ESSAYS ON EMPIRICAL FINANCE

BY

MOHAN YANG

DISSERTATION

Submitted in partial fulfillment of the requirements

for the Degree of Doctor of Philosophy in Finance

Bayes Business School

City St George's University of London

Submitted in December 2025

OWN WORK DECLARATION

I, Mohan Yang confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to Professor Sonia Falconieri and Professor Anh L. Tran. Their expert guidance has been essential throughout my doctoral studies.

Beyond academic supervision, they have offered thoughtful advice, encouraged me to think critically, and created a supportive atmosphere that encouraged my intellectual growth. Whenever I faced difficulties or uncertainties, their patience and belief in my work helped me refine my research and develop as a researcher. This dissertation reflects their significant influence, and I feel fortunate to have had the opportunity to learn under their mentorship.

Lastly, I would like to thank my family and friends for their continued support and encouragement.

TABLE OF CONTENTS

ABSTRACT

Special Purpose Acquisition Companies (SPACs) have rapidly transformed from a marginal financing tool to a central force in global capital markets, especially during the unprecedented boom of 2020–2021. The first chapter provides a comprehensive and critical overview of SPACs, integrating a detailed exposition of their institutional features with a systematic review of the academic literature. We first trace the historical evolution and operational mechanisms of SPACs, highlighting their unique structure, regulatory environment, and international variations. We then synthesise theoretical and empirical research on SPACs, covering topics such as incentive design, information disclosure, market performance, governance, and the challenges of globalisation and specialisation. By bridging institutional analysis with literature review, this paper not only clarifies how SPACs function in practice but also critically assesses the strengths and limitations of current research. We conclude by identifying key research gaps and proposing future directions, aiming to serve as a foundational reference for scholars, policymakers, and practitioners seeking to understand the evolving role of SPACs in contemporary financial markets.

The second chapter refers to Loughran-McDonald Sentiment Word Lists and applies textual analysis method to investigate the relationship between features (tones, length, readability) extracting from the risk factors section of deSPAC prospectus and deSPAC underpricing. We find 1) deSPAC underpricing is positively affected by the negative, uncertain, weak modal, and constraining tones of the risk factors section of their deSPAC prospectus, while other tones, text length, and readability of the risk factors section have no significant effect. The results remain robust after going through various robustness tests. 2) The positive impact of those four tones affects deSPAC underpricing mainly through two major channels, namely, investors' cognitive bias at the subjective level and inadequate disclosure of core information at the objective level. 3) Results of Principal Component Analysis show that negative, uncertain, weak-modal, and constraining tones all proxy for the same effect and reflect the same attribute. 4) Generalize the analysis of risk factors section to other sections of the prospectus, we find tones of the risk factors section have a greater impact on deSPAC

underpricing than other sections of prospectus and full text. This study contributes to academic by introducing textual analysis into research field of deSPACs and explain deSPAC underpricing by qualitative features of prospectus. Also, we believe that this chapter contributes to financial industry by help investors make investment-decision.

The third chapter examines how the tone in the Management Discussion and Analysis (MD&A) section of S-4 filings influences the deSPAC deal completion return and post deal performance. We find that tone significantly influences deSPAC deal completion return, while its effect on deSPAC post deal performance is not significant. Moreover, the negative tone has a stronger influence on deal completion return compared to the positive tone. We attribute this to the unique characteristics and regulatory environment of SPACs. Negative tone can create a "candor effect", where the market interprets it as a signal of transparency rather than increased risk. We believe that sponsors play a critical role in mediating this relationship. Sponsors amplify the candor effect of negative tone through the combined effects of reputation, economic incentives, and resource signalling. This chapter extends the existing literature on the value relevance of non-financial features of disclosure, as well as holds significant practical implications for both investors and firms.

Chapter 1

SPAC Institutional Details and Literature Review

1.1 Introduction

In recent years, Special Purpose Acquisition Companies (SPACs) have emerged as one of the most dynamic and controversial innovations in global capital markets. Once a marginal financing vehicle, SPACs have experienced dramatic cycles of boom and bust, fundamentally reshaping the landscape of public listings and attracting the attention of academics, practitioners, and regulators alike. The surge in SPAC activity (most notably during 2020 and 2021, when SPAC IPOs accounted for more than half of all U.S. IPOs) has not only altered the structure of primary markets, but also raised profound questions about market efficiency, investor protection, and the boundaries of financial innovation.

The evolution of SPACs is vividly illustrated by the changing ratio of SPAC IPOs to traditional IPOs over the past three decades. Figure 1.1 illustrates the annual number of traditional IPOs and SPAC IPOs in the United States from 1990 to 2024, as well as the proportion of SPAC IPOs relative to the total IPO market. As shown in Figure 1.1, SPACs were virtually absent from the market in the 1990s and early 2000s, but began to gain traction in the mid-2000s, culminating in an unprecedented surge in 2020–2021. This explosive growth was followed by a sharp contraction, reflecting both the cyclical nature of financial innovation and the heightened scrutiny from regulators and market participants. The SPAC phenomenon is thus not only a story of financial innovation, but also a lens through which to examine the interplay between market forces, regulatory responses, and the evolving needs of issuers and investors.

Despite their prominence, SPACs remain a subject of debate and uncertainty. On the one hand, proponents argue that SPACs democratise access to capital markets, offer a flexible alternative to traditional IPOs, and facilitate the listing of high-growth or otherwise overlooked firms. On the other hand, critics highlight concerns about agency conflicts, information asymmetry, regulatory arbitrage, and the long-term performance of deSPACed companies. The rapid proliferation of SPACs has also prompted a wave of regulatory interventions and academic research, seeking to understand not only how SPACs operate in practice, but also their broader implications for market integrity and investor welfare.

Given this context, there is a pressing need for a comprehensive and critical synthesis of both the institutional details and the academic literature on SPACs. While a growing body of research has examined specific aspects of SPACs, such as their incentive structures, disclosure practices, and market outcomes, there remains a lack of systematic resources that integrate the operational mechanics of SPACs with a rigorous review of empirical and theoretical findings. For scholars, policymakers, and practitioners alike, understanding the institutional architecture of SPACs and the state of academic knowledge is essential for informed decision-making, effective regulation, and the identification of future research directions.

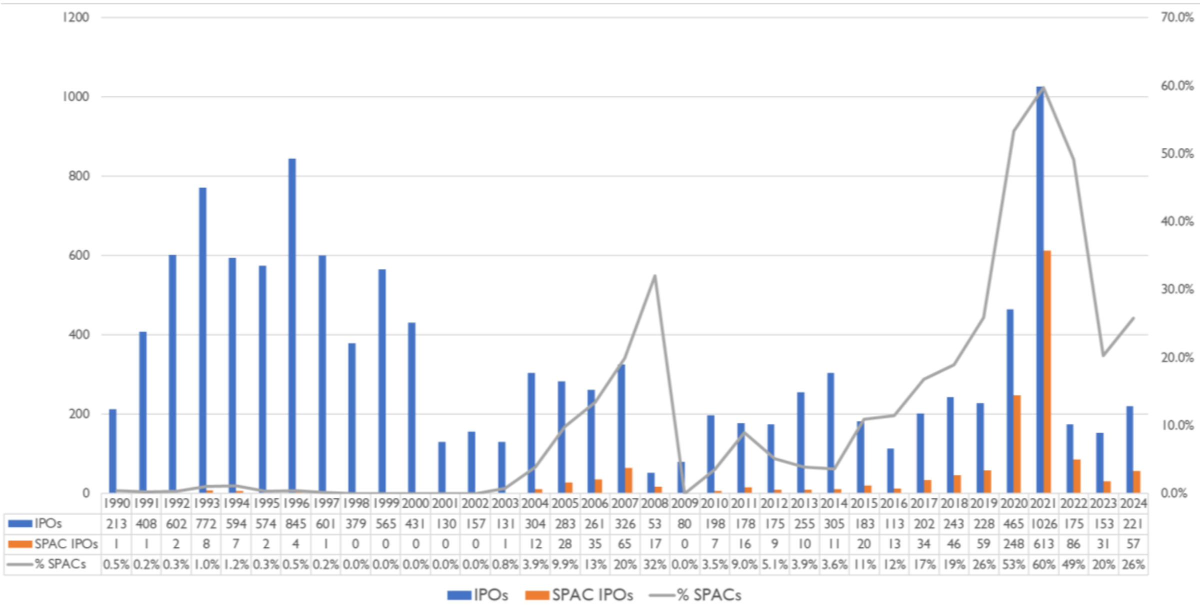

Figure 1.1. Numbers of IPOs Versus SPAC IPOs, 1990-2024

Note: This figure illustrates the annual number of traditional IPOs and SPAC IPOs in the United States from 1990 to 2024, as well as the proportion of SPAC IPOs relative to the total IPO market. Raw data are obtained from Jay R. Ritter's report: "Special Purpose Acquisition

Company (SPAC) IPOs Through 2024".

We seek to fill this gap by providing an encyclopaedic overview of SPACs, combining a detailed exposition of their institutional features with a critical review of the extant literature. The structure of the chapter is as follows. Section 2 systematically introduces the institutional details of SPACs, including their historical evolution, operational mechanisms, regulatory environment, and international variations. Section 3 presents a comprehensive literature review, synthesising theoretical and empirical studies on SPACs' design, market performance, disclosure, governance, and global development. Section 4 identifies key research gaps and outlines possible directions for future research. By bridging the gap between institutional analysis and academic research, this chapter aims to serve as a foundational reference for anyone seeking to understand the complexities and significance of SPACs in contemporary financial markets.

1.2 Background on SPACs

This section provides a structured overview of SPACs. It first defines the SPAC and traces its historical development, highlighting key phases and market shifts. The analysis then turns to the core mechanisms underpinning the SPAC and deSPAC process, outlining each critical stage from formation to acquisition. We further discuss the principal drivers of the recent SPAC surge, contrast SPAC IPOs with traditional IPOs, evaluate investment risks and returns, identify the determinants of successful SPAC transactions, and review the latest regulatory developments in the market. The section concludes by examining the adoption and adaptation of SPACs in major international financial markets. Through this section, a comprehensive foundation is hopefully provided for understanding the complexities and significance of SPACs in contemporary capital markets.

1.2.1 Definition

A SPAC is a publicly listed entity that raises capital through an initial public offering with the primary objective of acquiring or merging with an existing company. In cases where the target is private, this process allows the target to achieve a public listing while bypassing the traditional IPO process. SPACs are often referred to as “blank cheque companies” because, at the time of listing, they are essentially shell companies with no substantive business operations or tangible assets, holding only the cash raised from the IPO and a small amount of investments. In the IPO phase, a SPAC essentially functions as a pool of capital with a clearly defined purpose. When a SPAC raises capital, the money does not go straight into the hands of management. Instead, it is locked away in a trust or escrow account. The funds remain untouched until a deal is struck or, if things do not go as planned, the SPAC is dissolved. During this period, the management team (often a mix of industry veterans, private equity players, and financial professionals) sets out to find a suitable target. The search is typically limited to 18 to 24 months. If no deal materialises, investors get their money back.

The deSPAC process represents the final stage of the SPAC lifecycle and the realisation of its mission. It refers to the merger or acquisition process of the selected target company by the SPAC, thereby transforming the target into a publicly listed entity. At this point, the SPAC ceases to exist as a shell and the target steps into the public market, taking over the listing. Notably, regulatory scrutiny intensifies: shareholder approval is required, and the detailed disclosure documents must be submitted. These requirements help ensure transparency and protect investors. Once the transaction is complete, the target company gains access to the capital markets.

1.2.2 History and Development

1.2.2.1 SPAC and Blank Check Company

The concept of raising capital without a specified target, as seen in SPAC, can be traced back to the “blind pool” companies of the South Sea Bubble era in eighteenth-century Britain (1711–1720). These companies were established by raising funds from investors without specifying the intended use of the capital, requiring investors to place blind trust in the management’s decisions. This model was inherently speculative: during the South Sea Bubble, many companies exploited investor enthusiasm for new markets to raise substantial sums, but after the bubble burst, most failed to deliver on their promises, resulting in significant investor losses. The losses caused by blind pools exposed the vulnerabilities of financial instruments lacking transparency and regulation, providing historical lessons for the subsequent regulation of SPACs.

The direct predecessor of the modern SPAC is the “blank cheque company” that emerged in the United States in the 1980s. These companies listed via IPOs with little in the way of tangible assets or clear business plans, their sole purpose being to raise funds for future acquisitions or mergers. Owing to their shell nature, blank cheque companies quickly became vehicles for fraud and market manipulation, particularly in the penny stock market. Data show that approximately 2,700 blank cheque companies conducted IPO in late 1980s[1], which exceed even the number of SPAC IPOs during the 2020–2021 boom.

However, the boom in blank cheque companies concealed significant risks. Penny stock traders encountered huge loss to fraudulent activities, much of which was linked to blank cheque companies. These entities were often exploited by bad actors, who used prearranged transactions or nominee accounts to deceive investors. Some schemes involved artificially inflating share prices through misleading publicity, after which management would sell their holdings for profit, leaving investors with worthless shells. By the late 1980s, shell companies had become a hotbed for fraud, and the abuse of blank cheque companies attracted widespread attention.

To address the fraud associated with blank cheque companies, the U.S. Congress passed the Penny Stock Reform Act (PSRA) in 1990[2]. Rather than outright banning blank cheque

---

[1] See the report by Knowledge Bank, Ohio State University via https://kb.osu.edu/server/api/core/bitstreams/b374bd45-a5ff-5715-91a1-e91e1043aa5b/content

[2] See the following link for more details. https://www.law.cornell.edu/topn/securities_enforcement_remedies_and_penny_stock_reform_act_of_1990

companies from issuing securities, the Act amended Section 7 of the Securities Act, authorising the Securities and Exchange Commission (SEC) to establish specific rules restricting such issuances. To implement the PSRA, the SEC promulgated Rule 419 in 1992, specifically regulating the issuance activities of blank cheque companies. Rule 419 introduced a series of protective measures that fundamentally altered the operating model of blank cheque companies and provided the compliance framework for the modern SPAC. Its core provisions include the requirement that IPO proceeds be placed in a trust account until an acquisition is approved; the submission of a post-effective amendment containing the financial statements of both parties upon identification of a target; and a further amendment upon execution of the acquisition agreement. Investors are entitled to withdraw their investment prior to the acquisition and receive interest (less certain expenses). These rules effectively prevent the misuse or misappropriation of shareholder funds prior to a transaction, significantly reducing investor risk and laying the foundation for the standardisation of modern SPACs. Thus, SPACs gradually evolved into a legitimate financial instrument, striking a balance between innovation and investor protection.

1.2.2.2 SPAC in 1990s

The contemporary SPAC structure began to take shape in the 1990s, pioneered by the investment bank GKN Securities and subsequently refined by EarlyBirdCapital. In the early 1990s, the US securities market imposed stringent constraints on blank cheque companies through the 1990 PSRA and the SEC's Rule 419, promulgated in 1992. Key figures in the development of the SPAC structure, notably David Nussbaum and David Miller, were profoundly influenced by the "blind pool" investment experiences of the late 1980s and sought to devise an instrument that would retain the essential characteristics of a blank cheque IPO while rehabilitating the sector's reputation, tarnished by the frauds of the preceding decade, through robust investor protection mechanisms. Their innovation lay in developing the SPAC in tandem with Rule 419, employing technical exemptions to circumvent certain restrictions. For instance, they set the offering price above \$5 to avoid the regulatory threshold for penny stocks (albeit below the contemporary $10 standard for SPACs). Simultaneously, SPACs introduced shareholder trust accounts and post-registration supplemental amendments to ensure transparency and safeguard investor rights. Ultimately, SPACs inherited the fundamental structure of blank cheque companies but incorporated more rigorous regulatory requirements, gradually earning the recognition of the SEC and the trust of the market. This evolution included features such as a limited timeframe to consummate an acquisition and the right of shareholders to redeem their shares should they disapprove of the proposed merger. These mechanisms were subsequently adjusted in later iterations of the SPAC to balance the interests of sponsors with the need for investor protection.

To further enhance the credibility of SPACs, Nussbaum made a concerted effort to enlist highly respected individuals to endorse these vehicles, a strategy that works today in the emphasis on elite management teams and high-profile advisers. The success of over a dozen SPACs in the early 1990s demonstrated the model's compliance and appeal, which is how the blank cheque concept managed to shake off its negative image from the 1980s and present itself as a new kind of financial instrument.

SPACs enjoyed a brief period of expansion in the mid-1990s. However, despite the strengthening of investor protections during that period, changes in the market environment curtailed most SPAC activity by 1997. With a traditional IPO market providing direct capital access for growth-oriented companies, smaller companies found it easier to go public on their own, which, in turn, undermined the attractiveness of SPACs. Early SPAC investors were primarily retail clients in small investment banks and hedge funds who took a chance on sponsors promoting non-traditional growth firms. However, as enthusiasm mounted for tech company IPOs, supply slumped, and demand for SPACs plummeted. Therefore, SPACs development stagnated.

1.2.2.3 SPAC in 2000s

SPACs continued to develop under the significant influence of the regulatory environment and market dynamics in the early 2000s. This period saw SPACs evolve into a genuinely viable alternative to the traditional IPO. In 2002, the U.S. Congress enacted the Sarbanes-Oxley Act in response to corporate scandals that eroded investor trust. The legislation imposed stringent requirements including enhanced financial disclosures, internal controls, and executive accountability, making traditional IPOs costlier and more complex. SPACs, by contrast, offered a pre-funded, less burdensome alternative.

The second generation of SPACs emerged in May 2003, when EarlyBirdCapital filed an S-1 registration statement for Millstream Acquisition Corp. This iteration refined earlier models by incorporating investor protections tailored to the post-Sarbanes-Oxley environment. As traditional IPOs waned under regulatory pressure, SPAC IPOs began a steady rise. The American Stock Exchange's decision in 2005 to allow SPAC listings was a milestone. No longer confined to the margins, SPACs were granted a degree of legitimacy that had previously eluded them. AMEX's endorsement did more than open doors; it reassured investors and, for the first time, set SPACs apart from the less reputable "blank cheque" vehicles of the past. The entry of Apollo's Marathon SPAC in 2006, attracting heavyweight private equity and hedge funds, only added to the sense that the market was maturing.

The peak for SPACs came in 2007, with 22% of U.S. IPOs and over $12 billion raised . Unlike surges that would later be driven by retail investors, this boom was instigated by hedge funds exploiting arbitrage opportunities. Even as federal fund rates climbed from 1% in 2004 to 5.25% in 2006, SPAC units (priced at $10 and split into stocks, warrants, and rights) traded at intrinsic values above their cost. Hedge funds caught this "free lunch," prioritising short-term gains over long-term investments. By 2008, SPACs became eligible to list on the NYSE and Nasdaq, embedding them deeper into mainstream finance. Access to premier exchanges broadened their appeal, aligning them with established instruments and enhancing their visibility.

The SPAC dynamics came to a halt with the financial crisis of 2008. Fundraising for that year plunged to $3.8 billion. Only one SPAC completed a modest $36 million offering in 2009. The crisis revealed some SPAC flaws, and they had to adapt to survive.

Most SPACs required 80% shareholder approval for business combinations during this period, which grant minority investors (often hedge funds) significant leverage. A 20% dissent would kill a deal. Redemption rights forced sponsors to give up on concessions within the 18-24 month window. Hedge funds treated SPACs as arbitrage vehicles. They used their veto power to extract value rather than support target companies' growth. A few of these issues were tackled by attaching tender offer mechanisms to SPACs. This streamlines deals done in a narrow timeframe. "Bulldog clauses" later curbed extortion by limiting tender offer participation for investors holding over 10%. In December 2010, the SEC allowed listing on Nasdaq not requiring voting, which was a great jump concerning pure tender offer SPACs.Yet, tender offers revealed short-termism. Investors, backed by trust accounts holding 99% of the IPO proceeds, often redeemed or sold shares at premiums, treating warrants as bonuses rather than long-term stakes.

1.2.2.4 SPAC in 2010s and the SPAC Surge in 2020 and 2021

Since the early 2000s, the SEC has incrementally tightened SPAC rules by incorporating investor protection elements through mandatory disclosures, trust account safeguards, and redemption rights. These improvements addressed earlier criticisms and fostered trust among investors and regulators alike. Later, in the 2010s, SPACs shed their reputation as speculative vehicles when they were joined in this area by elite underwriters. The participation of leading investment banks even further helped the process of institutionalisation in this area.

The SPAC market of the early 2010s was still shadowed by the 2008 global financial crisis. From 2012 to 2014, SPAC IPOs accounted for a mere 5% of the total U.S. IPOs, while the funds raised were below 2% of the market's capital. During this moribund period, however, the simple structure of modern-day SPACs solidified. SPACs issued units at \$10, containing common shares and warrants exercisable at \$11.50. They employed tender offer mechanisms and continued to allow retention of shareholder voting rights. Features contemporary with today's SPACs will provide continuity and familiarity for investors, which subsequently allows broader institutional participation and continued growth.

