t_3-t_2)}S_I] &= S - e^{\lambda(t_3-t_2)}S_I, \\
\mathbb{E}[\pi^E|S_E = S_E^*, S_E < e^{\lambda(t_3-t_2)}S_I] &= [1 - e^{-\lambda(t_3-t_2)}]S,
\end{aligned}
$$

the entrant chooses the optimal level of compensation by comparing the above two payoffs. Let $\mathbb{E}[\pi^E|S_E = S_E^*, S_E \geqslant e^{\lambda(t_3-t_2)}S_I] \geqslant \mathbb{E}[\pi^E|S_E = S_E^*, S_E < e^{\lambda(t_3-t_2)}S_I]$, we have,

$$
\begin{aligned}
&\mathbb{E}[\pi^E|S_E = S_E^*, S_E \geqslant e^{\lambda(t_3-t_2)}S_I] \geqslant \mathbb{E}[\pi^E|S_E = S_E^*, S_E < e^{\lambda(t_3-t_2)}S_I] \\
&\Rightarrow S - e^{\lambda(t_3-t_2)}S_I \geqslant [1 - e^{-\lambda(t_3-t_2)}]S \\
&\Rightarrow -e^{\lambda(t_3-t_2)}S_I \geqslant -e^{-\lambda(t_3-t_2)}S \\
&\Rightarrow S_I \leqslant e^{-2\lambda(t_3-t_2)}S
\end{aligned}
$$

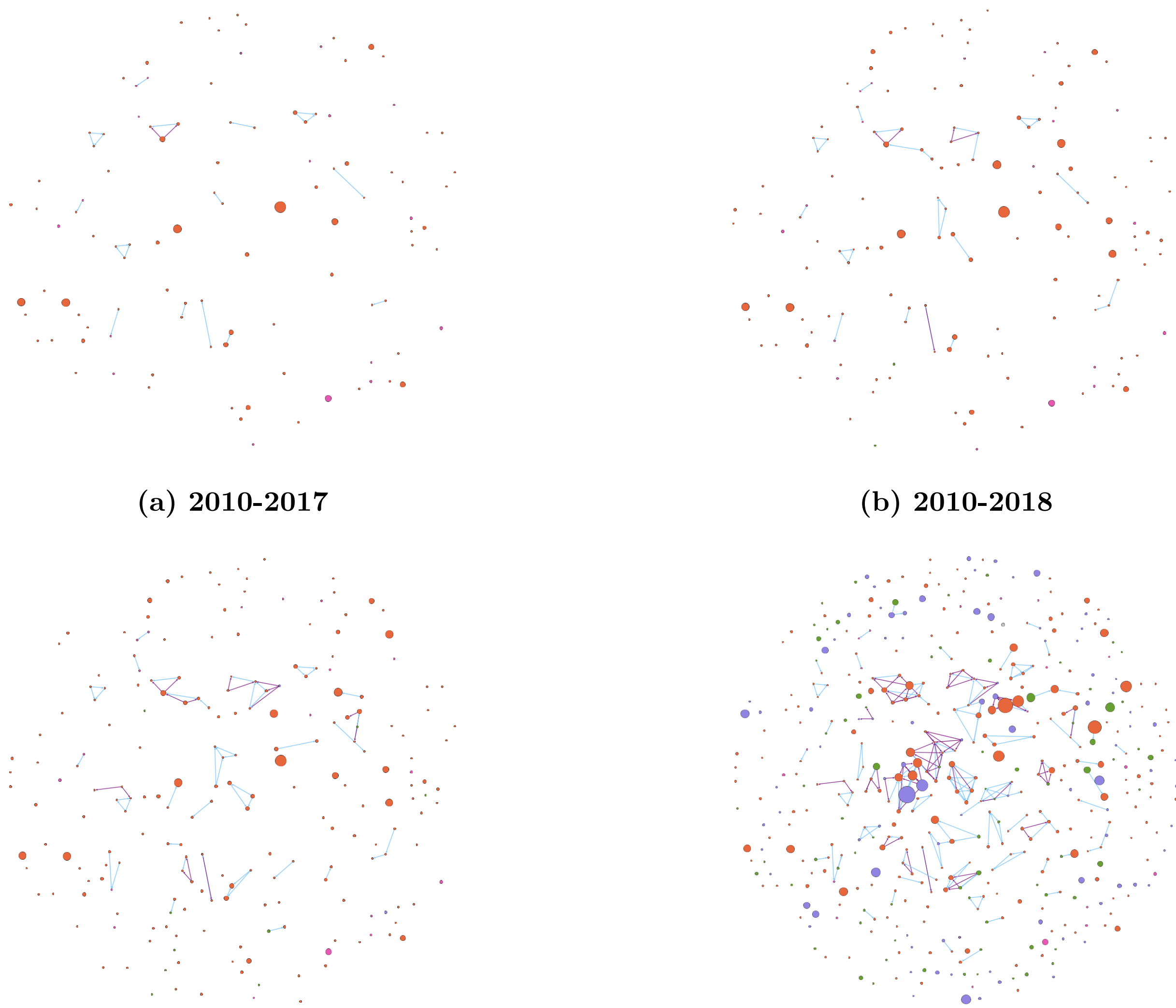
Thus, $S_E^* = e^{\lambda(t_3-t_2)}S_I$ if $S_I \leqslant e^{-2\lambda(t_3-t_2)}S$, and $S_E^* = 0$ otherwise. □

Online Appendix

Online Appendix A. Figures and Tables

Figure A.1: Visualization of Directors Network Dynamics

This figure shows the evolution of the board interlock network since 2010 for SPACs that filed original S-1 filings during January 2010 to December 2021. Each node is a SPAC, node size is proportional to the SPAC's IPO proceeds. A SPAC is connected to another SPAC through interlock. The more purple the edge is, the more board members are connected.



(a) 2010-2017 **(b) 2010-2018**

(c) 2010-2019 **(d) 2010-2020**

Table A.1: SPAC's Top IPO Underwriters

This table shows top book-runner IPO underwriters for SPACs that went through IPO during January 2010 to December 2021.

Underwriter	#SPACs
Citigroup	156
Credit Suisse	122
Goldman Sachs	106
Cantor Fitzgerald	106
Deutsche Bank	88
Morgan Stanley	70
BofA Securities	69
Jefferies	68
JP Morgan	61
EarlyBirdCapital	60
Barclays	57
UBS	52
Chardan	44
BTIG	31
Cowen	29
B. Riley FBR	24
Stifel Nicolaus	23
Maxim	22
I-Bankers Securities	18
Oppenheimer	17

Table A.2: Correlation Matrix

This table reports correlations between the key variables. The numbers in the first row represent corresponding variables in the first column. The definition of each variable is shown in Table 9.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reputation	1.000							
Conflict, IPO	0.512	1.000						
Conflict, DeSPACing	0.367	0.746	1.000					
Announced	0.216	0.609	0.742	1.000				
Incumbent, Searching	0.180	0.793	0.462	0.114	1.000			
Incumbent, Announced	0.240	0.717	0.684	0.860	0.144	1.000		
Entrant, Searching	0.332	0.282	0.814	0.434	0.034	0.419	1.000	
Entrant, Announced	0.050	0.077	0.386	0.615	-0.000	0.126	0.197	1.000

Figure A.2: Area Under the ROC Curve

This figure plots the area under the ROC curve for the logit regression specified in Table 7.