In 2011, every SPAC traded on a major exchange (though none were listed on the vaunted New York Stock Exchange). That changed by late 2016 when the SEC approved rule changes allowing SPAC listing on the NYSE, a pragmatic example of blunt regulatory approval and a better market position for SPACs. Combined with a non-intrusive new regime under the U.S. administration, the NYSE embraced pure tender offer SPACs, making it fertile for growth. The rising market interest allowed the IPOs to raise $3.9 billion in 2015 and $3.5 billion in 2016, setting the stage for a dramatic escalation in 2020 and 2021.

The groundwork for this SPAC surge in 2020 and 2021 was laid in late 2016 when the SEC allowed SPACs to list on NYSE. By 2016, major investment banks like Goldman Sachs and Morgan Stanley had already started to participate. Morgan Stanley underwrote a $150 million international SPAC in November. SPACs had a huge year in 2017, raising $10 billion and accounting for 18% of U.S. IPO volume. This growth continued through 2018 and 2019, with fundraising reaching $10.8 billion and $13.6 billion, respectively, and each year held a roughly 20% share of IPO proceeds. Proceeds from the IPO were held in a trust account, invested in short-term government securities, assuring a net asset value of $10.00 per share. Investors could redeem shares before a merger, recovering their capital plus interest. Warrants provided upside potential, making SPACs an attractive low-risk, high-reward vehicle.

The true explosion occurred in 2020, when 248 SPAC IPOs raised $83 billion. This frenzy intensified in the first quarter of 2021, with 298 IPOs amassing $96 billion. Several factors fuelled this boom: near-zero interest rates encouraged risk-taking, a robust stock market favoured growth-oriented deals, and high-profile sponsors (celebrities, athletes, and industry titans) drew retail investor enthusiasm. The involvement of elite underwriters and the NYSE's imprimatur further legitimised SPACs, positioning them as a mainstream alternative to traditional IPOs.

However, the boom revealed structural challenges, particularly in the deSPAC phase. Research highlights a significant equity dilution in deSPAC transactions, driven by high redemption rates and the need to bridge funding gaps (Klausner et al. 2023). When shareholders redeemed shares, trust account assets dwindled, often necessitating PIPE (Private Investment in Public Equity) financing. PIPE investors, securing shares at favourable terms, exacerbated dilution for remaining SPAC shareholders. The uncertainty of redemption levels complicated valuation, leaving deSPAC shareholders to bear the cost of what the researchers called "an expensive bill" for the benefit of sponsors, target companies, and redeeming investors. Sponsors' 20% equity stakes, earned for minimal upfront investment, further amplified concerns about misaligned incentives.

By 2022, the SPAC frenzy began to cool as regulatory scrutiny intensified and market saturation led to underperforming deSPAC companies. The period also underscored the need for reforms to address dilution and incentive misalignments, lessons that continue to shape the SPAC landscape as it evolves into a more sustainable model.

1.2.2.5 SPAC after the 2020 and 2021 Surge

Recent SPAC development reflects a period of recalibration and cautious resurgence following the frenetic 2020-2021 boom and subsequent market cooldown. Figure 1.2 presents the quarterly number of SPAC IPOs and their corresponding mean initial returns (IR) in the United States from the first quarter of 2021 to the fourth quarter of 2024. As shown in Figure 1.2, the SPAC market faced significant headwinds in 2022 and 2023. The rising interest rates, tighter financial policies, and disappointing deSPAC performances curbed enthusiasm. In 2023, only 31 SPAC IPOs raised $3.8 billion, a sharp decline from the 2021 peak of 613 IPOs and $162.5 billion. However, signs of stabilization emerged by year-end, with 98 mergers completed and IPOs closing slightly above expected values, hinting at a potential recovery.

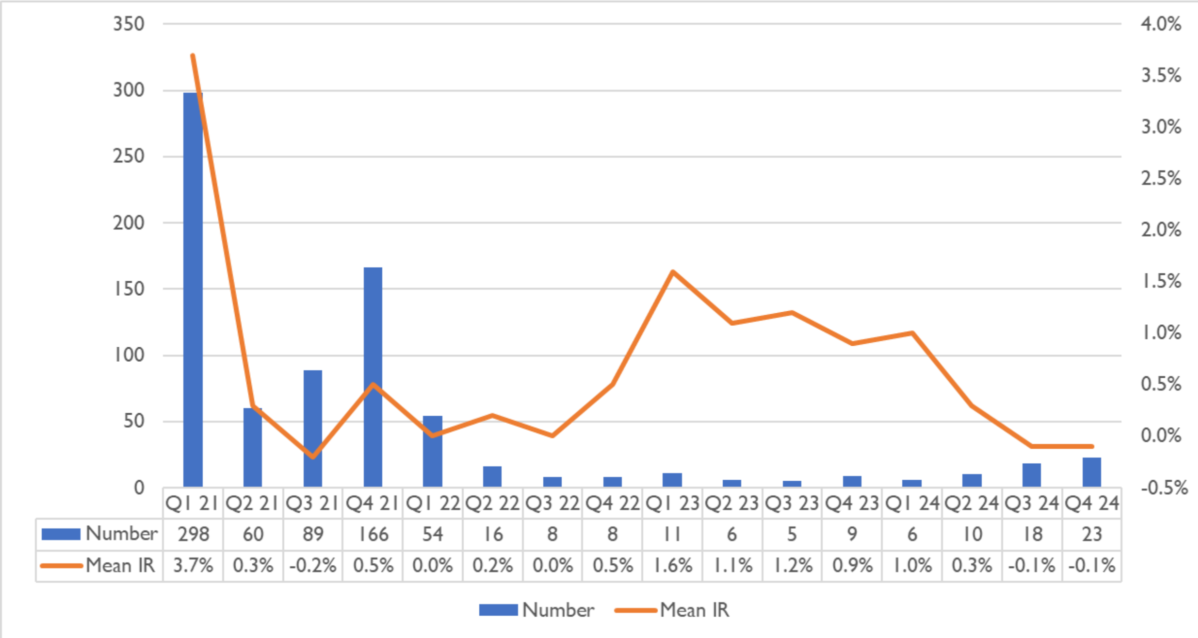

Figure 1.2. SPAC IPOs by Quarter, 2021-2024

Note: This figure presents the quarterly number of SPAC IPOs and their corresponding mean initial returns (IR) in the United States from the first quarter of 2021 to the fourth quarter of 2024. The blue bars denote the number of SPAC IPOs completed each quarter, while the orange line represents the mean IR, defined as the percentage change from the offer price to the closing price at the end of the first trading day. Raw data are obtained from Jay R. Ritter's report: "Special Purpose Acquisition Company (SPAC) IPOs Through 2024".

This momentum carried into 2024, particularly in the second half, when SPAC activity accelerated. The year saw 57 IPOs raise $9.6 billion (See Figure 1.3 for the annual total proceeds raised through SPAC IPOs in the United States from 2003 to 2024), alongside 73 business combinations valued at nearly $38 billion, with an additional 61 deals announced or pending. The first quarter of 2025 sustained this upward trajectory, with 19 SPAC IPOs raising $3.1 billion, aligning with the prior three quarters' average of 20 IPOs and $3.4 billion per quarter. Notably, approximately 80% of these IPOs, totalling $2.7 billion, were led by serial SPAC sponsors, the experienced issuers who dominated the market over the past year. Their prominence reflects investor preference for proven track records in navigating complex deal landscapes. Serial sponsors have leveraged their expertise to position SPACs as an attractive alternative for companies facing a congested traditional IPO pipeline, particularly smaller or growth-oriented firms seeking capital market access.

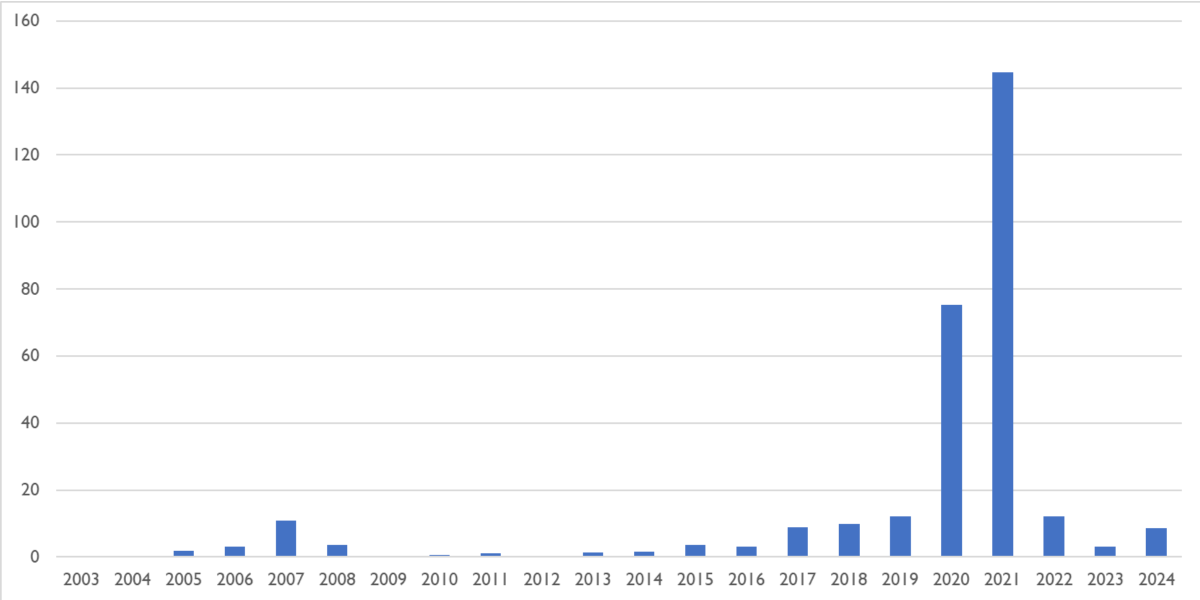

Figure 1.3. Changes in SPAC IPO Proceeds, 2003-2024

Note: This figure displays the annual total proceeds raised through SPAC IPOs in the United States from 2003 to 2024, measured in billions of US dollars. The bars reflect the aggregate capital raised by SPACs each year. Raw data are obtained from SPAC Research.

Regulatory changes have played a pivotal role in shaping this stage. In January 2024, the SEC introduced rules to enhance transparency, mandating prominent disclosure of dilution risks, refining forward-looking statement criteria, and tightening projections for deSPAC transactions. These measures addressed concerns about misaligned incentives and equity dilution, which had plagued earlier SPACs, ensuring greater investor protection without overhauling the SPAC framework. The regulations have encouraged sponsors to pursue higher-quality targets, reducing the risk of underperforming mergers.

The latest SPAC dynamics illustrate its resilience and adaptability. By 2025, the market has stabilised, with experienced sponsors and robust regulatory frameworks fostering confidence. SPACs have reemerged as a viable option for companies outside the traditional IPO mold, particularly in sectors like technology, energy transition, and financial services, as evidenced by recent IPOs targeting AI, fintech, and carbon capture businesses. While no longer the speculative frenzy of 2021, SPACs have carved a lasting niche, offering a disciplined, sponsor-driven pathway to public markets.

1.2.3 SPAC and deSPAC Process

As mentioned above, SPAC is a financial vehicle designed to raise capital through an IPO with the sole purpose of acquiring or merging with an existing private company, enabling it to become publicly traded without undergoing a traditional IPO. The process involves two main phases: the SPAC's formation and fundraising, followed by the acquisition or merger stage, known as the deSPAC process. Figure 1.4 illustrates the entire process from the SPAC IPO through to the completion of the combination, culminating in the listing of the post-merger entity.

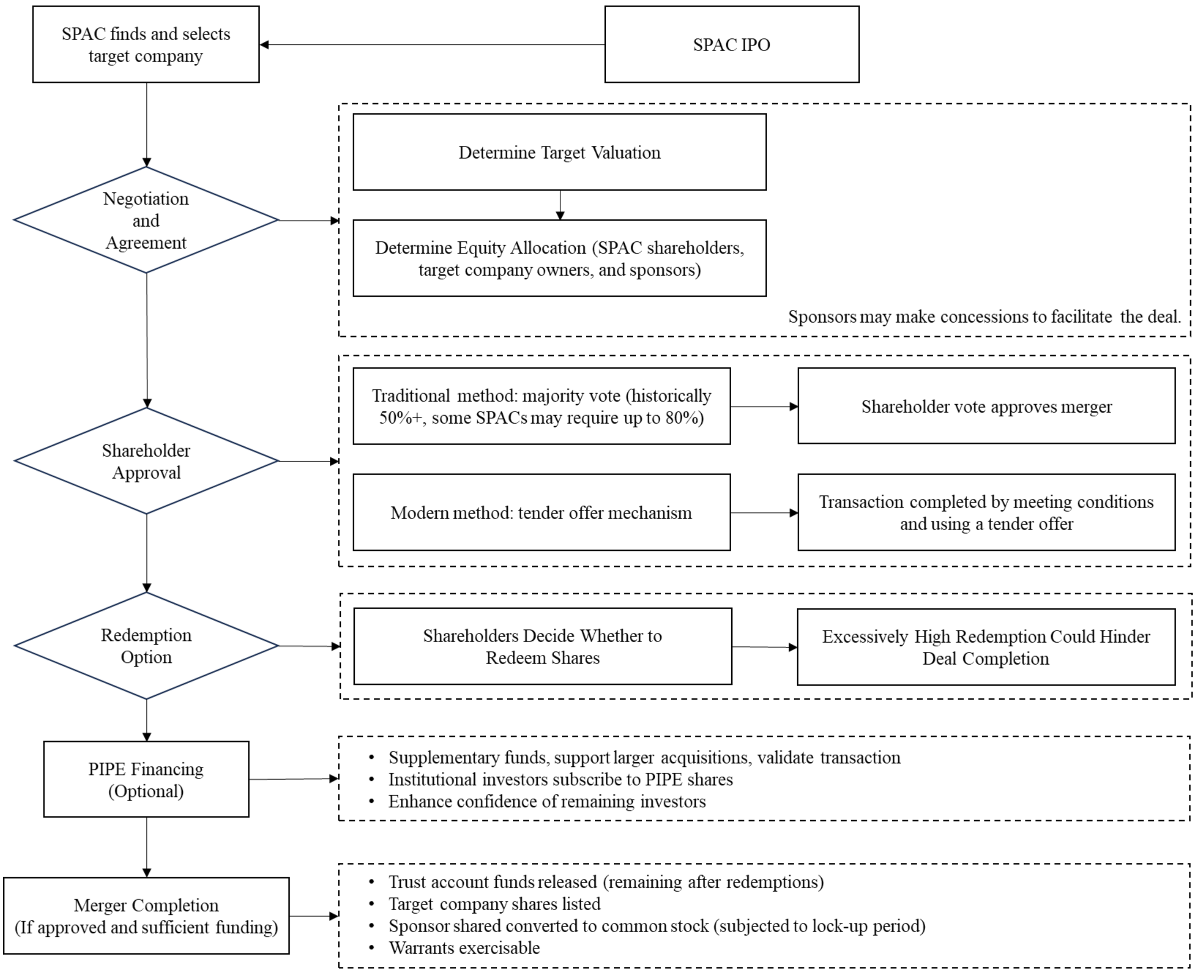

Figure 1.4. Flowchart of the SPAC and deSPAC Process

Note: This figure provides a schematic representation of the typical lifecycle of a SPAC, from the IPO and target identification, through negotiation, shareholder approval, and redemption options, to the completion of the merger (deSPAC) process. The figure is constructed based on a synthesis of academic literature, industry reports, and market practice.

1.2.3.1 Formation and IPO: Launching the SPAC

The SPAC begins with a team of sponsors (experienced investors, industry experts, or financial professionals) who form the entity. Sponsors typically invest a nominal amount (e.g., $25,000) to acquire approximately 20% of the SPAC's equity as "founder shares" or "promote shares." These shares often carry enhanced voting rights but are subject to restrictions, such as lock-up periods (typically one year post-merger) and ineligibility for redemption. Sponsors may also purchase "founder warrants" at a low exercise price (e.g., $1.50), further aligning their incentives with the SPAC's success.

Unlike a traditional IPO, where common shares are issued, a SPAC raises funds by issuing units. Figure 1.5 presents the annual number of unit-based and non-unit-based SPACs issued in the United States from 1990 to 2024. As shown in Figure 1.5, the grey line represents the proportion of SPACs that raised capital through the issuance of units, which was 100% or nearly 100% in most years. Each unit typically includes: one common share (Class A stock sold to public investors), and a fraction of a warrant (e.g., one-half or one-third), exercisable at a set price (commonly $11.50) after the merger, offering potential upside. The IPO proceeds (often requiring at least 85% to be held in escrow) are deposited into a trust account and invested in low-risk securities like government bonds. This ensures funds are safeguarded for an acquisition or returned to investors if no deal is completed within a specified timeframe (typically 18-24 months).

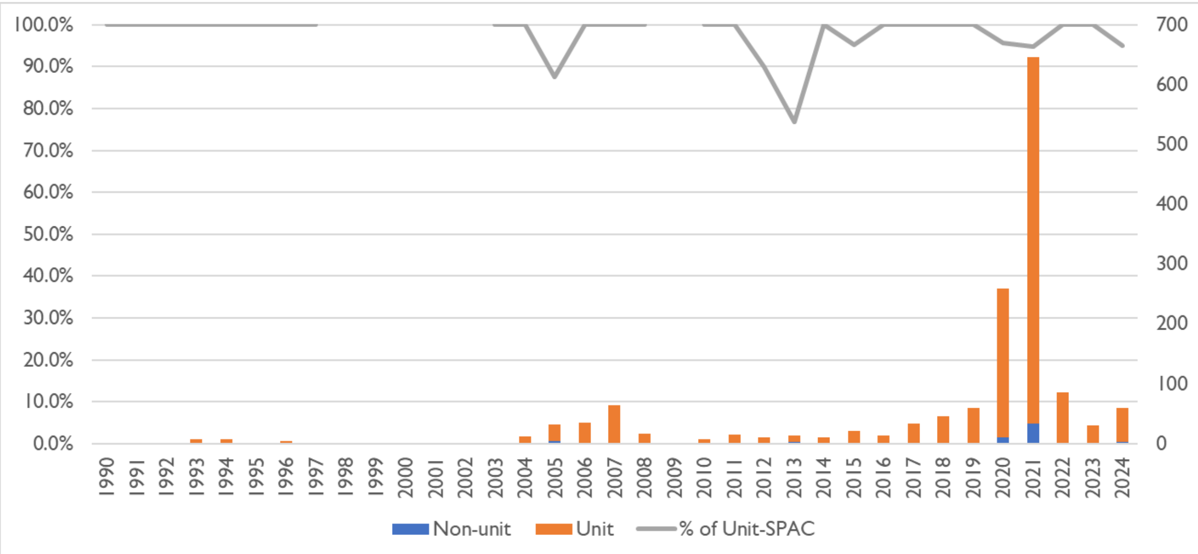

Figure 1.5. Change in Numbers of Unit and Non-unit SPACs, 1990-2024

Note: This figure presents the annual number of unit-based and non-unit-based SPACs issued in the United States from 1990 to 2024. The blue bars represent non-unit SPACs, while the orange bars indicate unit-based SPACs. The grey line shows the proportion of unit-based SPACs as a percentage of total SPAC issuances for each year. For certain years, there are no data points for the proportion of unit-based SPACs, as no SPACs were issued in those years. Raw data are obtained from Jay R. Ritter's report: "Special Purpose Acquisition Company (SPAC) IPOs Through 2024".

Since the SPAC has no operations or target at the IPO stage, investor confidence relies heavily on the sponsors' reputation, experience, and acquisition strategy. Units are designed to attract investors by offering a low-risk cash position (via redemption rights) and potential high returns (via warrants). After a stabilization period (e.g., 52 days post-IPO), units split into tradable shares and warrants, allowing investors to sell shares near cost while retaining warrants for upside potential.

1.2.3.2 The Search for a Target

Sponsors have a limited window (18-24 months) to identify a private company for acquisition or merger. The target must have a fair market value of at least 80% of the trust account balance, though in practice, the combined entity's value is often 2-3 times the IPO proceeds. This flexibility allows sponsors to pursue ambitious deals, often supplemented by additional financing like PIPE (Private Investment in Public Equity).

During this phase, sponsors leverage their expertise to evaluate targets based on valuation, growth potential, and strategic fit. Their 20% equity stake (potentially worth millions post-merger) motivates them to secure a deal, though this can create conflicts of interest if they prioritise completion over quality.

1.2.3.3 deSPAC: The Acquisition and Merger Process

The deSPAC process transforms the SPAC from a shell company into an operational public entity through the following steps.

To start the process, once a target company is identified within the SPAC's typical 18-24 month timeframe, the sponsors initiate negotiations to finalise the terms of the merger. This involves determining the target's valuation. Negotiations also cover the allocation of equity among SPAC shareholders, the target's owners, and the sponsors, who hold a significant 20% stake in founder shares. To secure a deal, sponsors may make concessions, such as relinquishing portions of their founder shares or warrants, ensuring alignment with the target's expectations and investor interests. This phase requires strategic finesse, as sponsors aim to maximise value while maintaining the deal's appeal to all parties.

Following the agreement, the proposed merger is submitted for shareholder approval, a step historically requiring a majority vote (50% or more), though some SPACs mandated up to 80% consent in earlier structures. Modern SPACs increasingly employ a tender offer mechanism, which allows the deal to proceed without a formal vote if predefined conditions, such as sufficient shareholder participation, are met. A cornerstone of investor protection is the redemption right, enabling shareholders to reclaim a pro-rata portion of the trust account (typically $10 per share plus accrued interest) regardless of their vote. Among the 595 deSPAC transactions between 2017 and 2024, the average redemption rate was 66.5% (see Figure 1.6 for quarterly number of completed deSPAC transactions and the corresponding average redemption rates). Regulatory changes have decoupled voting and redemption rights, giving investors flexibility to support a deal while exiting if they choose. However, if over 20% of shareholders opt for liquidation, the deal may collapse, triggering a distribution of trust funds to investors after deducting fees.

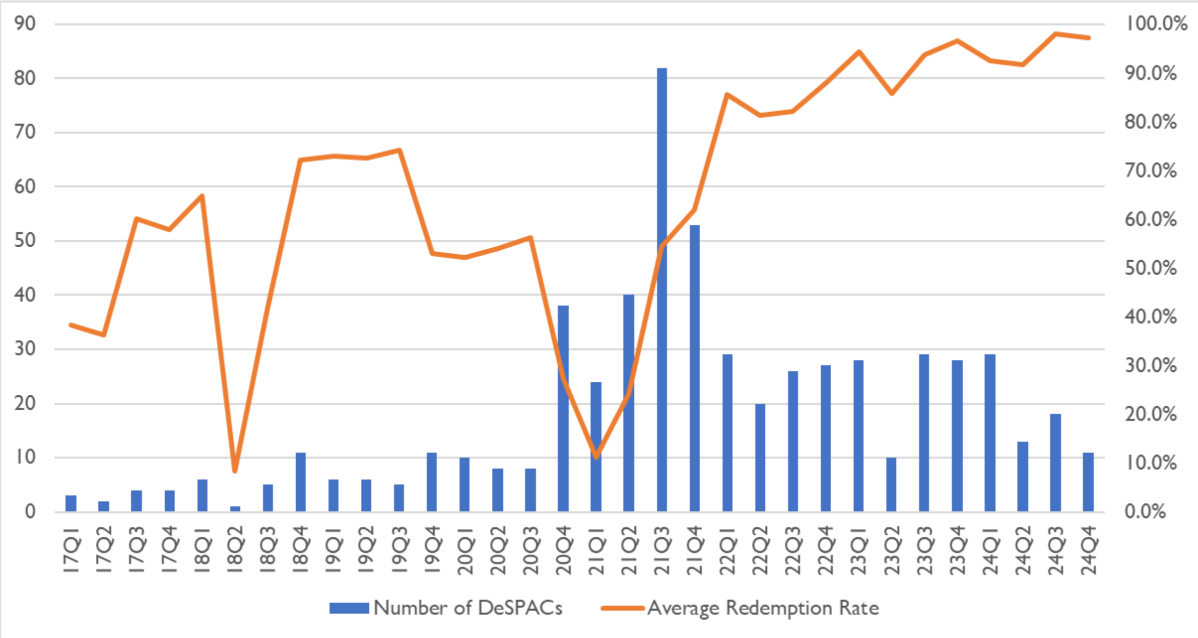

Figure 1.6. Redemption Rates on deSPACs, by Quarter, 2017-2024

Note: This figure illustrates the quarterly number of completed deSPAC transactions and the corresponding average redemption rates in the United States from the first quarter of 2017 to the fourth quarter of 2024. The blue bars represent the number of deSPACs completed each quarter, while the orange line shows the average redemption rate, calculated as the equally weighted average proportion of shares redeemed by public shareholders at the time of the merger between a SPAC and an operating company. Data are obtained from SPAC Research.

To mitigate the financial impact of redemptions and fund acquisitions exceeding the trust account's capacity, SPACs often secure PIPE commitments from institutional investors. Negotiated after target selection but before the merger announcement, PIPE deals involve investors purchasing shares at approximately $10 each upon deal completion. These commitments serve as a financial backstop, ensuring sufficient capital if many shareholders redeem, and act as a vote of confidence in the merger, bolstering trust among remaining investors.

Upon securing shareholder approval or satisfying tender offer conditions, the merger moves to completion. The trust account funds are released to finance the transaction, often supplemented by PIPE proceeds. The target company assumes the SPAC's listing on a stock exchange, such as the NYSE or Nasdaq, seamlessly transitioning to public status. Founder shares held by sponsors convert to common shares, subject to lock-up periods (typically one year), and warrants become exercisable, usually at $11.50 per share. This final step marks the culmination of the deSPAC process, transforming the SPAC into a fully operational public entity ready to pursue its strategic objectives in the capital markets.

1.2.4 Discussions on SPAC

This section examines some issues that have come under critical review in recent years regarding SPACs. First, it considers macroeconomic, institutional, and sectoral factors that may have favoured the boom recently observed in SPAC activity. Then, it compares the processes, valuations, cost structures, disclosure, and investor protection methods of SPAC IPOs against traditional IPOs. Further elaboration includes investment risks and returns associated with SPACs. Key factors contributing to successful SPAC transactions are identified, such as target selection, capital structure, management expertise, and market timing. The discussion is concluded with a review of the rapidly changing regulatory environment, including recent SEC reforms toward greater transparency and disclosure that relate to the protection of investors in SPAC transactions.

1.2.4.1 Reasons for the recent SPAC Frenzy

During 2020–2021, the SPAC market experienced an unprecedented boom. According to statistics from SPAC Analytics, total SPAC fundraising in 2020 reached $83.4 billion, six times that of 2019, accounting for 55% of all newly listed companies in the United States that year.

An accommodative monetary policy environment laid the foundation for the SPAC surge. In March 2020, the Federal Reserve lowered the federal funds rate to a historic low of 0–0.25% and launched unlimited quantitative easing. Simultaneously, the U.S. government introduced a $1.9 trillion fiscal stimulus package, directly distributing cash subsidies to households. These policies caused the household savings rate to soar from 7.2% in January 2020 to 33.7% in April, creating approximately $2 trillion in excess savings. This surplus liquidity sought investment outlets, while yields on traditional fixed-income assets fell sharply in the low interest rate environment, prompting investors to seek higher returns.

Strong market demand for high-growth companies further propelled the development of SPACs. In 2020, the technology sector's weight in the S&P 500 reached a record 28%. According to PitchBook[3], over 60% of companies going public via SPACs in 2020 were in the technology and healthcare sectors. Investors showed particular interest in innovative fields such as electric vehicles, biotechnology, and fintech. Notable examples include Lucid Motors (electric vehicles) and Virgin Galactic (space tourism). SPACs provided these firms with a rapid route to public markets, while also allowing public investors to participate in high-growth opportunities previously reserved for private equities.

SPACs offer significant institutional advantages over traditional IPOs. A traditional IPO typically takes 12–18 months, whereas a SPAC merger can be completed in just 3–6 months. In terms of cost, the average underwriting fee for a traditional IPO in 2020 was 7%, compared to only 5.5% for SPACs. More importantly, SPACs allow target companies to provide financial forecasts for the next 3–5 years at the time of the merger, whereas traditional IPOs may only disclose historical data. Under the Private Securities Litigation Reform Act, SPACs' forward-looking statements enjoy "safe harbour" protection, making them a more attractive listing option.

The deep involvement of institutional investors injected new vitality into the SPAC market. In 2020, prominent hedge funds such as Pershing Square and Third Point launched their own SPACs. The average size of PIPE investments rose from $150 million in 2019 to $320 million in 2020. According to statistics from SPAC Research, the average SPAC redemption rate in

[3] See https://www.svb.com/globalassets/trendsandinsights/reports/venture-monitor/vm-q4-2020/q4_2020_pitchbook_nvca_venture_monitor.pdf

2020 fell to 24%, significantly below historical levels, indicating increased investor confidence. Leading investment banks such as Goldman Sachs and Morgan Stanley underwrote over 100 SPAC IPOs in 2020, further boosting market confidence.

The unique social context of the pandemic also contributed to the rise of SPACs. In March and April 2020, U.S. equity markets experienced extreme volatility, and the traditional IPO market nearly froze. Lockdown policies led to a surge in retail trading. According to Nasdaq, the number of new brokerage accounts opened in 2020 increased by 12 million[4]. The suspension of professional sports further reinforced this trend, with some gambling funds flowing into capital markets. Besides, the increased participation of reputable underwriters and exchanges in SPAC transactions not only maintained but enhanced the market status of SPACs, attracting a broader investor base.

1.2.4.2 Compare SPACs with Traditional IPO

SPAC IPOs and traditional IPOs are the two main routes for companies to access public capital markets, but they differ significantly. Table 1.1 summarises the main differences between the two.

Table 1.1. Key Differences between SPAC IPOs and Traditional IPOs

Aspect	SPAC IPO	Traditional IPO
Time to Market	Completed within several months. Relatively fast process.	Usually takes a year or longer. More complex process.
Valuation & Pricing	Valuation negotiated directly between sponsor and target. Flexible, often results in higher valuations.	Pricing determined by market demand and underwriters. Highly sensitive to market fluctuations.
Costs & Dilution	Lower underwriting fees (5-6%), but sponsors typically receive ~20%	Higher underwriting fees (~7%), but no additional dilution. Cost

[4] See https://www.nasdaq.com/articles/the-brokerage-stack%3A-a-quick-look-back-at-2020-as-we-jump-into-2021-2020-12-17

	equity, leading to significant dilution. Some studies suggest total costs may exceed those of traditional IPOs.	structure is transparent.
Disclosure	Limited disclosure prior to merger. Investors may lack sufficient information.	Stringent disclosure requirements, high transparency, rigorous due diligence by underwriters.
Investor Protection	Historically less stringent regulation and weaker investor protection. 2024 rules align more closely with IPO standards.	Strict SEC regulation, comprehensive investor protection mechanisms
Typical Issuer Profile	Often smaller, riskier, high-growth companies that may struggle to go public via traditional IPO.	Typically mature, large, low-risk companies.
Historical Returns	Average returns post-SPAC merger: -12.3% at 6 months, -34.9% at 12 months (2019 cohort).	Average one-year return post-IPO: +92% (2020 cohort).
Key Risks	Uncertain targets, high redemption rates, information asymmetry, misaligned incentives, and significant dilution.	Market volatility, but sufficient transparency.
Regulatory Changes	2024 SEC rules enhance disclosure and investor protection, increasingly aligned with IPOs	Long-standing strict SEC oversight and robust protection mechanisms

Note: Note: This table provides a comparative summary of the principal differences between SPAC IPOs and traditional IPOs across a range of dimensions, including time to market, valuation and pricing mechanisms, cost structures, disclosure requirements, investor protection, issuer profiles, historical returns, key risks, and recent regulatory changes. The information is synthesised from academic literature and regulatory reports.

The listing process and timeline are the most apparent distinctions. The SPAC listing process is significantly faster than that of a traditional IPO (Kolb et al., 2016; Bai et al., 2021). As a "shell company," the SPAC is already listed, and the target company achieves public listing simply by merging with the SPAC, a process that typically takes only 3–6 months. In contrast, the traditional IPO process is complex, involving due diligence, roadshows, pricing, and regulatory approval, and usually takes a year or more. The speed advantage of SPACs makes them the preferred choice for firms seeking rapid financing and aiming to seize market windows.

Valuation and cost structures also differ fundamentally. SPAC valuations are primarily negotiated directly between the sponsor and the target company, allowing for greater flexibility and often resulting in higher valuations for the target. This "negotiated deal" model reduces the impact of market volatility on pricing and increases transaction certainty. In contrast, traditional IPOs rely on market demand and underwriter pricing, with the final offer price determined through roadshows, making them susceptible to market sentiment and short-term fluctuations, and often resulting in "first-day pops" or underpricing. In terms of costs, SPACs appear to have lower underwriting fees (5–6%) compared to traditional IPOs (around 7%), but because sponsors typically receive about 20% of "founder shares" and additional incentives such as warrants, ordinary investors experience significant dilution. Studies by Klausner et al. (2022) and Gahng et al. (2023) show that the total cost of SPACs is often higher than that of traditional IPOs, and the actual cash delivered to the target company is frequently less than the nominal amount, mainly due to high redemption rates and associated fees.

There are also clear differences in information disclosure and investor protection. Traditional IPOs are subject to strict SEC regulation, requiring detailed disclosure of financial, business, and risk information, with underwriters playing a key role in due diligence and investor protection. SPACs provide limited disclosure prior to the merger, requiring investors to make decisions with less information, thus exacerbating information asymmetry. In March 2024, the SEC introduced new rules requiring SPACs to align their disclosure, conflict of interest, and financial forecast requirements with those of traditional IPOs. Target companies must now act as co-registrants and assume legal liability, and the "safe harbour" for forward-looking statements is restricted, all aimed at enhancing investor protection.

Another difference is the characteristics of companies that typically pursue each route.

SPACs tend to attract smaller, riskier, high-growth firms that may struggle to meet the financial and compliance thresholds of traditional IPOs (Bai et al., 2021). For example, early-stage, unprofitable, or highly leveraged companies often choose SPACs to bypass the hurdles of a conventional IPO. Traditional IPOs are more suitable for mature, larger companies, with underwriters typically favouring lower-risk firms (Gahng et al., 2023).

For investors, there are also significant differences in investment returns between SPAC IPOs and traditional IPOs. Historical return data show that companies completing the deSPAC process generally perform poorly. Among the 451 companies that completed deSPAC transactions between 2012 and 2022, the average one-year buy-and-hold return was -46.3%, and the average three-year buy-and-hold return was -57.7%, indicating poor performance (see Figure 1.7 for the average equally weighted one-year and three-year buy-and-hold returns for companies that have completed deSPAC transactions). In 2020, the average one-year return was only -3%, compared to a market return of 32.6% for the same period. Since 2021, the average one-year return has hovered around -60%. Since 2009, the average deSPAC share return in major industries has been negative (see Table 1.2 for the average percentage returns for deSPAC common shares by industry sector, based on completed deSPAC transactions). Thus, from an investment perspective, SPAC investors face greater dilution and return uncertainty, while traditional IPOs, with their transparency and established processes, offer more attractive long-term returns.

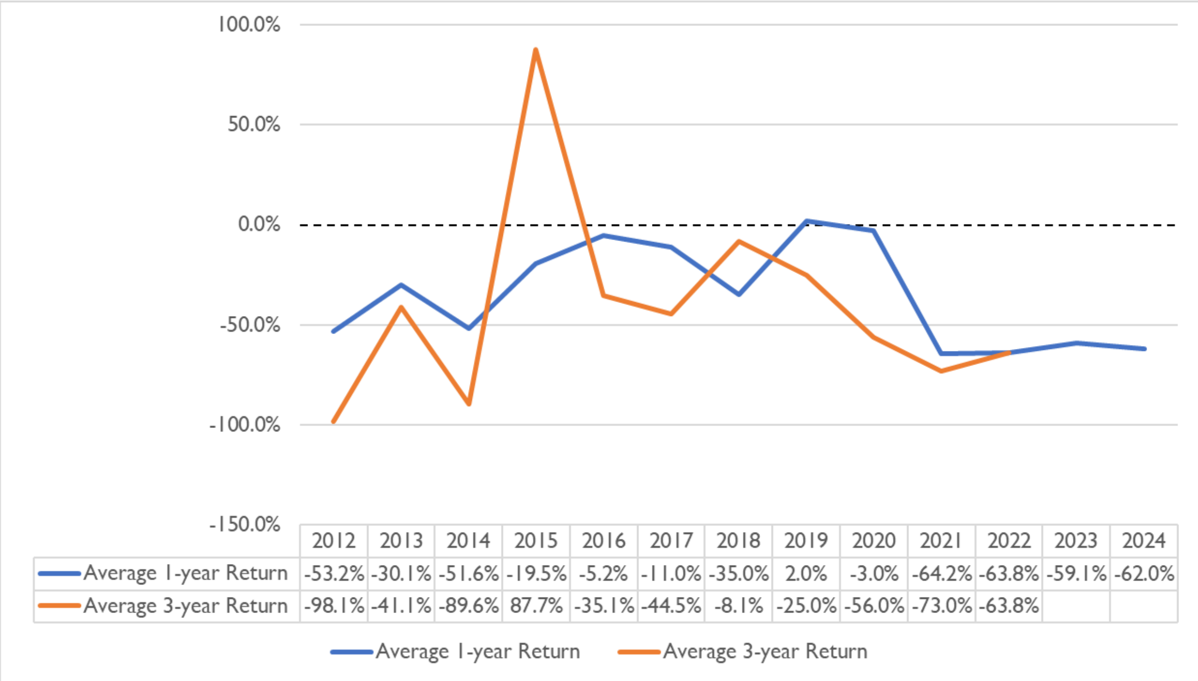

Figure 1.7. Post-merger Return on deSPACs, 2012-2024

Note: The figure presents the average equally weighted deSPAC period common share percentage returns based on a buy-and-hold strategy in which an investor purchases common shares of a merged company at the close of the first day of trading as a new entity (the deSPAC) and holds them for 1 or 3 years. The blue line represents the average one-year return, while the orange line shows the average three-year return. The year labels correspond to the year of the merger. Raw data are obtained from Jay R. Ritter's report: "Special Purpose Acquisition Company (SPAC) IPOs Through 2024".

Table 1.2. Average deSPAC Share % Return by Industry, 2009-Current

Category	Average deSPAC Share % Return
Electric Vehicle	-87.8%
Healthcare	-70.9%
Crypto	-70.9%
Biotech	-69.9%
Consumer	-66.9%
Transportation	-66.1%

Technology	-62.7%
TMT	-62.7%
Renewable Energy	-59.1%
Sustainability	-55.8%
Hospitality & Entertainment	-55.3%
Real Estate	-50.7%
Space	-45.1%
Gaming	-43.1%
Natural Resources	-41.1%
Manufacturing	-33.7%
Financial Services	-21.9%
Industrials	-19.9%

Note: This table presents the average percentage returns for deSPAC common shares by industry sector, based on completed deSPAC transactions in the United States from 2009 to the present. The returns are calculated as equally weighted averages for each industry, reflecting the post-merger performance of companies that have gone public via SPAC mergers. The data are obtained from SPAC Insider (https://www.spacinsider.com/data/stats).

1.2.4.3 Invest in SPAC

As previously discussed, SPAC investors typically subscribe to units at the IPO stage and enjoy redemption rights later, providing a degree of risk mitigation. In addition to participating directly in the IPO, investors may also purchase SPAC shares on the secondary market or participate in PIPE placements. However, the unique structure of SPAC investments also raises several noteworthy concerns.

The institutional design of SPACs allows them to circumvent some of the stringent regulations associated with traditional IPOs. For example, SPACs utilise the “safe harbour” provision for forward-looking statements under the Private Securities Litigation Reform Act (PSLRA), thereby reducing the legal liability of sponsors and underwriters in relation to disclosure. While this mechanism may enhance market efficiency, it also exacerbates information asymmetry and complicates investor protection. The SEC has repeatedly warned that the terms of securities issued to sponsors and PIPE investors often differ from those offered to public shareholders, potentially resulting in further concentration of control and economic benefits.

There is a significant misalignment of incentives within the SPAC structure. Sponsors typically acquire a substantial number of founder shares at minimal cost, enabling them to profit even if the post-merger company performs poorly, while ordinary investors bear greater losses. In addition, PIPE investments and the exercise of warrants may dilute the holdings of existing investors. In terms of market performance, many companies listed via SPACs underperform[5] after the merger, with overall returns lagging significantly behind those of traditional IPOs and major indices. Figure 1.8 compares the performance of three indices namely S&P500, the Defiance Next Gen SPAC Derived ETF(SPAK), and the First Trust US Equity Opportunities ETF(FPX), based on the value of a hypothetical $100 investment from October 2020 to October 2022. As shown in Figure 1.8, between October 2020 and September 2022, SPAK declined by approximately 45%[6], compared to an 11% decline for FPX[7] and a 16% increase for the S&P 500 index over the same period.

[5] This shows the underperformance of deSPACs, which means deSPACs companies have poorer stock market performance relative to broad market indices and IPO benchmarks over the long term.

[6] SPAK tracks the performance of U.S.-listed private companies that became public as a result of a merger with a SPAC.

[7] FPX tracks the performance of the largest and most liquid U.S.-based traditional IPOs.

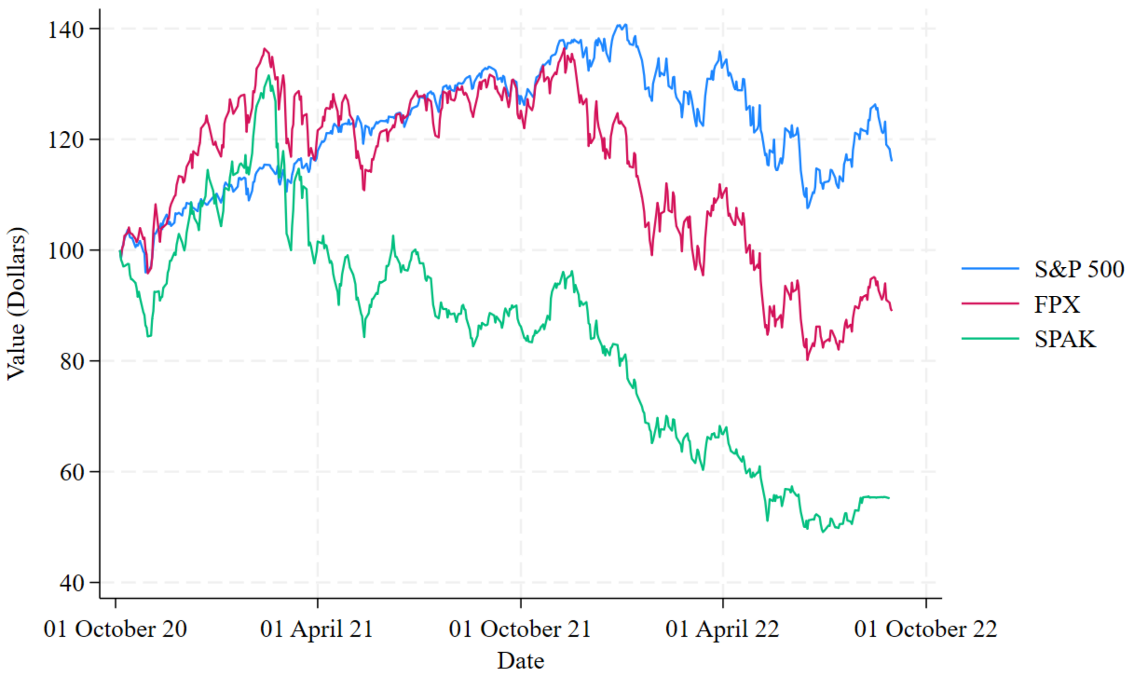

Figure 1.8. Stock Market Performance (Value of $100 Investment), 2020-2022

Note: This figure compares the performance of three indices based on the value of a hypothetical $100 investment from October 2020 to October 2022. The blue line tracks the S&P 500 Index, representing the broad US equity market; the red line tracks the First Trust US Equity Opportunities ETF (FPX), which measures the performance of the 100 largest and most liquid US companies following their IPOs; and the green line tracks the Defiance Next Gen SPAC Derived ETF (SPAK), which follows the Indxx SPAC & NextGen IPO Index, comprising US-listed SPACs and companies that have gone public via SPAC mergers. SPAK ETF was listed on 30 September 2020 and ceased operations on 30 August 2022. The period during which the SPAK ETF was active is used as the sample window for our analysis. Data are obtained from Bloomberg Terminal.

High redemption rates in SPAC transactions and the increased bargaining power of merger targets further exacerbate investor risk. In the second half of 2021, redemption rates for some deals reached as high as 90% and only a small fraction of the anticipated capital was ultimately raised. Meanwhile, SPAC sponsors, underwriters, and insiders are often able to achieve liquidity after the transaction, while ordinary investors face both capital lock-up and dilution pressures.

Therefore, although SPACs offer investors diversified participation routes and certain risk mitigation mechanisms, issues such as structural incentive misalignment, regulatory arbitrage, insufficient disclosure, and poor post-merger performance mean that ordinary investors' actual returns are generally unsatisfactory. As the SEC has emphasised, investors should carefully review SPAC prospectuses and subsequent periodic reports, remain alert to potential dilution, information asymmetry, and incentive misalignment, and make rational decisions in line with their own risk tolerance and investment objectives.

1.2.4.4 Factors for A Successful SPAC

Although most companies resulting from SPAC mergers underperform, some successful cases demonstrate that the long-term performance of SPAC IPOs is closely related to a combination of factors, including target selection, capital structure design, management team capability, incentive mechanisms, market timing, and compliance risk management.

The size, industry position, and growth potential of the target company are of paramount importance. Successful SPAC transactions often select targets with large scale, industry leadership, and clear growth prospects. Research indicates that the higher the enterprise value (EV) to SPAC trust account multiple (EV/Trust Multiple), the better the post-merger share price performance[8]. Large-scale targets can effectively dilute the impact of sponsor shareholdings, attract more PIPE investment and analyst coverage, and enhance market liquidity and valuation stability. For example, in the cases of DraftKings and Vertiv, the target companies were industry leaders with clear growth strategies and sustainable profitability. Conversely, smaller targets with unclear industry positions or limited growth potential often struggle to gain long-term

---

[8] See report by Sia Partners, 2021 via https://www.sia-partners.com/en/insights/publications/spacs-which-factors-lead-merger-success

market recognition.

Capital structure design and dilution control are also critical. The capital structure of a SPAC directly affects investor returns. High dilution rates are a primary reason for the poor performance of many SPAC projects. SPACs with trust cash per share above $7 at the time of merger generally exhibit better subsequent share price performance. Successful SPACs typically reduce dilution by attracting substantial PIPE investment, sponsors voluntarily forfeiting part of their “promote” shares, and optimising warrant structures to protect the interests of ordinary investors. For instance, in the Vertiv SPAC transaction, PIPE investment reached $1.2 billion, significantly alleviating funding pressure from redemptions and enhancing capital structure stability. Statistics show that SPACs with low dilution (i.e., a high proportion of trust cash at merger) achieve significantly better 6- and 12-month returns than high-dilution projects[9].

The professional competence of the management team and the rationality of incentive mechanisms are key to long-term SPAC success. “Operator-led” SPACs (those led by former C-suite executives with extensive industry and public company management experience) outperform other SPACs over the long term. The management team must demonstrate expertise in target selection and deal negotiation, and continue to drive company strategy, governance, and capital market communication post-merger. For example, Collier Creek Holdings (sponsor of Utz) and GS Acquisition Holdings (sponsor of Vertiv) were both led by seasoned industry executives and investment banking teams, providing strategic, capital, and resource support to the target companies. In recent years, some innovative SPACs have optimised incentive structures by limiting sponsor shares, extending vesting periods, and linking rewards to long-term company performance, thereby boosting investor confidence and market performance. Projects in which sponsors voluntarily forfeit part of their incentives and align interests closely

[9] See report by Sia Partners, 2021 via https://www.sia-partners.com/en/insights/publications/spacs-which-factors-lead-merger-success

with PIPE investors tend to exhibit more stable post-merger share prices.

Market timing, industry trends, and compliance risk management are equally important. Successful SPACs are often able to seize industry transformation windows, capitalising on policy tailwinds and favourable sector conditions. For example, DraftKings went public during the wave of sports betting legalisation in the US. Utz benefited from the trend towards healthier snack consumption. Vertiv capitalised on the rapid growth in global data centre infrastructure demand.

As SPAC-listed companies gain greater public market exposure, intellectual property (IP) litigation and compliance risks have also increased significantly. Successful SPAC targets typically possess robust IP management and compliance systems, enabling them to effectively address potential legal and regulatory challenges. For example, Vertiv actively addressed IP litigation before and after the merger, strengthening its technological barriers and compliance framework, and effectively mitigating post-listing legal risks[10].

1.2.4.5 Recent SPAC Regulation Dynamics

During 2020 and 2021, SPAC market experienced extraordinary growth, but this also exposed issues such as regulatory arbitrage, information asymmetry, and insufficient investor protection, raising concerns about the SPAC structure and investor safeguards in deSPAC transactions. In particular, sponsor compensation, potential conflicts of interest, and the dilutive effects on shareholders attract the attention of market observers and the SEC. As SPACs are perceived as a faster and less regulated route to listing compared to traditional IPOs, concerns over investor protection have intensified, prompting the SEC to increase its scrutiny. The SEC has made it clear that its objective is to ensure that the rules governing SPACs are fundamentally consistent with those for traditional IPOs, better aligning sponsor incentives

[10] See IAM Report, 2021 via https://www.iam-media.com/article/ip-litigation-risk-played-big-part-in-completed-spac-transactions-in-2020-breakdown-industry

with those of public investors, and ensuring that investors in deSPAC transactions receive information and protection equivalent to those in traditional IPOs.

In December 2020, the SEC issued CF Disclosure Guidance Topic No. 11[11], providing guidance on disclosure for SPACs during IPOs and subsequent business combinations. The guidance specifically emphasises the need for clear disclosure of potential conflicts of interest involving SPAC sponsors, directors, executives, and their affiliates, including conflicts arising from securities ownership, compensation arrangements, or relationships with affiliated entities. The guidance also addresses the timeframe for completing business combinations and how this may affect negotiations with potential targets.

These initial measures to strengthen disclosure requirements aimed to address regulatory gaps, as SPACs lacked certain specific disclosure obligations compared to traditional IPOs. The intention was to enhance investor protection by ensuring that investors are aware of potential conflicts of interest and economic incentives of SPAC insiders. The guidance also highlights the need to disclose the terms of securities issued to sponsors, which often differ from those offered in IPOs. Notably, the SEC expressed concern over sponsor compensation, noting that their economic interests may diverge from those of public shareholders. The guidance stresses the need to disclose differences between securities held by insiders and those sold in the IPO, and how this ownership structure may incentivise insiders to complete a business combination even if it is not optimal for other shareholders. The SEC recognises the unique economic dynamics of SPACs, where sponsors typically acquire substantial equity for a nominal investment, potentially diluting the returns of other shareholders.

In April 2021, the SEC issued a staff statement on accounting and reporting considerations for SPAC-issued warrants[12]. The SEC raised concerns about the potential accounting

---

[11] See https://www.sec.gov/rules-regulations/staff-guidance/disclosure-guidance/disclosure-special-purpose-acquisition

[12] See https://www.sec.gov/newsroom/speeches-statements/accounting-reporting-warrants-issued-spacs

implications of certain common warrant terms, suggesting that these may require classification as liabilities rather than equity on the SPAC's balance sheet. This view differed from the historical accounting treatment adopted by many SPACs[13]. The SEC staff focused on the indexation of warrants to the entity's own shares and the possibility of cash settlement based on events outside the entity's control.

The SEC's statement on warrant accounting had a significant impact on the SPAC market. It prompted many SPACs and post-SPAC companies to reassess their accounting treatment of warrants and, in many cases, to restate previously issued financial statements. The SEC staff also indicated that pending registration statements for SPAC transactions would not be declared effective until warrant accounting issues were resolved, resulting in delays to IPOs and deSPAC transactions. The SEC's scrutiny of warrant accounting also underscored its broader focus on the accounting and internal controls of SPACs and their target companies.

Subsequently, in 2024, the SEC adopted final rules amending Regulation S-K to introduce Subpart 1600, specifically for SPACs[14]. Under the new S-K Item 1603(a), detailed disclosure is required in registration statements and schedules relating to SPAC IPOs and deSPAC transactions regarding the SPAC sponsor, its affiliates, and any persons involved with the sponsor. These disclosures include the sponsor's experience, key roles and responsibilities, and any agreements, arrangements, or understandings between the sponsor and the SPAC, its executives, directors, or affiliates regarding whether to proceed with a deSPAC transaction. Disclosure is also required of the sponsor's controlling persons and any individuals who directly or indirectly hold significant interests in the sponsor. Unlike the proposed rules, the final rules take into account the potential returns from increases in sponsor share prices and

---

[13] See https://www.pillsburylaw.com/en/news-and-insights/sec-staff-statement-on-accounting-issues-for-spac-warrants.html

[14] See https://www.sec.gov/resources-small-businesses/small-business-compliance-guides/special-purpose-acquisition-companies-shell-companies-projections

require disclosure of the number of securities issued or to be issued to the sponsor, its affiliates, and the sponsor itself, as well as the price paid or to be paid for such securities. To avoid speculation about sponsor compensation, disclosure is also required of any mechanisms designed to maintain the sponsor's ownership at a certain level and any additional shares that may be issued to the sponsor. Furthermore, the material terms of any lock-up agreements with the sponsor and its affiliates must be disclosed in tabular form.

The new S-K Items 1602 and 1604 require additional disclosure of potential sources of dilution, including sponsor compensation, underwriting fees, shareholder dilution, unexercised warrants, convertible securities, and PIPE financing. For SPAC IPOs, new S-K Item 1602(b) requires disclosure of a range of information related to potential business combinations, including how targets are identified, whether shareholder approval is required, the expected timeline for completing the transaction (including any possible extensions), and related plans.

New S-K Item 1605 requires disclosure of the background, material terms, and effects of the deSPAC transaction, as well as the material interests of SPAC sponsors in the deSPAC or any related financing, and any redemption or appraisal rights of SPAC security holders. S-K Item 1606 requires disclosure of whether the SPAC board has determined that the deSPAC transaction is advisable and in the best interests of the SPAC and its shareholders, and the key factors considered in making this decision. This is only required where such a decision is mandated by the SPAC's jurisdiction of organisation. Any disclosure on board decision must be accompanied by a discussion of the key factors considered by the board. S-K Item 1607 requires disclosure of whether the SPAC or sponsor receives any reports, opinions, or appraisals from external parties or unaffiliated representatives in connection with the deSPAC transaction. The SEC also adopts new Securities Act Rule 145a, providing that any direct or indirect business combination involving a reporting shell company (including a SPAC) and a non-shell company is deemed a sale of securities to the reporting shell company's shareholders. In addition, the target company in a deSPAC transaction must co-register with the SPAC, thereby assuming responsibility for the disclosures in the registration statement.

Of particular importance, the SEC revises the definition of "blank cheque company" to include SPACs, thereby removing the safe harbour for forward-looking statements under the Private Securities Litigation Reform Act of 1995. The SEC strengthens disclosure requirements for financial projections, mandating detailed disclosure of the purpose, preparer, material bases and assumptions underlying the projections, and whether they reflect the views of the SPAC or target company management or board. deSPAC transaction disclosure documents must be distributed to shareholders at least 20 calendar days in advance. Furthermore, post-deSPAC companies are required to reassess their status as a Smaller Reporting Company (SRC). The prospectus cover page must disclose key information in plain English, including the timing of the deSPAC transaction, redemption, sponsor compensation, dilution, and conflicts of interest. In addition, the financial statement requirements for business combinations involving SPACs and target companies align more closely with those for traditional IPOs. Finally, SPACs are required to tag disclosures in Inline XBRL format in accordance with Regulation S-K Subpart 1600.

Table 1.3 summarises the timeline of SPAC regulation since 2020. The central logic behind the recent evolution of SPAC regulation in the United States is to cover the regulatory gaps left for regulatory arbitrage, address information asymmetries and the inadequate investor protection that came to light during the SPAC boom. In their totality, these reforms could be viewed as SEC's effort to increase the transparency and accountability of SPAC transactions and thus position the regulatory regime more closely relative to that applicable to traditional IPOs.

Table 1.3. Timeline of SPAC Regulation Since 2020

Year	Key Regulatory Event	Description
2020	CF Disclosure Guidance: Topic No. 11[15]	Emphasised disclosure considerations

[15] See https://www.sec.gov/newsroom/whats-new/cf-disclosure-guidance-topic-special-purpose-acquisition-companies

		regarding conflicts of interest in SPAC IPOs and business combinations.
2021	Staff Statement on Accounting and Reporting Considerations for Warrants Issued by SPACs[16]	SEC focused on the accounting treatment of SPAC-issued warrants, issuing guidance that may require classification as liabilities rather than equity.
2022	SEC Proposed Comprehensive SPAC Reform[17]	Aimed to strengthen disclosure and accountability in SPAC IPOs and deSPAC transactions.
2024	SEC Adoption of Final Rules[18]	Enhanced investor protection, aligning SPAC regulation more closely with traditional IPOs. Effective on July 1, 2024.

Note: This table outlines the major regulatory developments affecting the SPAC market in the United States since 2020. The information is compiled from official SEC releases and regulatory reports.

1.2.5 SPAC in Other Financial Markets

The global SPAC market has undergone significant development in recent years. The United States leads this trend as the most mature market. Singapore, Hong Kong, and Europe rapidly emerge as important participants as well, each with a unique regulatory approach and market dynamics. This section puts SPACs in other financial markets into perspective, comparing them to the U.S. market and examining how they are further developing in the more significant context of global SPACs.

---

[16] See https://www.sec.gov/newsroom/speeches-statements/accounting-reporting-warrants-issued-spacs

[17] See https://www.sec.gov/newsroom/press-releases/2022-56

[18] See https://www.sec.gov/newsroom/press-releases/2024-8, and https://www.sec.gov/files/rules/final/2024/33-11265.pdf

1.2.5.1 SPAC in Singapore

The Singapore Exchange (SGX) formally introduced SPAC listing rules in September 2021, becoming one of the first major Asian exchanges to permit SPAC listings[19]. As early as March 2021, SGX released a consultation paper on the primary SPAC listing framework, seeking public feedback. The final framework was formulated after careful consideration of input from a wide range of industry participants, including banks, law firms, auditors, and venture capital funds.

Key features of the Singapore SPAC listing regime include: a minimum market capitalisation requirement of SGD 150 million (initially proposed at SGD 300 million), which is consistent with the minimum market capitalisation standard for traditional IPOs on SGX. Sponsor requirements include subscribing for at least 2.5% to 3.5% of IPO shares (depending on market capitalisation), with total sponsor holdings at IPO not exceeding 20%. The deSPAC must be completed within 24 months of the IPO, with a possible extension of 12 months subject to certain conditions. Extensions require approval from SGX and 75% of shareholders (excluding sponsors and management). Investor protection measures include the mandatory deposit of at least 90% of IPO proceeds in a trust account, redemption rights for all independent shareholders, and a 20% cap on sponsor equity. The rules also incorporate risk control measures, such as preventing excessive dilution of shareholders by sponsors and avoiding hasty acquisitions of target companies by shell entities, which are lessons drawn from the U.S. SPAC market. Any SPAC merger must provide “prospectus-level disclosure” at the time of target acquisition and submit a shareholder circular to SGX for review, ensuring transparency[20].

---

[19] See http://ifcreview.com/articles/2022/june/spacs-in-singapore-a-look-into-the-pioneering-sgx-listed-spacs/

[20] See https://www.pinsentmasons.com/out-law/news/singapore-exchange-allows-spac-listings

1.2.5.2 SPAC in Hong Kong

The Hong Kong Stock Exchange (HKEX) launched its SPAC listing regime on 1 January 2022, following a market consultation in September 2021. Although shell companies were historically prohibited from listing, the new regime aims to attract issuers, investors, and capital from Greater China and the Asia-Pacific region[21].

Hong Kong adopts a cautious regulatory approach to SPACs, with key features including[22]: a minimum IPO fundraising amount of HKD 1 billion. Prior to the initial public offering, subscription and trading are restricted to professional investors. The minimum trading unit for SPAC shares is HKD 1 million. A SPAC must distribute at least 75% of the securities it issues for its initial listing to Institutional Professional Investors, and the securities it issues for its initial listing to a minimum of 75 Professional Investors, of which 20 must be institutional professional Investors. At least one sponsor must be a Hong Kong SFC-licensed corporation (Type 6 or Type 9 licence) holding at least 10% of sponsor shares. The board must include at least two SFC-licensed individuals. The deSPAC target must have a fair market value of at least 80% of the IPO fundraising amount. The target company must be announced within 24 months of listing and the transaction completed within 36 months. Investor protection measures include the requirement that 100% of IPO proceeds be held in a segregated trust account established in Hong Kong and managed by a qualified trustee or custodian, ensuring the security and proper use of funds. Only shareholders voting against the merger have redemption rights, and independent PIPE investment is mandatory. The deSPAC transaction is effectively treated as a new listing application.

---

[21] See https://www.sidley.com/en/insights/publications/2022/01/sidley-spac-insights-new-listing-regime-for-spacs-in-hong-kong

[22] See https://www.ogier.com/news-and-insights/news/hong-kong-updates-listing-regime-for-spacs-from-1-january-2022/

1.2.5.3 SPACs in Europe

SPAC activity in Europe is mainly concentrated on Euronext Amsterdam, with some presence on the Frankfurt Stock Exchange and Euronext Paris. SPACs entered Europe around 2007, when Pan-European Hotel Acquisition Company (PEHAC) listed on Euronext Amsterdam.

The regulatory framework of Euronext Amsterdam is similar to that of the United States[23], offering considerable flexibility. Listing requires a prospectus approved by the Dutch Authority for the Financial Markets (AFM). The minimum free float is 25%. Business combinations require shareholder approval. Redemption rights are typically linked to voting against the merger. Sponsor equity is usually capped at 20%. Warrants are commonly issued at IPO. Following the SPAC IPO boom in the United States, Euronext Amsterdam also saw an explosive increase in SPAC IPOs in 2021.

It is worth noting that, compared to the United States, SPACs in some European countries face a more rigid regulatory environment, and legal structure issues increase the complexity of establishment. For example, in Germany and other jurisdictions, SPACs may be classified as either companies or investment funds (each subject to different regulations), making the set-up process more complicated[24]. In addition, fiscal frameworks (such as negative interest rates on euro-denominated trust accounts) add further complexity, requiring additional “risk capital” to cover costs[25]. As a result, some European SPACs choose to list in New York to benefit from more favourable regulation, indicating a preference among investors for the more familiar U.S. SPAC. U.S. SPACs continue to provide important capital sources and a more mature listing

---

[23] See https://www.afm.nl/~/profmedia/files/onderwerpen/afm-market-watch/afm-market-watch-5-spacs.pdf?sc_lang=nl-nl&hash=A2FCBACDA57064899361E1446327D826

[24] See https://www.reuters.com/article/us-spacs-europe/europe-set-to-tiptoe-into-spac-land-as-shell-company-deal-pipeline-builds-idUSKBN28E0R6/

[25] See https://www.lexology.com/library/detail.aspx?g=29225bb9-7d57-40d0-8be1-02c38f69756c

route for European companies, especially in sectors such as technology. Overall, the European SPAC ecosystem still lags that of the United States.

1.2.5.4 Discussion

Across major global financial markets, all jurisdictions require minimum capitalisation or fundraising thresholds, impose requirements on sponsors, and set timelines for completing the deSPAC process. Investor protection is a central focus in all regions, including the use of trust accounts and redemption rights. The differences lie in the regulatory approach: Hong Kong adopts a more stringent regime, with the highest minimum fundraising requirement and an emphasis on quality over quantity. Mandatory PIPE investment in Hong Kong adds an additional layer of investor validation. Most Hong Kong SPAC applicants have mainland China backgrounds. The close ties between Hong Kong and mainland China make it an attractive destination for Chinese companies seeking SPAC listings, especially as U.S. regulatory scrutiny intensifies. In contrast, Singapore's lower minimum market capitalisation and more relaxed, U.S.-aligned approach allow for retail investor participation. Europe, represented by Amsterdam, offers a more flexible regime, with rules closely resembling those of the United States. Table 1.4 compares the main features of SPACs in the United States, Singapore, Hong Kong, and Europe.

Table 1.4. Comparison of SPAC Regulation

Aspect	United States	Singapore	Hong Kong	Europe (Amsterdam)
Minimum Capital Raised	Varies by exchange (e.g., \$50m–\$100m)	\$150m (approx. \$111.6m)	HK\$1bn (approx. \$128m)	Not Specified
Investor Eligibility (Pre-deSPAC)	All investors	All investors	Professional investors only	Mainly institutional investors
Sponsor Requirements	No specific requirements	No specific requirements	At least one SFC-licensed (Securities	No specific requirements

			& Futures Commission) firm	
Timeframe for Acquisition	Typically 18-24 months	24 months	36 months	Typically 24 months
Escrow/Trust Account	Typically 90–100%	At least 90%	At least 90%	At least 90%
Redemption Rights	Generally for all shareholders	All independent shareholders	Only shareholders voting against the merger	Generally linked to voting rights
Mandatory PIPE Investment	Not mandatory, but common	No mandatory requirement	Yes, depending on the valuation tier of the deSPAC target	No specific requirement
Sponsor Promote Cap	Typically 20%	Up to 20%	Up to 20%	Typically 20%

Note: This table compares the principal regulatory requirements for SPACs across four major jurisdictions, namely the United States, Singapore, Hong Kong, and Europe (Amsterdam). Key aspects include minimum capital raised, investor eligibility, sponsor requirements, acquisition timeframes, escrow or trust account provisions, redemption rights, PIPE investment requirements, and sponsor promote caps. The information is based on official regulatory documents, exchange rules, and market practice.

1.3 Literature Review on SPAC

1.3.1 Theoretical Foundations

The theoretical foundations and mechanism design of SPACs are central to understanding their market behaviour and economic consequences. The theoretical underpinnings of SPACs span multiple dimensions, including security design, incentive mechanisms, behavioural finance, market structure, and information intermediation. These theories not only complement each other in explaining why SPACs can rapidly develop under specific market conditions, but also provide a solid basis for subsequent empirical research and policy formulation.

Early theories on security design lay the groundwork for the structure of SPACs. Chemmanur and Fulghieri (1997) proposes the “unit IPO” theory, suggesting that high-risk firms tend to issue stock units bundled with warrants to achieve signalling and risk-sharing objectives. This theory provides a rationale for the later widespread use of warrants in SPAC structures.

Building on this, Chatterjee et al. (2016) emphasises the role of warrants and equity incentives in governance structures. Through a theoretical model, they systematically explain why SPACs commonly adopt unit issuance and how the allocation of equity and warrants in founder contracts is determined. Their model shows that warrants not only constrain founders' incentives to select high-risk targets, but also, through equity grants, pre-set the discount level of SPAC IPOs. This theory deepens the understanding of incentive compatibility mechanisms in SPACs. Banerjee and Szydlowski (2024), from a behavioural finance perspective, constructs a theoretical model to reveal how investor overconfidence affects SPAC market dynamics. They find that when investors are overconfident in their ability to process information, redeemable shares and warrants in SPACs tend to be overvalued, leading to excessive investment in low-quality targets. This model explains the differences in short-term and long-term returns for SPAC investors and provides a theoretical basis for policymakers to assess the effectiveness of different interventions.

From the perspective of regulatory arbitrage, Bai et al. (2023) proposes a market structure theory of SPACs as non-bank intermediaries. They find that the SPAC market attracts high-risk, high-growth firms that are often overlooked by traditional underwriters, and that the rise of SPACs is closely related to increased litigation risk in the IPO market. This theoretical perspective helps explain why SPACs can expand rapidly under certain market conditions. Alti and Cohn (2023) introduces an informed intermediation model, highlighting that SPAC sponsors act as key information producers in environments with high information asymmetry through acquisition and resale mechanisms. Their model suggests that SPACs can reduce information asymmetry in the listing process via acquisition price signals, which echoes the empirical findings of Naumovska and Harmon (2024) regarding founders' informational advantages and communication strategies.

Lewellen (2009) systematically analyses SPACs as an asset class, finding that their lifecycle and returns are highly predictable, with a market beta close to one despite relatively high leverage. This provides a theoretical foundation for understanding the systematic risk and investment attributes of SPACs. Gryglewicz et al. (2022) views SPACs as “PE for the Public,” arguing that the SPAC mechanism is more effective than the traditional PE-IPO route in screening high-quality acquisition targets, especially in industries with severe information asymmetry. This theory helps explain why SPACs are more popular in technology and intangible asset-intensive sectors.

In addition, Shachmurove and Vulanovic (2017) and Berger (2008) review the historical evolution and mechanism development of SPACs, tracing their transformation from eighteenth-century “blank cheque” entities to modern financial innovations, and highlighting their adaptability and innovativeness in different market environments. Dimitrova (2017) characterised SPACs as “private equity funds for the poor,” emphasising the impact of their incentive structures on long-term performance.

1.3.2 SPAC Sponsor and the Agency Problem

The characteristics and incentives of SPAC sponsors, and the resulting agency conflicts, are central to understanding market outcomes and investor protection in SPAC. The literature in this area can broadly be grouped into two strands: studies that highlight the prevalence and consequences of agency problems, and those that identify mechanisms or contexts in which sponsor-investor alignment is achieved, thereby mitigating such conflicts.

A substantial body of research underscores the agency problems inherent in the SPAC structure. Dimitrova (2017) provides compelling evidence that distorted sponsor incentives (particularly as the merger deadline approaches, or where deferred underwriting fees and deals near the regulatory threshold are involved) lead to poorer post-merger performance. Luo and Sun (2022) further develop a dynamic model, demonstrating that as the deadline looms, sponsors become increasingly inclined to pursue suboptimal or low-quality acquisitions, while investors respond by exercising redemption rights. This theoretical framework explains the empirical prevalence of “last-minute mergers” and high redemption rates, and highlights the persistent misalignment of interests between sponsors and public shareholders. Feng et al. (2023) reinforce this perspective, showing that agency costs are pervasive and materially erode investor welfare, with return differentials of up to 19%. Their findings suggest that superficial restrictions, such as limiting warrant issuance, are insufficient to address the underlying incentive misalignments.

The literature also identifies factors that can mitigate agency conflicts and promote sponsor-investor alignment. Several studies emphasise the importance of sponsor reputation and social capital. Pawliczek et al. (2024) and Del Giudice and Signori (2024) both find that sponsor reputation (whether derived from prior SPAC experience, private equity backgrounds, or market standing) can act as a soft governance mechanism, constraining opportunistic behaviour and improving post-merger outcomes. Notably, Del Giudice and Signori (2024) show that private equity sponsors, due to reputational concerns, are more selective in target choice, resulting in fewer but higher-quality mergers. Lin et al. (2021) and Haniffa et al. (2022) extend this argument, demonstrating that sponsors with extensive networks and social capital are better positioned to source attractive deals and secure favourable financing, thereby enhancing merger success rates and post-merger returns. These findings supplement the traditional perspectives of incentives and reputation, emphasising the role of social networks and soft resources in SPAC success.

International evidence further illustrates the potential for effective contract design to align sponsor and investor interests. Chiang et al. (2025a), examining the Korean SPAC market, find that more balanced incentive structures (such as those linking sponsor rewards to long-term performance) are associated with superior post-merger outcomes, in contrast to the US market where misalignment remains prevalent. This suggests that regulatory and contractual innovations can play a critical role in mitigating agency problems.

Taken together, the literature reveals a nuanced picture. While agency conflicts are endemic to the SPAC model, their severity and consequences are contingent on sponsor characteristics, reputational constraints, social capital, and, crucially, the design of incentive mechanisms. Studies consistently indicate that where sponsor and investor interests are better aligned (through reputation, network effects, or contractual innovation) post-merger performance and investor protection are significantly enhanced. Conversely, where misalignment persists, agency costs are substantial and investor outcomes are compromised.

1.3.3 Information Disclosure and Forward-looking Projections

Information disclosure and forward-looking projections hold unique importance in the SPAC market. Due to the distinctive nature of the SPAC listing process, issues of information asymmetry and signalling are particularly pronounced. The literature analyses, both theoretically and empirically, the effects of disclosure and forecasting behaviour on investor decision-making and market outcomes. On the one hand, SPAC firms commonly use forward-looking projections and voluntary disclosures to attract investors, especially retail participants. On the other hand, overly optimistic forecasts and insufficient disclosure may lead to investor misjudgement and poor market performance. Derivative securities such as warrants provide more effective information signals to the market, while theoretical analyses of information asymmetry and communication strategies offer a solid foundation for understanding signalling and investor behaviour in SPAC financing.

Forward-looking projections are a salient feature of SPACs, and research reveals both a tendency towards optimism and heterogeneity in investor responses. Blankespoor et al. (2022) analyses performance forecasts in SPAC mergers, showing that 80% of SPAC firms provide, on average, four years of forecasts at the time of merger, but only 35% achieve or exceed these projections. The longer the forecast horizon, the lower the probability of achievement, and nonserial sponsors exhibit greater forecast bias. Compared to traditional IPOs and matched firms, SPACs’ revenue growth forecasts are on average three times higher, with long-term projections being especially optimistic. After the merger, SPAC firms reduce the frequency of forecasts, becoming more similar to traditional IPO companies. This evidence supports concerns among market participants and regulators regarding the excessive optimism of SPAC projections. Dambra et al. (2022, 2023) further find that the compound annual growth rate of SPAC revenue forecasts is positively associated with abnormal returns during the merger announcement window, retail trading, and social media activity (such as on Twitter/X), but has limited impact on institutional investors and traditional information intermediaries. Higher forecasted growth rates not only predict worse future operating and stock performance, but also correlate with increased class action risk. These findings support the SEC's concerns that aggressive SPAC projections attract retail investors but ultimately harm their interests. Castellani et al. (2024) focus on investor responses to voluntary SPAC disclosures, finding that optimistic guidance significantly increases retail buying pressure, more so than for institutional investors. Although some investors are able to identify risks and exit at the redemption date, the market as a whole fails to fully recognise the risks of optimistic forecasts, resulting in significantly poorer performance for these SPACs in the two years following the merger, with institutional investors also tending to reduce their holdings. Chapman et al. (2021) analyse the legal and market implications of forward-looking SPAC disclosures. They find that greater inclusion of forecasts in merger announcements is associated with positive announcement returns, post-announcement drift, lower redemption rates and bid-ask spreads, and increased retail buying, but do not find evidence that forecasted growth rates are linked to return reversals. Overall, forward-looking disclosure does not mislead retail investors, and forecasted sales growth is positively related to returns at the first post-merger earnings announcement.

Recent research reveals further aspects of information efficiency and investor behaviour in the SPAC market. Chu (2023) examines risk factor disclosure in SPAC merger documents, finding that SPACs disclosing more specific risk information experience higher redemption rates, indicating that investors withdraw capital in response. This effect is more pronounced in SPACs with PE/VC sponsors or less experienced CEOs, and with higher retail ownership. Moreover, specific risk disclosure is associated with increased post-merger stock volatility, but reduces the probability of large net income declines, suggesting that while investors use risk information in their decisions, they may also overreact. Nohel (2024) focuses on the information content of SPAC securities (shares, warrants, rights), finding that the prices of warrants and rights reflect the true value of merger transactions more effectively than share prices, and that warrant prices can predict future redemption rates. Due to the existence of shareholder redemption rights, the information content of SPAC shares is diminished, while non-redeemable securities such as warrants provide more effective signals to the market.

Furthermore, Hori and Osano (2024) use a theoretical model to compare SPACs and traditional IPOs in terms of information production and resource allocation efficiency. They show that unless the traditional IPO process is extremely lengthy and costly, IPOs are superior to SPACs in terms of information efficiency. When the average quality of firms seeking to go public declines, SPAC acquisitions become more likely. This finding explains the relative advantage of SPACs during market downturns or periods of high uncertainty, and why SPACs are more popular in certain market environments. This is consistent with Kolb and Tykvová (2016), who find that SPACs tend to emerge during weak and volatile IPO markets, and are more often used by small, highly leveraged, low-growth firms, which subsequently underperform the market, industry, and comparable IPO firms in the long run. This market timing and the function of SPACs as a listing channel for “second-best” firms are closely related.

Besides, information asymmetry and communication strategies play an important role in SPAC financing. Naumovska and Harmon (2024) argue that when founders possess informational advantages, actively conveying high-quality signals facilitates successful fundraising; when both founders and investors face high uncertainty, acknowledging uncertainty can actually lead to better financing outcomes. Empirical analysis supports this theory and enriches the understanding of information production and communication mechanisms in SPACs.

1.3.4 Market Performance and Investor Behaviour

The market performance of SPACs and their impact on different types of investors attract considerable attention from both academia and practitioners. The literature reveals the overall and segmented returns of SPACs, as well as analyses in depth how investor structure, market sentiment, and behavioural biases affect SPAC outcomes.

Barth et al. (2022) conduct evaluation of 299 SPAC mergers from 2013 to 2021, finding that SPACs exhibit low market-adjusted buy-and-hold abnormal returns and risk-adjusted abnormal returns, with the proportion of warrants issued being the main driver of deSPAC returns. This finding is consistent with Finne and Haga (2024), who show that SPACs with high warrant coverage tend to be of lower quality, have higher merger premiums, but perform worse post-merger, indicating a close relationship between warrant design and market performance. Vulanovic (2017) focuses on the survival rate of SPACs after mergers, finding a failure rate as high as 58.09%, which exceeds that of typical IPO firms. Pre-merger commitments and initial market performance increase the likelihood of survival, while high transaction costs and cross-border mergers raise the risk of failure, highlighting the importance of governance structure and market environment for the long-term viability of SPACs.

Kiesel et al. (2022) examine market reactions following SPAC merger announcements, finding a short-term announcement return of +7.4%, but abnormal returns of -14.1% and -18.0% after one and two years, respectively. The longer the time from IPO to announcement, the lower the short-term return. This result is consistent with Anconetani et al. (2023), who find that SPACs underperform matched IPO groups in both operations and stock market performance, with longer merger execution times associated with worse outcomes. Jenkinson and Sousa (2011) find that more than half of approved SPAC transactions immediately destroy value, suggesting that investors should pay close attention to market perceptions of proposed deals. Papathanasiou et al. (2022), using high-frequency data, analyse volatility spillovers between SPACs, traditional IPOs, merger arbitrage, hedge fund replication strategies, and equities, finding that the SPAC market responds relatively neutrally to external shocks, with moderate and stable levels of volatility spillover, indicating that SPACs can provide diversification benefits to investment portfolios.

Regarding post-merger performance and the listing outcomes of target companies, both Klausner et al. (2022) and Hansen (2024) show that investors generally suffer significant losses after the merger. Hansen (2024) reports that, one year after listing, SPAC target companies underperform the market by an average of 45 percentage points and lag traditional IPO firms by 25 percentage points. Klausner et al. (2022) attribute this to the actual costs of SPAC listings being much higher than commonly assumed. Gahng et al. (2023) support this view, comparing the costs and returns of SPACs and traditional IPOs, and finding that SPAC listing costs are much higher. Although SPAC IPO investors and sponsors achieve high returns, post-merger company investors experience extremely low market-adjusted returns, with high redemption rates limiting investor losses.

Whether the target company has PE/VC backing significantly affects SPAC market performance. Williams (2023), using machine learning methods, finds that SPACs with PE-backed targets perform better one year after the merger, suggesting that target characteristics are important for market outcomes. Huang et al. (2023), however, reach the opposite conclusion, noting that although the number of SPACs and IPOs surged in 2021, the market collapsed rapidly in 2022, and VC-backed deSPAC companies performed poorly in the long run. Groh et al. (2025) further support this conclusion, comparing VC-backed firms exiting via SPACs or traditional IPOs. They find that, compared to IPOs, VC-backed firms exiting through SPACs are smaller, less profitable, and of lower overall quality. More importantly, VC-backed SPAC merger targets significantly underperform both non-VC-backed SPAC targets and standard IPO groups, exhibiting pronounced long-term disadvantages. The authors suggest that this reflects VCs potentially exploiting the relatively lax regulation and limited investor sophistication in the SPAC market to package lower-quality ventures as attractive merger targets, thereby undermining overall SPAC market performance.

Factors such as market sentiment and the pandemic also influence SPAC performance. Bui and Hwang (2024) find that SPAC activity increased significantly during the COVID-19 pandemic (2020–2021) and is positively correlated with market sentiment. During periods of high market sentiment, investors are more willing to invest in high-risk, speculative SPACs, reflecting the role of market timing and investor psychology in driving SPAC expansion. This is consistent with the theoretical model of Banerjee and Szydlowski (2024), who argue that investor overconfidence leads to excessive investment in low-quality targets and overall underperformance. Kang and Lee (2023, 2024), using the Korean market as a case study, review the evolution of SPACs since their introduction in 2010 and the impact of the pandemic. In Korea, the probability of SPAC mergers declined after the pandemic, but those that did merge achieved higher announcement returns, and SPACs performed relatively better during market downturns. In the later period, merger success rates fell, merger premiums rose, and completion times lengthened, indicating that regulation and market environment have a significant impact on SPAC performance.

Overall, SPACs tend to underperform traditional IPOs, with warrant design, sponsor incentives, market sentiment, and investor structure jointly shaping SPAC returns and risks. While SPAC merger announcements may generate positive short-term returns, long-term performance is generally poor. Investor behaviour and market environment play a crucial role in SPAC outcomes.

1.3.5 Regulatory Environment

The regulatory environment of SPACs is crucial for understanding their boom-bust cycles, investor protection, and market efficiency. The literature emphasises that only with effective regulation and high-quality disclosure can SPACs realise their potential as innovative financing vehicles, while also protecting investors and maintaining market fairness and efficiency.

Legal risks and regulatory controversies surrounding SPACs become a focal point of recent research. Coates (2022) provides an in-depth analysis of common misconceptions in the legal environment of SPACs, arguing that the SPAC boom partly stems from misunderstandings about their legal and regulatory attributes, including myths regarding forecast disclosure, liability exemptions, and SEC registration processes. In reality, the litigation rate for deSPACs has surpassed that of traditional IPOs since 2021, indicating that SPACs do not, as some market participants claim, avoid legal risks. Coates (2022) stresses that complex financial legal innovations make the SPAC market more susceptible to “deep fraud,” and that regulators should strengthen the interpretation of legal uncertainties and guide market expectations to curb distortions and asset bubbles. Klausner et al. (2022), from the perspective of structural costs and investor protection, call for the SEC to establish clearer disclosure requirements for SPAC mergers, enhance transparency, and balance regulatory differences between SPACs and IPOs. They find that the net cash per share at the time of a SPAC merger is far below the $10 face value at IPO, that hidden costs in SPAC structures are much higher than in traditional IPOs, and that these costs are mainly borne by investors holding shares at the time of the merger, while sponsors reap substantial profits. Post-merger, investors generally suffer significant losses. Strengthening disclosure and regulation can help reduce information asymmetry and agency conflicts, thereby improving market fairness. Chapman et al. (2021) address the legal controversy over forward-looking SPAC disclosures, finding that forecast information in SPAC merger announcements does not mislead retail investors and is associated with positive announcement returns and subsequent return drift. This empirical evidence challenges regulatory concerns that SPACs exploit disclosure exemptions for “hype,” suggesting that regulatory policy should balance investor protection and market efficiency. Bai et al. (2023), from a regulatory arbitrage perspective, reveal that the rise of the SPAC market is closely related to increased litigation risk in the IPO market. As non-bank intermediaries, SPACs provide a listing channel for high-risk, high-growth firms overlooked by traditional underwriters. Changes in the regulatory environment directly affect the market share and structure of SPACs and traditional IPOs.

Hemmings and Jaafar (2025) further illustrate the profound impact of regulatory policy changes on the SPAC market. Using the JOBS Act as an example, they find that although the Act aimed to reduce the direct costs of traditional IPOs, it did not achieve this as expected. Instead, it significantly reduced the direct costs for SPAC IPO sponsors. Since SPACs have no actual operating business at the time of IPO, they are better positioned to exploit the disclosure and compliance exemptions of the JOBS Act, thereby lowering costs and increasing their attractiveness to sponsors. Empirical analysis shows that SPAC activity surged after the implementation of the JOBS Act, but post-listing market performance deteriorated, indicating that regulatory innovation may lead to unintended incentive distortions and market consequences.

Moreover, the market’s response to regulatory signals is complex, and different policies have varying effects on SPAC market structure and trading behaviour. Akdogu et al. (2022) study the impact of the SEC's first official intervention targeting SPACs. Although the market generally feared that tighter regulation would have a major negative impact, empirical results do not support this hypothesis. Notably, although regulation directly targeted warrant accounting, the presence of warrants actually has a positive effect on announcement returns, indicating the complexity of market responses to regulatory signals. The study also finds that certain SPAC characteristics (such as warrant design) are associated with poorer returns in multivariate analysis, suggesting that regulatory policy should pay attention to the potential risks of structural incentives. Hepfer et al. (2023) focus on tax issues in SPAC transactions, finding that cross-border SPAC deals often suffer from tax disadvantages, leading to lower announcement returns and less PIPE investment. Since sponsors do not directly bear tax costs, there is a moral hazard. This finding suggests that as domestic U.S. targets become scarcer, tax regulation and investor protection in cross-border SPAC transactions will become increasingly important. From the perspective of market evolution, Berger (2008) points out that SPACs have evolved from a "stopgap" used only in weak markets to an innovative listing vehicle suitable for both bull and bear markets, with ongoing improvements in regulation and market mechanisms driving the mainstreaming of SPACs.

1.3.6 Internationalisation and Specialisation of SPACs

With the increasing globalisation and segmentation of the SPAC market, scholars have conducted in-depth research on its international expansion, cross-border mergers and acquisitions, and specialisation in areas such as ESG, green, energy, and Islamic finance, which reveal the performance, challenges, and opportunities of SPACs across different countries and market segments.

On one hand, the internationalisation and cross-border SPACs. Chiang et al. (2025b) compare the performance of domestic and foreign SPACs in the U.S. market, finding that foreign SPACs have weaker fundraising capacity in IPOs and PIPEs and higher redemption rates, mainly due to their limited networks in the U.S. market, which leads to competitive disadvantages. This finding highlights the structural barriers faced by international SPACs in local markets. Emm et al. (2024) further analyse cross-border SPAC mergers, using a sample of 1,737 SPAC IPOs and 537 cross-border mergers from 2003 to 2022. They find that SPACs targeting foreign companies are less likely to complete mergers quickly, and those targeting China and other emerging markets experience the worst announcement and long-term returns. Across all SPAC mergers, market-adjusted post-merger returns are generally poor, and country-level factors such as investor protection and accounting standards significantly affect post-merger performance. In particular, SPACs targeting Chinese firms perform the worst one year after the merger, while those targeting other emerging markets perform relatively better.

On the other hand, the specialisation of SPACs, mainly in green, energy, ESG, and Islamic finance. Specifically, specialised SPACs in this context refer to vehicles that adopt a stricter, distinctive thematic mandate or specific structural compliance requirements. These vehicles explicitly narrow their target universe. Dimic et al. (2024) study green SPACs and find that IPO size is influenced by CEO characteristics, exchange choice, and stakeholder expertise. Announcement returns during mergers range from 6% to 12%, but post-merger returns quickly turn negative (from -1% to -9%) and decline further over time. The speed of green SPAC IPOs is related to the concentration of legal advisors, indicating that specialised SPACs have unique structural and performance patterns. Dimic et al. (2023) focus on energy SPACs, analysing the success factors for energy SPACs from 2003 to 2022. They find that merger speed and reputable underwriters are the main indicators of success, while female directors and foreign CEOs reduce the probability of success. This provides practical guidance for investors and entrepreneurs in the energy transition sector. Dimic et al. (2025) further find that energy SPACs exhibit positive returns at the merger announcement, but both merger and long-term returns are negative, indicating that while energy SPACs may be attractive in the short term, they face persistent challenges in long-term performance and governance. Datar et al. (2023) focus on ESG SPACs, finding that only half of ESG SPACs ultimately complete mergers with ESG firms, and that ESG SPACs underperform non-ESG SPACs in both operations and market performance, with one-year post-merger excess returns being 11.6% lower. This suggests that the ESG label does not automatically translate into better performance, and investors should be cautious of “greenwashing” risks.

Regarding the applicability of SPACs in Islamic finance, the traditional SPAC structure, due to its lack of substantive assets and commercial foundation, involves significant gharar (uncertainty), which fundamentally conflicts with Shariah principles (Nawaz, 2025). Unless the terms of SPAC structures are fundamentally revised, “blank cheque” IPOs are unlikely to be accepted within Islamic finance. In another paper, Nawaz (2024) proposes the iSPAC structure, which addresses issues of incentive misalignment, speculation (gharar), information asymmetry, and transparency in traditional SPACs by introducing designs with less dilution, risk sharing, and stronger compliance. The iSPAC structure also considers issues such as riba (interest), opportunity cost, management fees, and unethical behaviour (such as unfair wealth distribution) in Islamic finance, aiming to make SPACs more consistent with the ethical and legal requirements of Islamic finance through structural innovation.

Regardless of whether internationalisation or specialisation is pursued, a common challenge is the post-listing performance of target companies. Hansen (2024) compares SPAC and traditional IPO companies from 2020 to 2021, finding that SPAC target companies perform significantly worse after listing, and that well-known investors and private equity firms prefer traditional IPOs. This indicates that SPACs still face challenges of quality screening and investor trust in the process of internationalisation and specialisation.

1.4 Possible Research Gaps and Future Research Directions

The current literature on SPAC makes significant progress in mapping the landscape of this financial innovation. Researchers document the underperformance of deSPACs relative to traditional IPOs, the centrality of sponsor incentives and agency conflicts, the effects of regulatory and disclosure changes, and the heterogeneity of outcomes across investor types, market cycles, and international contexts. Recent studies also begin to address the rise of specialised SPACs (such as those focused on ESG, energy, or Islamic finance) and to explore the behavioural and structural drivers of market cycles and investor outcomes. Despite these advances, several concrete research gaps remain.

Sponsor Incentives, Disclosure, and the Determinants of deSPAC Performance. A central theme in the literature is the role of sponsor incentives, agency conflicts, and information disclosure in shaping SPAC outcomes. While prior studies establish that misaligned incentives and weak governance can lead to value-destroying mergers, the mechanisms by which sponsors select targets and communicate with investors (especially through qualitative disclosures such as prospectus tone) remain underexplored. There is limited evidence on how the content and tone of deSPAC-stage prospectuses influence investor expectations, market reactions, and the long-term performance of deSPAC target firms. This represents a promising avenue for future research, as understanding the informational and behavioural channels at play could shed new light on the determinants of post-merger value creation or destruction. Such work would complement existing studies on sponsor characteristics, contract design, and investor behaviour, and is particularly relevant given the increasing scrutiny of SPAC disclosures by regulators and market participants.

Comparative Institutional and Regulatory Analysis. Most empirical research on SPACs remains heavily U.S.-centric, with only a limited number of studies systematically comparing SPAC structures, regulatory responses, and post-merger outcomes across different legal and market environments. The literature suggests that institutional context, such as the alignment of sponsor incentives, disclosure requirements, and investor protection regimes, can significantly shape SPAC performance and governance, as evidenced by contrasting outcomes in the U.S., South Korea, and other markets. However, there is a lack of large-sample, cross-jurisdictional research that directly links these institutional differences to SPAC market dynamics and long-term outcomes. Future research could leverage international samples and regulatory changes to identify the causal impact of institutional features on SPAC behaviour and performance.

Specialised SPACs Performance, Governance, and Market Fit. The emergence of specialised SPACs, such as those focused on green energy, ESG, or Islamic finance, are documented in recent literature. While these vehicles are often positioned as solutions to sector-specific financing gaps or as vehicles for ethical investment, empirical evidence on their performance, governance, and market acceptance is still limited and sometimes contradictory. There is a need for more systematic research comparing the governance structures, investor bases, and long-term outcomes of specialised versus generalist SPACs, as well as rigorous evaluation of the credibility and impact of thematic labels (e.g., “green,” “ESG,” “Shariah-compliant”) on investor decision-making and market performance.

In summary, while the SPAC literature has made significant strides in documenting the contours and challenges of this phenomenon, important questions remain regarding the role of institutional context, sponsor incentives and disclosure, and the evolution of specialised SPACs. Addressing these gaps will not only deepen our understanding of SPACs but also inform market participants and policymakers as the SPAC landscape continues to evolve globally.

Chapter 2

Risk Disclosure and deSPAC Underpricing

2.1 Introduction

A Special Purpose Acquisition Company (SPAC) is a blank-check entity that secures capital through an initial public offering (IPO) with the objective of utilizing the raised funds to acquire an existing company. On the other hand, deSPAC denotes the procedure by which a SPAC merges with an existing company to take it public. The process of becoming a publicly traded company via a deSPAC merger exhibits distinct attributes in contrast to a conventional initial public offering (IPO). These include a shorter time cost and a more adaptable trajectory (Chaplinsky et al., 2017; Kolb and Tykvová, 2016), as well as guidance and mentorship from sponsors (Klausner et al., 2022; Hsu, 2004), along with potential prospects for regulatory arbitrage (Kiesel et al., 2023). The burgeoning popularity of SPACs can be largely attributed to the numerous advantages they offer. The empirical evidence indicates that in the year 2020, there were a notable 248 IPOs of SPACs[26]. These SPAC IPOs collectively amassed a substantial sum of $83.3 billion in capital, surpassing the cumulative total of the preceding ten-year period. In addition, it is noteworthy that the proportion of SPAC IPOs within the overall landscape of IPOs in the United States experienced a substantial increase (see Figure 2.1). Specifically, the percentage of SPAC IPOs relative to total US IPOs surged from 28% in 2019 to an impressive 73% in 2022 (see Figure 2.2). Furthermore, the proportion of SPAC IPO proceeds in relation to the total proceeds generated by US IPOs also witnessed a significant surge, rising from 19% in 2019 to a noteworthy 59% in 2022. Besides, SPAC IPOs possess inherent structural advantages that enable operating companies to swiftly take advantage of the financial

[26] Data source: SPAC Analytics, a leading provider of SPAC data to investment banks and portfolio managers since 2007. https://www.spacanalytics.com/

environment (Klausner et al., 2022). Consequently, it is observed that these SPAC IPOs tend to manifest with greater frequency during periods characterized by market volatility (Cumming et al., 2014). In light of the COVID-19 pandemic, which engendered substantial market volatility and uncertainty, it is not surprising that SPACs emerges as an appealing option for companies seeking capital.

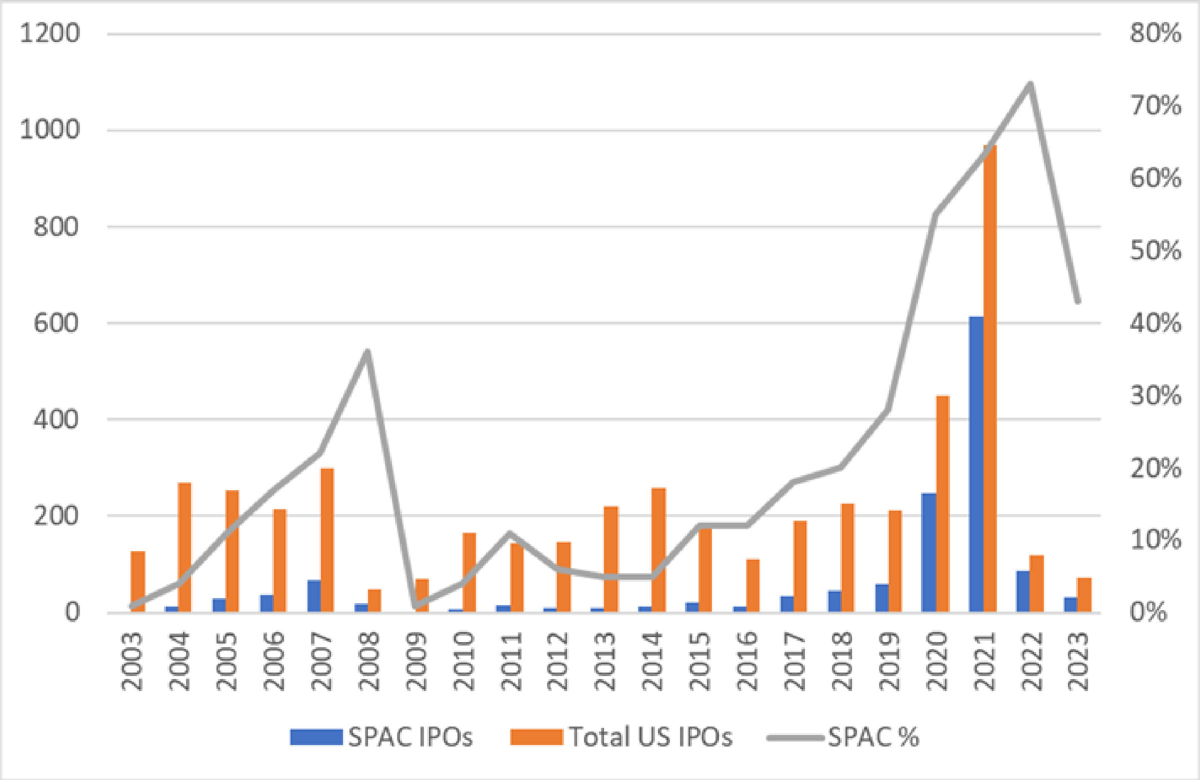

Figure 2.1. Trends in SPAC IPOs, Total US IPOs, and SPAC Percentage

Note: Relevant data is obtained from SPAC Analytics.

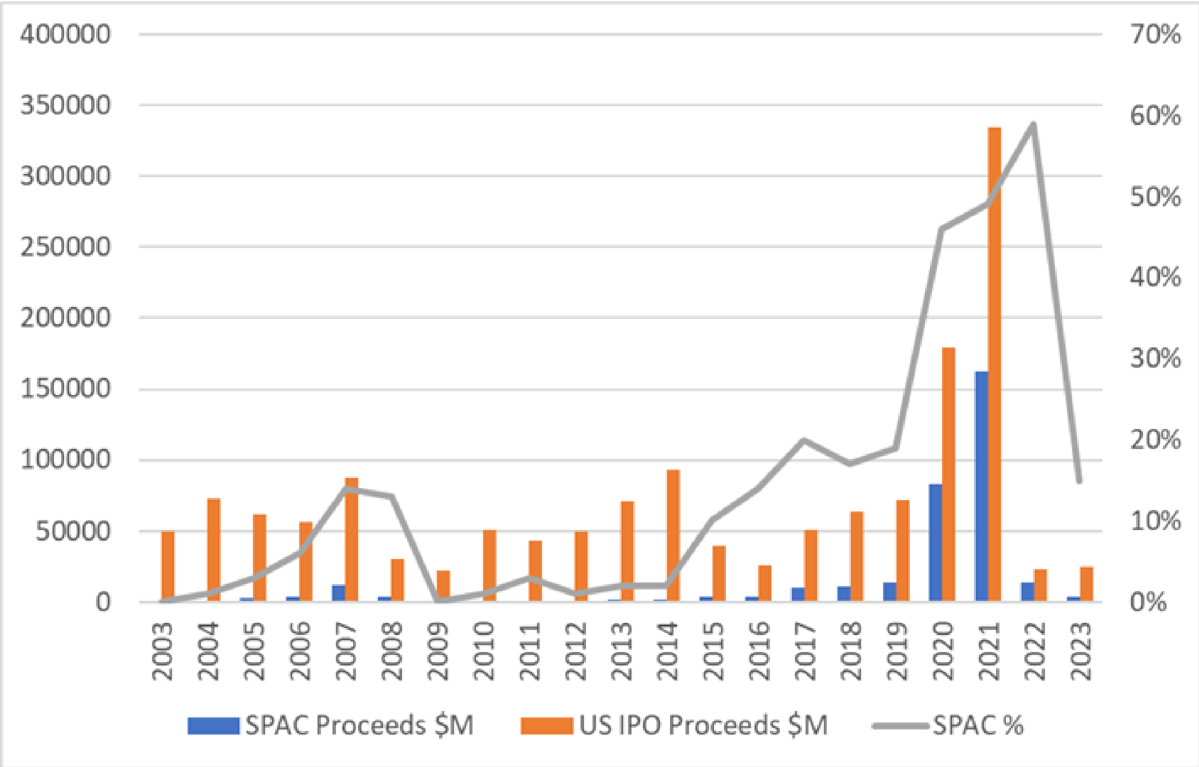

Figure 2.2. Trends in SPAC Proceeds, Total US IPO Proceeds, and SPAC Percentage

Note: Relevant data is obtained from SPAC Analytics.

Existing literature does not provide a comprehensive explanation for the phenomenon of deSPAC underpricing. This topic holds significant importance and warrants further attention. deSPAC underpricing refers to the tendency for a company's stock price to increase on its first day of trading after completing a merger with a SPAC. This can occur because SPACs typically have cash reserves that they use to acquire companies at valuations that may be lower than their true market value. As a result, when the merged company goes public through the SPAC, its stock price may be undervalued relative to its true market worth. Previous literature mainly focus on SPACs and extensively examine various aspects of SPACs, such as their structure design, including the effect of sponsor's promote, purchase warrants, redemption rights, merger voting rights, the time it takes for a SPAC to reach a definitive agreement and other characteristics in reducing the degree of information asymmetry and alleviating the agency problem (Gahng et al., 2023; Dambra et al., 2022; Cazier et al., 2020; Degeorge et al., 2016; Kolb and Tykvová, 2016; Cumming et al., 2014; Carpentier et al., 2012; Floros and Sapp, 2011; Boyer and Baigent, 2008). As for deSPAC, scholars analyse the motivations of companies to go public through deSPAC (Klausner et al., 2022; Chaplinsky et al., 2017; Hsu, 2004), the characteristics that may lead companies to be more inclined to go public through deSPAC (Gahng et al., 2023; Bai et al., 2021; Gryglewicz et al., 2021; Kolb and Tykvová, 2016; Brown et al., 2013; Jenkinson and Sousa, 2011; Adjei et al., 2008; Fang, 2005; Lee et al., 1996), and company's long-term and short-term performance after deSPAC completion (Gigante and Notarnicola, 2021; Dimitrova, 2017; Lakicevic & Vulanovic, 2013; Howe and O'Brien, 2012). However, existing research does not address deSPAC underpricing comprehensively, and to the best of our knowledge, there are limited literature applying text analysis methods in the deSPAC research. Previous research shows that IPO underpricing is affected by the amount of information provided and the tone of their IPO prospectus. Especially considering the fact that understanding the factors that contribute to deSPAC underpricing can help companies and investors make more informed decisions (e.g. whether to pursue a SPAC merger or traditional IPO, better prepare for the merger process and potentially mitigate some of the risks), we should comprehensively identifying the variables that are most strongly associated with deSPAC underpricing, and specifically further investigate the relationship between text tones of the prospectus and deSPAC underpricing.

Numerous research draws on the relationship between the text features (tones, length, readability) in IPO prospectus and IPO underpricing, which may provide some meaningful insights in applying text analysis on deSPAC prospectus though two types of underpricing differ slightly. Basically, the information contained in different tones of the prospectus is not exactly the same, which leads to some differences in explaining IPO underpricing both in the conclusion derived and explanatory power (Guo et al., 2022; Loughran and McDonald, 2013; Arnold et al., 2010), and noted that negative and uncertain tone variables have greater explanatory power than other tones on IPO underpricing where a positive relationship is identified. Loughran and McDonald (2013) further illustrated that positive tones are relatively less interpreted since they can be easily negated in ways that are difficult to identify computationally. However, though traditional IPOs and deSPAC mergers do share some similarities as two ways of going public, it is essentially merging with a SPAC company rather than going through the entire SEC-required IPO process when a company chooses to go public through a deSPAC process, which is regulated by U.S. laws for mergers (Kiesel et al., 2023). Therefore, the mechanisms of the tones of prospectus influencing deSPAC underpricing may differ from those of traditional IPO underpricing. Moreover, there is typically more public information available about the issuing company in an IPO than there is about a private target company being acquired by a SPAC, which means that investors may have more access to relevant information when evaluating an IPO than they do when evaluating a deSPAC merger. Risk factors section of the prospectus typically includes information on a wide range of potential risks, such as market and industry risks, regulatory risks, operational risks, and financial risks, which can help investors to better understand the potential downside risks associated with the company. And investors respond to the information provided in the risk factors section to a certain extent (Kravet and Muslu, 2013; Campbell et al., 2014). Thus, we focus on the risk factors section of the deSPAC prospectus and investigate the relationship between text features (tones, length, readability) and deSPAC underpricing.

To address the relationship between text features of risk factors section and deSPAC underpricing, this chapter uses a sample of 252 deSPACs and applied an OLS regression model with fixed effects to control for unobserved heterogeneity and clustering to account for the correlation of the error terms. We refer to Loughran-McDonald Sentiment Word Lists to construct tone variables, which is defined by the proportion of corresponding sentiment words in the prospectus. Each tone will be analysed separately, meaning that only one tone variable will be added in the empirical model each time. Some meaningful results are obtained based on our analysis: 1) The underpricing of deSPACs is positively affected by the negative, uncertain, weak modal, and constraining tones of the risk factors section of their deSPAC prospectus, while other tones, text length, and readability of the risk factors section have no significant effect. The results remain robust after going through two robustness tests. 2) The positive impact of those four tones affects deSPAC underpricing mainly through two major channels. The first is on the subjective level that affects investors' risk perceptions and confidence in the company, which in turn affects their decision-making process and influences investors' processing of information. The second is on the objective level, where tone affects the degree of information asymmetry between the company and investors by influencing the amount of key information embedded in the prospectus, which in turn prevents investors from accurately assessing the value of the company. 3) Results of Principal Component Analysis show that negative, uncertain, weak-modal, and constraining tones all proxy for the same effect and reflect the same attribute. 4) Generalize the analysis of risk factors section to other sections of the prospectus, namely management's discussion, use of proceeds, prospectus' summary, and full text, we find tones of the risk factors section have a greater impact on deSPAC underpricing than other sections of prospectus and full text.

This research differentiates itself from prior seminal work on traditional IPO underpricing, such as Loughran and McDonald (2013), by anchoring the analysis within the distinct regulatory and structural context of the deSPAC process. Unlike traditional IPOs that undergo a rigorous price discovery phase, a deSPAC transaction is fundamentally a merger lacking a traditional book-building mechanism. Consequently, we frame the textual analysis within the theoretical lens of decision-making under uncertainty. In this environment, the prospectus serves as the primary input for investor judgement. We extend the existing literature by demonstrating that disclosure does not merely convey information but actively shapes decision-making outcomes through behavioural channels. Specifically, we show that ambiguous or uncertain disclosure triggers a cognitive bias, prompting investors to demand a higher risk premium (underpricing) as a defensive strategy in the face of heightened uncertainty.

The rest of the chapter is structured as follows. Section 2 reviews the previous literature on related topic and develops the hypotheses. Section 3 elaborates the research design, including the samples collected and models used. Empirical Results will be provided in section 4, while section 5 concludes the chapter.

2.2 Literature Review and Hypothesis Development

2.2.1 Institutional Background

2.2.1.1 Differences between SPAC IPOs to traditional IPOs

Overall, when comparing SPACs (Special Purpose Acquisition Companies) with traditional IPOs (Initial Public Offerings), significant differences emerge in terms of structure, regulation, market response, and investor protection. The key differences between SPAC IPOs and traditional IPOs provide the basis for carefully monitoring and analysing SPAC disclosures.

First, the structures of SPACs and traditional IPOs differ significantly. A traditional IPO involves a company issuing new shares in the public market to raise capital while gaining public company status. This process is typically time-consuming, costly, and subject to stringent regulatory requirements and disclosure obligations. In contrast, a SPAC is a "blank check company" that raises capital through an IPO without having a specific business in place, with the aim of finding and acquiring an operating company within a specified timeframe (usually within two years). Thus, a SPAC essentially serves as a reverse merger tool, allowing private companies to bypass the cumbersome procedures of a traditional IPO and quickly enter the public market (Nawaz, 2024; Cumming et al., 2014).

Second, differences in regulatory and disclosure requirements influence the contexts in which these methods are used. In a traditional IPO, the company must undergo rigorous due diligence, detailed financial scrutiny, and public disclosure. These procedures are designed to protect investors by ensuring they have sufficient information when making investment decisions. However, due to the unique structure of SPACs, there is no need to disclose specific information about the target company at the initial listing stage. Investors are essentially investing in a yet-to-be-determined acquisition project. This information asymmetry can lead to issues such as moral hazard and adverse selection (Papathanasiou et al., 2022).

Additionally, market reaction and investor returns differ between the two methods.

Traditional IPOs typically attract significant market attention, with investor returns depending on the company's post-IPO performance. In contrast, SPACs offer a more complex return mechanism. SPAC investors can redeem their shares before the acquisition is finalized, allowing them to avoid risk but potentially missing out on the gains following a successful merger. This redemption mechanism offers SPACs a certain degree of flexibility, but increases investment uncertainty as well (Blomkvist & Vulanovic, 2020).

Finally, there are notable differences in investor protection between SPACs and traditional IPOs. Traditional IPOs, with their transparency and regulatory demands, provide strong safeguards for investor rights. Although SPACs offer investors the option to redeem their shares, the lack of initial disclosure and the potential for speculative behaviour may expose some investors to higher risks (Nawaz, 2024). Nonetheless, by the way, the unique structure of SPACs also makes them an attractive financing tool during periods of market turbulence, especially when capital market conditions are uncertain (Cumming et al., 2014).

2.2.1.2 Reasons for Analysing Disclosure for SPACs

Given the above characteristics, we need to pay close attention to SPAC disclosures[27]. While SPACs offer a fast track to the public market, the asymmetry of information and potential high risks require investors to thoroughly assess the associated risks and returns before investing. The importance of focusing on SPAC disclosures lies in the fact that SPACs face more severe information asymmetry issues than traditional IPOs, issues that cannot be

[27] The key timeline in the deSPAC process is as follows. (1) Signing of the Merger Agreement: Once the SPAC identifies a target company and signs the merger agreement, the transaction will be publicly announced, and investors will be notified. (2) Filing of the S-4 Document: The company must file the S-4 proxy statement with the SEC, which includes financial statements of both the SPAC and the target company, management discussion, historical financial data, per-share cost information, a description of the company structure, and any relevant debt financing agreements. (3) SEC Review: The SEC will review the submitted documents and may request the company to provide comments and additional information. (4) Shareholder Voting Notification: The company needs to engage a proxy voting firm to handle the shareholder vote and must send out voting notifications to all shareholders at least three weeks in advance. (5) EGM and Shareholder Circular: Once the relevant regulatory approvals are obtained, the SPAC will hold an Extraordinary General Meeting (EGM) to secure shareholder approval and will issue a shareholder circular. (6) Marketing Campaign: During this period, the company will also develop a marketing campaign to ensure the success of the transaction.

mitigated through the price discovery process common in traditional IPOs. Traditional IPOs rely on market price discovery mechanisms, where thorough due diligence, information disclosure, and market demand feedback ensure that investors can make informed decisions based on comprehensive information. In the case of SPACs, during the deSPAC stage, the SPAC must find an acquisition target within a specified period and facilitate the target company's listing. However, since the acquisition target is often not disclosed in the initial stages, investors do not know which company they will ultimately be investing in at the time of the SPAC IPO. This high level of information asymmetry introduces significant risks, making the SPAC IPO a more uncertain tool compared to traditional IPOs.

SPAC IPO investors face not only initial uncertainty but also various potential issues during the deSPAC stage, such as whether the acquisition target will meet expectations, whether the sponsor's incentive structure is reasonable, and the post-merger market performance. Since these risks cannot be alleviated by the traditional IPO price discovery process, the performance during the deSPAC stage directly impacts the overall risk level and investor returns of the SPAC IPO. Therefore, particular attention must be paid to SPAC IPOs, as their success depends not only on the IPO process itself but also on how information asymmetry and related risks are managed during the deSPAC stage.

In other words, the risks and uncertainties of SPAC IPOs fundamentally stem from the complexity and potential challenges of the deSPAC stage. This makes SPACs a more challenging and risky listing tool compared to traditional IPOs, requiring investors to be more cautious in evaluating and managing these risks. Thus, paying attention to SPAC disclosure is not only about understanding their uniqueness as a financing tool but also about anticipating and addressing the various issues that may arise during the deSPAC process to ensure the safety of the investment and the sustainability of returns.

2.2.2 Previous Research on deSPACs

Previous literature mainly focuses on SPACs, and thoroughly studies SPACs from many perspectives. The structure design of SPACs gives them more advantages than traditional backdoor listing approaches, cleverly reducing the degree of information asymmetry and alleviating the agency problem. Some scholars analyse the disadvantages of backdoor listing, pointing out that due to the lower listing standards (Floros and Sapp, 2011; Carpentier et al., 2012), investors of these newly listed companies may face serious information asymmetry, risk and uncertainty (Cumming et al., 2014), resulting in a poor reputation for this vehicle. SPACs mitigate these problems from two aspects. On the one hand, SPACs need to go through the traditional IPO listing process, including road shows and SEC registrations, when SPAC investors can assess the ability of SPAC sponsors during this period, reducing the degree of information asymmetry (Cumming et al., 2014; Kolb and Tykvová, 2016). On the other hand, considerable amount of compensation under the SPAC structure (sponsor's promote and purchase warrants) motivates sponsors to search high-quality target companies, because if they fail to find a merger partner that satisfies the majority of shareholder, they may even lose money (Gahng et al., 2023). SPAC shareholders' voting rights and redemption rights limit SPAC sponsors' motivation to select bad companies, thereby ensuring that SPAC sponsors acts to maximize shareholder interests (see Boyer and Baigent, 2008) and protect investors. However, despite the protection of redemption rights and voting rights, studies find that business mergers completed under time pressure (i.e., at the end of the SPAC's life cycle) tend to perform poorly (Gahng et al., 2023; Degeorge et al., 2016). Merger vote is so important in the SPAC mechanism that some scholars specifically analyse factors that affect the shareholder approval probability of SPAC mergers, pointing out that larger underwriters and more experienced sponsors do not increase the success rate of shareholder approval for mergers (Cumming et al., 2014). In addition, some scholars compare SPACs with Private Equity, illustrated that the main difference is that investors have no control over the target companies in PE scenarios, but SPACs can (Gahng et al., 2023). Therefore, SPACs are also called "poor man's private equity" (Bryant, 2022), providing retail investors with an opportunity to invest in start-up companies.

As for deSPAC, which is the process starting from SPAC announcing that it finds a merger partner to completing the merger and listing the stock of the merged company for trading. Previous studies analyse the motivations of companies to go public through deSPAC, which can be summarized as: 1) to obtain the professional knowledge and industry insights of SPAC sponsors, so as to win in the fierce market competition (Klausner et al., 2022). This is similar to venture capital investment, where the company want to get both financial support and mentorship (Hsu, 2004). 2) Going public through deSPAC is faster than traditional IPO. SPAC has already gone through the complex process of traditional IPO when it goes public (Kolb and Tykvová, 2016). Traditional IPO requires preparing financial statements, which generally last for a median of about 5 months (Chaplinsky et al., 2017), and some studies point out that it takes 6-9 months (PitchBook, 2022). 3) To take advantage of regulatory arbitrage opportunities to make profits. Unlike IPOs, a deSPAC is considered a merger under U.S. laws (Kiesel et al., 2023). Due to the existence of the "safe harbor" provision in U.S. laws for mergers, these forward-looking statements about future revenues are protected, even if they are wrong (Cazier et al., 2020). Therefore, companies pursuing going public through deSPAC have an incentive to make forward-looking statements to maximize their pre-financing valuation, which is critical for obtaining shareholder approval and attracting PIPE, thereby benefiting from the merger with SPACs (Klausner et al., 2022). Many revenue and profit forecasts are based on extremely optimistic assumptions, resulting in actual revenues and profits being far lower than these forecast values on average (Dambra et al., 2022). But for IPOs, they are fully responsible for the forecasts. This is essentially a regulatory arbitrage (Klausner et al., 2022), and Coates (2022) question about whether this regulatory arbitrage was consistent with existing law.

After reviewing literature on the motivations of companies to go public through deSPAC, we are interested in literature about the characteristics of companies that use this vehicle. Kolb and Tykvová (2016) point out that smaller, more levered and low-growth firms are more inclined to use this route. This may due to the fact that these firms have difficulty finding high-quality underwriters to increase the chances of successful listing (Fang, 2005). Even if they find underwriters, these firms also face many obstacles, such as high (fixed) direct costs (Lee et al., 1996), and the inability to attract enough investors (Adjei et al., 2008). In addition, more unprofitable, more underperforming (Gahng et al., 2023), riskier (Bai et al., 2021), higher adverse selection (Gryglewicz et al., 2021) and low-quality (Brown et al., 2013; Jenkinson and

Sousa, 2011) firms tend to use this vehicle to become publicly listed, and those firm characteristics may lead to the fact that the merged company tend to have minimal assets, are illiquid, have negative profitability, and are mostly development-stage firms (Cumming et al., 2014).

After reviewing the company characteristics that may lead companies to be more inclined to go public through deSPAC, we shed lights on the literature about the company's performance after deSPAC completion, which are illustrated from the perspectives of short-term performance and long-term performance. As for the short-term returns around the announcement date, previous literature based on early sample periods found that the excess return rate on the announcement date averaged less than +2%. (Dimitrova, 2017; Lakicevic & Vulanovic, 2013). A study based on 236 deSPACs from 2012 to 2021 shows that the average short-term return for public investors on the announcement date was +7.4% (Kiesel et al., 2023). Another research that expanded the time range to the [−5, +5] event window around the announcement date found a cumulative abnormal return of +1.7% (Howe and O'Brien, 2012). As for the short-term returns around the completion date, the first-day returns after the merger are generally significantly positive (Klausner et al., 2022), and after the merger completion date, the [0, +3] event window has a statistically significant cumulative excess return of 6.3%, while for the [0, +7] event window, the return is very poor with a value of -9.6% (Lakicevic and Vulanovic, 2013). Further analysis suggests that the poor performance may result from trading activities occurring before the merger date, where parties in favor of the merger may be purchasing stocks at a premium before the proxy vote (Lakicevic and Vulanovic, 2013).

As for the long-term returns after getting listed via deSPAC, the excess returns measured by different benchmarks all show that the overall performance in recent years has been negative (Gahng et al., 2023). The short-term positive returns did not last over time (Kiesel et al., 2023), and the cumulative excess returns reached their peak after about a month of trading (Klausner et al., 2022), then gradually declined. In the long run, most companies that went public through deSPAC performed poorly (e.g., Dimitrova, 2017; Howe and O'Brien, 2012; Kolb and Tykvova, 2016). Klausner et al. (2022) found that the two-month after deSPAC completion cumulative excess returns of companies relative to Nasdaq were about negative 10%. In addition, it is important to note that there are differences in long-term performance across different industries (Ritter, 1991). Healthcare companies that went public through deSPAC "deliver highly negative returns in the short term and substantially underperform small-cap firms and (non-SPAC) healthcare companies" (Gigante and Notarnicola, 2021). There are also studies that combine long-term returns with the time it takes for SPAC sponsors from SPAC IPO to definitive agreement (Dimitrova, 2017; Blomkvist and Vulanovic, 2020; Kiesel et al., 2023) and the size of the company (Kiesel et al., 2023).

2.2.3 Textual Analysis and IPO Underpricing

To the best of our knowledge, there are limited literature that applies text analysis methods in the deSPAC research. Therefore, based on the topic, this chapter analyses the application of text analysis methods in IPO underpricing.

Investors intentionally or unintentionally take descriptive information into consideration when making investment decisions (Guo et al., 2022). Previous studies analyse different types of financial text, such as prospectuses, newspaper articles, and analyst reports, indicating a relationship between descriptive information and investor behaviour (Jiang et al., 2019; Bajo and Raimondo, 2017; Jegadeesh and Wu, 2013). Prospectuses provide investors with comprehensive and detailed business operations, risk conditions, and financial information, etc. The release date of the prospectus is far earlier than the offering date, giving investors enough time to digest information. Then information contained in prospectus reflects in the price by investor's behaviour. Compared to quantitative information like financial indicators, qualitative information such as prospectus text receives less attention, possibly due to the difficulty in verifying and processing qualitative disclosures than quantitative earnings numbers (Lehavy et al., 2011). Existing research finds that such qualitative information can significantly reduce information asymmetry and increase company transparency to the investors (Filzen, 2015; Chiu et al., 2018; Loughran and McDonald, 2013), which is crucial for research IPO underpricing (Hanley and Holberg, 2010). Recent development in computer technology boosts the progress of textual analysis method, which serves as a tool to analyse qualitative information and making large-scale analysis possible. Beatty and Ritter (1986) are pioneers in the field of qualitative information research, where they used the amount of "use" in the Use of Proceeds section to approximate ex ante uncertainty about IPO value. Nowadays, qualitative information analysis is not limited to one word or particular section, but is based on different word lists to discuss multiple sections using text analysis methods (Loughran and McDonald, 2015). Additionally, various dimensions are involved, including tone, length, and readability of the prospectus (Guo et al., 2022; Loughran and McDonald, 2014; Li, 2008). Apart from discussions in econometric settings, scholars also employ machine learning methods to investigate underpricing using the extracted features from prospectuses through text analysis (Kim et al., 2019; Quintana et al., 2017; Cheng et al., 2007).

The information contained in different tones of the prospectus is not exactly the same, which leads to some differences in explaining IPO underpricing both in the conclusion derived and explanatory power. Previous research shows that negative and uncertain tone variables (defined by the proportion of corresponding sentiment words in the prospectus) have greater explanatory power than positive, strong modal, weak modal, and litigious tone variables to elucidate IPO underpricing (Guo et al., 2022), and IPOs with higher level of negative and uncertain text tend to have greater underpricing (Arnold et al., 2010; Loughran and McDonald, 2013). Hanley and Hoberg (2012) analysed why litigious tone are a less powerful variable in explaining IPO underpricing, showing that though issuers use litigious language in the prospectus to signal potential risks but investors have no response to this signal. An alternative perspective on litigious tone presented by Lowry and Shu (2002) showed that litigious words indicate possible litigation risks and issuers with higher litigation risks will have more underpricing to avoid future lawsuits. Apart from the tones mentioned above, Arnold et al. (2010) analysed from the perspective of ambiguity, illustrating that additional premium will be required from investors to compensate for the ambiguity in the document. Brau et al. (2016) even create a new dictionary for textual analysis and derive the strategic tone of the document, and find that it is positively related to first day returns from IPO. Scholars also shed lights on the post-IPO performance and find IPOs with high level of negative and uncertain text is more likely to underperform in the future (Ferris et al., 2013). Similar results are obtained by Guo et al. (2022), which illustrated that percentages of negative, uncertain, weak modal, and litigious words are significantly linked with IPO underpricing and the post-IPO operating performance.

In addition, investor characteristics, market sentiment and other factors have a moderating effect on the relationship between the tone of the prospectus and IPO underpricing. On the one hand, the information processing ability of investors is a key moderating variable. Based on the studies of institutional investors (Hendershott et al., 2015) and analysts (Zhu et al., 2015; Jackson, 2005) who generally have higher information processing ability, it shows that the relationship between tone variables derived from prospectus and IPO underpricing will be amplified for investors with higher information processing ability. On the other hand, market sentiment also plays an important role. Guo et al. (2022) point out that high market sentiment will weaken the role of the prospectus in predicting underpricing, which is easier to understand from the perspective of behavioural finance.

2.2.4 Hypothesis Development

Numerous studies investigate the reasons for initial public offering (IPO) underpricing, and one important explanation is information asymmetry. Information asymmetry arises when issuers, underwriters, and investors possess some critical pieces of information while lacking others, resulting in money being left on the table (Lowry et al., 2017). The direct consequence of information asymmetry is that investors' estimations of a company's future prospects and uncertainties may be biased, thereby affecting their investment decisions. When investors are optimistic about a company's prospects and believe that it has significant growth potential, they may be willing to pay a higher price to purchase its shares. If the IPO is underpriced, investors may consider it a highly profitable investment opportunity and rush to buy the company's stock, which may result in an oversubscription and leads to a rise in its price. Therefore, the IPO company may face a lower degree of pricing error and lower underpricing in this scenario. Conversely, if investors are uncertain or pessimistic about a company's prospects, they may require a higher return to compensate for the risk. In this case, IPO company may face a higher degree of pricing error and underpricing.

Similar to IPO underpricing, deSPAC underpricing is related to investors' judgments about the future prospects and uncertainties of the company. In IPOs, investors may demand higher returns due to the uncertainty about the future performance of the new company, which lacks historical data and information, leading to underpricing if the issuing price is lower than the actual market value. Similarly, in deSPAC settings, there may also be uncertainty about the target company's business and prospects, leading investors to demand higher returns, which may result in deSPAC underpricing.

Textual information can provide detailed information about a company's business, market prospects, operating environment, and other aspects that can affect investors' judgments about the company's future prospects and uncertainties, further affecting the uncertainty of valuation and ultimately reflected in the level of underpricing. The prospectus consists of multiple sections, with the risk factors section deserving particular attention. Key information related to the judgment of the company's future prospects and uncertainties is contained in the risk factors section. Prior research shows that risk factor disclosures can reveal future risk information about the company (Arnold et al., 2006), particularly the company's future cash flows (Campbell et al., 2019). By reducing the uncertainty of the company's future cash flows and increasing transparency about the risks facing the company (Filzen, 2015; Chiu, Guan, and Kim, 2018), the efficiency of the listing process can be improved (Zhao et al., 2022). Existing research shows that investors respond to the information provided in the risk factors section to a certain extent (Kravet and Muslu, 2013; Campbell et al., 2014).

The prospectus text exhibits a multitude of information pertaining to the company. As for the unfavorable and equivocal tones, on the one hand, the rise in unfavorable and equivocal language has the potential to diminish the effectiveness and quality of prospectus disclosure. Consequently, this could heighten uncertainty during the listing process and instigate doubts and concerns among investors regarding the future prospects of deSPAC process. Investors' inclination to seek elevated returns as a means of compensating risks can result in an amplified pricing bias and increased levels of underpricing. On the other hand, the utilization of words related to uncertainty and ambiguity suggests the presence of potential risks and uncertainties in the operational activities of the company. This indicates that the target company adopts a more objective and cautious approach in evaluating its own performance, refraining from excessive embellishment or exaggeration, and this disclosure can facilitate enhanced investor assessment of the company's value and prospective performance. As investors' perception of the company's sufficient disclosure of potential risks and uncertainties improves, their perception of risk diminishes, leading to a decrease in pricing bias and a subsequent reduction in underpricing levels. As for favorable tones, the interpretation of positive language is relatively limited due to their susceptibility to being negated in ways that are computationally challenging to identify (Loughran and McDonald, 2013). This aligns with the concept that issuers exhibit a preference for employing pessimistic language rather than optimistic language when conveying value-related details in the prospectus.

Based on the aforementioned analysis, it can be argued that the extent of negative, uncertain, weak-modal and constraining language in the risk factors section of a prospectus might influence investor uncertainty and their perception of risk regarding the future performance of the company. Consequently, this could result in higher required returns and deSPAC underpricing. The impact of this phenomenon is contingent upon whether the provision of risk disclosure facilitates investors in enhancing their ability to accurately assess the worth and prospective performance of the company, thereby influencing investors' perceptions regarding the uncertainty associated with the company's value. Moreover, these perceptions subsequently influence investors' risk assessments, ultimately influencing the extent of pricing bias and underpricing. Henceforth, we put forth the subsequent pair of competing hypotheses:

Hypothesis 1a (H1a): The underpricing of deSPACs is positively affected by the negative, *uncertain, weak modal and constraining tones of risk factors section of the prospectus.*

Hypothesis 1b (H1b): The underpricing of deSPACs is negatively affected by the negative, uncertain, weak modal and constraining tones of risk factors section of the prospectus.

2.3 Research Design

2.3.1 Data

We test our hypotheses on a sample of companies that get listed on three US stock markets (NYSE, Nasdaq and Amex) via deSPAC process[28]. Considering the recent popularity of deSPAC with the fact that the number of companies using deSPAC merger as a way to go public surged (numbers of SPAC IPO) since 2019[29], we choose 2019 as the start year of our sample. More specifically, all SPAC IPOs after 2019 will be considered. Originally, we have 420 deSPAC companies with the status of "Completed" (meaning SPAC merger has completed). After constructing the core independent variables and control variables, for each company in the initial dataset, whenever it has a missing value on any of the variables, the company is removed from the sample, and we get the final sample of 252 observations between 2021 and 2023, which corresponds to 252 firms that went IPO during 2019 to 2022[30]. Our sample is

[28] For clarity, we emphasize that both Chapter 2 and Chapter 3 exclusively focus on the U.S. SPAC market. All SPACs in our sample are U.S.-listed entities whose deSPAC transactions are governed by U.S. Securities and Exchange Commission regulations and listed on U.S. exchanges. While some target companies (the merger partners) are based internationally, the regulatory and capital market context remains fundamentally American. Critically, to account for the impact of the target company's home country, we consistently employ Country Fixed Effects in the empirical models of both chapters, as detailed in Sections 2.3.3 and 3.3.3.

[29] Gahng et al. (2023) shows that the number of SPACs has been on a slow rise since 2010, from an initial 2 to 59 in 2019. Then in 2020 the number of SPACs surged to 248.

[30] To ensure the maximum possible coverage and representativeness, the initial dataset consists of all completed deSPAC mergers available through the dedicated SPAC TRACK database as of the specific date of data extraction. This confirms that our sample represents the most rigorous, technically feasible set, effectively mitigating concerns regarding arbitrary sample selection.

characterised by its diversity. It contains firms from both mainstream sectors and a notable inclusion of highly specialised and emerging technologies,such as artificial intelligence, blockchain, fintech, quantum computing, healthcare, and biotechnology. All variables are winsorized at 1% level to prevent the interference of outliers on the conclusion.

2.3.1.1 Construction of Dependent Variable and Core independent variables

deSPAC underpricing refers to the tendency for a company's stock price to increase on its first day of trading after completing a merger with a Special Purpose Acquisition Company (SPAC). This can occur because SPACs typically have cash reserves that they use to acquire companies at valuations that may be lower than their true market value. Tran (2012) shows that SPACs negotiate an additional 7.6% discount compared to other public acquirers that bid for private targets. As a result, when the merged company goes public through the SPAC, its stock price may be undervalued relative to its true market value. With respect to the dependent variable, deSPAC underpricing is defined by first-day return. "First-day" is the day that marks the end of the deSPAC process (merger completion) and the target company is formally getting listed in stock exchange.

To construct the core independent variables, the tones/sentiments, which is defined as the ratio of each total tone language related words to total number of words in risk section, we select the word list that is used for categorization first. We refer to the previous literature of textual analysis on IPO prospectus (Loughran and McDonald, 2013) and use Loughran-McDonald Sentiment Word Lists[31] to classify words into negative, positive, uncertain, litigious, strong modal, weak modal and constraining categories. It is widely acknowledged that Loughran-McDonald Sentiment Word Lists is more appropriate for business application and financial documents analysis than other word lists like Harvard General Inquirer word list (Loughran and McDonald, 2015). Loughran-McDonald Sentiment Word Lists are comprised

[31] See: https://sraf.nd.edu/loughranmcdonald-master-dictionary/

of 2345 negative words (e.g., alerted, undermine, turmoil, suspect), 347 positive words (e.g., accomplish, advantage, tremendous, vibrant), 297 uncertain words (e.g., fluctuate, imprecise, likelihood, perhaps), 903 litigious words (e.g., prosecute, legal, judicial, forbade), 19 strong modal words (e.g., always, definitely, must, undoubtedly), 27 weak modal words (e.g., almost, nearly, sometimes, suggest) and 184 constraining words (e.g., abide, comply, refrain, unavailable). It is worth noting that some words exist in two or more words list. For instance, "unavailable" is in both the negative and constraining word lists.

Second, we download the PDF format of the S-4 prospectus of deSPAC companies with a status of "Completed" since 2019 from SEC EDGAR platform. The prospectus is about the business combination between SPAC and the private firm, EDGAR collects the digitally stored copies of all public-released files for a listing company, including prospectuses, which are machine-readable. Then we use Python language to get the content of each section of the prospectus, particularly focusing on the risk factors section. Management's discussion section, use of proceeds section and summary section are also considered but not the main topic of our study, which will be discussed briefly in additional analysis section (see Section 4.4). Next, Loughran-McDonald Sentiment Word Lists are used to classify words into nine categories mentioned above and calculate the ratio of each total tone language related words to total number of words[32]. Fog index[33] is also computed to measure the readability of each prospectus.

2.3.1.2 Other Control Variables

To accurately identify the impact of features of risk factors section (length and the

---

[32] Our approach to quantifying sentiment is purely objective and algorithmic. We use a standardised, rule-based dictionary approach via automated processing tools. This method applies the exact same criteria to every filing, ensuring that the tone classification is strictly objective and consistent across the entire sample, thus eliminating researcher subjectivity in the text scoring process.

[33] Fog Index = 0.4(AWPS + % Complex), where AWPS is the average number of words per sentence and % Complex is the percentage of complex words (i.e. words that are longer than two syllables). The Fog Index then translates in the number of years of education required to comprehend the text. No. of words captures the number of words in the IPO prospectus.

sentiment) on deSPAC underpricing, the model incorporates control variables of three dimensions. First, we add variables that could reflect the key attributes of the using SPAC as a way of getting listed, which includes: 1) IPO Size, defined in millions of USDs; 2) PIPE Size, PIPE stands for private investment in public equity[34], defined in millions of USDs; 3) Months from IPO to DA, defined as the months spent since SPAC IPO to reach definitive agreement with merger partner; 4) Months from DA to deSPAC Completion, defined as the months spent since the date of definitive agreement with merger partner to the date of deSPAC completion; 5) Top underwriter dummy, is set to 1 if the deal is backed by the Top 5 Investment Banks for Equity Deals, according to Financial Times[35], namely Goldman Sachs, JP Morgan, Morgan Stanley, BofA Securities, and Citi; 6) Well-known sponsor dummy, is set to 1 if the SPAC's management team, board of directors[36], or founders who are well known in the public or who belong to the executive management of major or notable companies, according to SPAC TRACK[37]; 7) Serial sponsor dummy, is set to 1 if the sponsor launches multiple SPACs at the same time; 8) % Shares Redeemed, defined as the percentage of public SPAC shares redeemed at merger vote.

Besides, corporate financial indicators (Asset-to-debt ratio, Market-to-book ratio, Tobin's Q, Market Cap) as well as variables reflecting the market environment (Cost of debt, Market Return) are added to the empirical model. Note that Cost of Debt is defined as 10-year T-bill rate on the deSPAC complete date, while Market Return is the 30-day average Nasdaq return before the deSPAC complete date. The introduced control variables were consistent with those in the existing literature (Kolb and Tykvová, 2016).

---

[34] It involves selling shares of a public company in a private arrangement with a select investor or group of investors.

[35] https://markets.ft.com/data/league-tables/tables-and-trends/Equity

[36] The Board of Directors of a SPAC is typically composed of the Sponsor's affiliates, whose economic incentives are heavily aligned with deal completion.

[37] See spactrack.io/data-catalog. SPAC TRACK is a data platform for everyday investors and professionals that are looking for real time data and insights into the SPAC market.

2.3.1.3 Data Source

We use two broad data sources. All data related to SPAC (e.g., the SPAC-level control variables) are collected from SPAC TRACK, a professional and well-known data platform for everyday investors and professionals that are looking for real time data and insights into the SPAC market. SPAC TRACK provide detailed information regarding the structure of each SPAC and its derivative securities, as well as some basic information about SPAC sponsors, underwriters, the initial trust amount, the redemption history, the sectors of merging partners, etc.

The rest of the data, including corporate financial indicators and market environment variables, are obtained from Bloomberg terminal. To mitigate potential biases arising from the heterogeneity of multiple data sources, we implement a rigorous data consistency check. Specifically, we cross-reference the key identifiers like firm name and ticker symbols, and event dates across these databases to ensure alignment. Regarding the textual analysis, we apply standardised pre-processing procedures to the documents retrieved from SEC EDGAR. This involves filtering out non-textual elements to avoid noise. Furthermore, all continuous variables are winsorised at the 1% and 99% levels to minimize the influence of outliers.

2.3.2 Summary Statistics and Correlation

Table 2.1 shows the summary statistics of the sample including the number of observations, mean, standard deviation, minimum value, median, and maximum value of the variables, which considers dependent variable deSPAC underpricing, and core independent variables of different sentiment, text length as well as fog index in the risk factors section. Different dimensions of control variables from SPAC level, corporate financial indicators level, market environment level is also presented in table 2.1.

Mean first-day return is 2.1% and equivalent to 13.3 million in dollar value for deSPACs, which is much lower than traditional IPO with the average first-day return floated in the US ranged from 9.8% in 1994 and 18.2% in 2015 (Ritter, 2016). The mean of SPAC IPO size and

PIPE size are $300.99M and $230M (already converted from the logarithm form), respectively. The average months from SPAC IPO to the definitive agreement is 8.090. As for three dummy variables about underwriter and sponsor, the average values are all lower than 0.5, showing that less than half of the deSPAC process are carried out by top underwriters, well-known sponsors and serial sponsors. The average percentage of redeemed shares is 33.5%.

The textual analysis demonstrates that the risk factor section is, on average, made of 0.8% positive, 3.5% negative, 2.8% uncertainty, 1.6% litigious, 0.4% strong modal, 2.1% weak modal and 1.1% constraining words. A higher proportion of negative, weak modal, uncertain tones and a lower proportion of positive, strong modal compared to its counterparts in Loughran and McDonald's (2013) are found, which is conducted in the context of IPO textual analysis. This difference reflects the different characteristics of IPO and deSPAC risk disclosures. The Fog Index has a very high mean of 29.741, which is a typical Fog Index for financial disclosures that are very technical.

Table 2.1. Summary statistics for deSPACs sample

variable	N	mean	std	min	median	max
First-day returns (Underpricing)	252	0.021	0.256	-0.387	-0.002	3.195
SPAC						
IPO Size (US Million, log)	252	5.532	0.590	3.827	5.542	7.636
PIPE Size (log)	252	16.947	5.741	0.000	18.826	22.120
Months from IPO to DA	252	8.090	5.076	1.151	6.608	25.838
Months from DA to Completion	252	6.048	1.935	3	6	17
Top underwriter dummy	252	0.389	0.489	0.000	0.000	1.000
Well-known sponsor dummy	252	0.310	0.463	0.000	0.000	1.000
Serial sponsor dummy	252	0.314	0.465	0.000	0.000	1.000
% Shares Redeemed	252	0.612	0.335	0.000	0.729	0.996
Corporate Financial Indicators						
Asset-to-debt ratio	252	19.774	23.607	0.000	15.886	122.230
Market-to-book ratio	252	5.253	28.469	-90.021	4.367	184.160

Tobin's Q	252	4.041	2.496	0.584	3.973	13.650
Market Cap (log)	252	19.112	1.577	15.453	19.121	22.446
Market Environment						
Cost of debt (%)	252	2.055	0.910	1.190	1.540	4.070
Market return (%)	252	0.040	0.225	-0.611	0.071	0.490
Prospectus: Risk Factors Section						
Proportion of Negative	252	0.035	0.007	0.017	0.037	0.049
Proportion of Positive	252	0.008	0.002	0.003	0.008	0.014
Proportion of Uncertainty	252	0.028	0.005	0.013	0.030	0.037
Proportion of Litigious	252	0.016	0.004	0.007	0.016	0.024
Proportion of Strong Modal	252	0.004	0.001	0.002	0.004	0.008
Proportion of Weak Modal	252	0.021	0.004	0.010	0.023	0.027
Proportion of Constraining	252	0.011	0.002	0.006	0.011	0.016
Number of Words (log)	252	10.221	0.379	8.985	10.231	11.165
Fog index	252	29.741	1.827	25.433	29.432	35.893

We derived the Pearson pairwise correlation coefficient matrix to exclude the influence of multicollinearity and the results are shown in Table 2.2, where we only provide the correlation coefficients. The star on the right of the number means the correlation coefficient is significant on 5% significance level. Multicollinearity exists only when the coefficient is greater than 0.5 and is statistically significant. Table 2.2 shows that no coefficients satisfy the condition, indicating that the empirical model in our study excludes multicollinearity effects [38]. Additionally, the correlation coefficient between the negative, uncertainty, weak modal, constraining tones variables and underpricing is positive, which is consistent with the intuitive

[38] You may notice that there are some significant correlation coefficients greater than 0.5 in the lower right corner of the table 2.2. It can be seen from the table that the variables involved in this part of the high correlation coefficient are among the sentiment of the prospectus. In this paper, each sentiment is added into the model separately, and the influence of each sentiment on underpricing is discussed separately. Therefore, we can still say that the model does not contain multicollinearity, and the conclusion based on this model is robust. Further, the high correlation between sentiments indicates that the information that different sentiment contain may have overlaps, which is analysed in Section 5.4 in detail.

positive relationship between the above-mentioned tone variables and deSPAC underpricing.

To further check for possible multicollinearity issues, the variance inflation factors (VIFs) are computed for each model used. The highest VIF value in any model was lower than the recommended rule-of-thumb threshold of 10 (Ryan, 1997). Thus, multicollinearity was not viewed as a major concern in these analyses.

Table 2.2. Pearson Pair-wise Correlation

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. First-day returns	1																					
2. PIPE Size (log)	0.04	1																				
3. IPOSize_log	-0.05	0.23*	1																			
4. Top underwriter dummy	-0.04	0.14*	0.50*	1																		
5. Well-known sponsor dummy	0.10	0.18*	0.37*	0.17*	1																	
6. Serial sponsor dummy	-0.04	0.06	0.30*	0.25*	0.32*	1																
7. % Shares Redeemed	0.08	-0.18*	-0.12	0.00	0.01	-0.13*	1															
8. Asset-to-debt ratio	0.02	-0.12	-0.05	-0.07	0.06	-0.09	0.10	1														
9. Market-to-book ratio	0.05	0.00	0.00	0.06	-0.06	0.07	-0.08	-0.02	1													
10. Tobin's Q	0.02	-0.01	0.03	-0.01	0.04	-0.05	0.07	0.10	-0.41*	1												
11. Market Cap (log)	-0.02	0.26*	0.47*	0.30*	0.25*	0.17*	-0.23*	-0.05	0.09	-0.01	1											
12. Cost of debt	0.19*	-0.36*	-0.22*	-0.15*	-0.12	-0.18*	0.34*	0.17*	-0.06	0.04	-0.19*	1										
13. Market return	0.02	0.27*	0.07	0.08	0.03	0.00	-0.25*	-0.10	-0.12	-0.05	0.08	-0.32*	1									
14. % Negative	0.03	0.02	0.17*	0.14*	0.08	0.20*	-0.06	0.00	-0.03	-0.07	0.09	-0.13*	0.05	1								
15. % Positive	0.03	0.02	-0.03	0.00	0.03	0.09	-0.05	-0.08	-0.10	0.04	0.00	-0.07	-0.05	0.60*	1							
16. % Uncertainty	0.07	0.03	0.17*	0.12	0.15*	0.20*	-0.04	0.02	-0.09	-0.05	0.12	-0.07	0.01	0.88*	0.66*	1						
17. % Litigious	-0.04	-0.07	0.04	0.10	-0.03	0.1436*	-0.02	-0.06	0.06	-0.11	0.07	-0.02	-0.08	0.60*	0.41*	0.51*	1					
18. % Strong Modal	0.02	0.00	0.00	-0.03	-0.03	-0.03	0.01	-0.07	-0.06	0.05	-0.05	0.05	-0.06	0.17*	0.37*	0.30*	0.09	1				
19. % Weak Modal	0.07	0.01	0.15*	0.13*	0.11	0.20*	-0.04	0.02	-0.09	-0.03	0.09	-0.09	-0.01	0.88*	0.72*	0.98*	0.54*	0.31*	1			
20. % Constraining	0.07	0.02	0.19*	0.12	0.08	0.18*	0.02	0.05	-0.09	-0.09	0.11	-0.04	-0.02	0.71*	0.42*	0.72*	0.56*	0.27*	0.71*	1		
21. Number of Words	0.00	-0.10	-0.17*	-0.09	-0.13*	-0.09	0.15*	-0.09	0.00	-0.04	-0.07	0.23*	-0.06	-0.31*	-0.12	-0.40*	0.13*	-0.18*	-0.35*	-0.23*	1	
22. Fog index	-0.04	-0.05	-0.15*	-0.01	-0.04	-0.03	-0.05	-0.05	0.05	-0.08	-0.15*	-0.01	0.05	-0.26*	-0.07	-0.31*	-0.07	-0.17*	-0.27*	-0.27*	0.29*	1

2.3.3 Model

In order to fully elaborate the relationship between the sentiment of the deSPACs prospectus and subsequent deSPAC underpricing, this study formulates a multivariate regression model (using the Ordinary Least Squares method[39]) with deSPAC underpricing as the dependent variable and core independent variables of different tones. Each tone will be analysed separately, meaning that only one tone variable will be added in the empirical model each time, which is in line with the previous literature in textual analysis (Loughran and McDonald, 2013). Apart from the key variables, this study also refers to the literature and take various control variables of different aspects into the empirical model.

Besides, to control for unobserved heterogeneity, we include industry fixed effect, country fixed effect and year fixed effect in the model. Industry fixed effects are considered to control for the characteristics of different industries that do not change over time, such as the degree of competition in the industry, the level of technology, market demand, etc. Country fixed effects are incorporated to remove the influence of country characteristics that do not vary over time on the dependent variable, such as political system, cultural habits, etc. Year fixed effects can eliminate the influence of common shocks across the globe on the dependent variable, such as geo-political conflicts, regulatory changes, and broader market trends. Considering the companies in our sample are from different industries, and some of the target companies locate outside the United States, plus the deSPAC process in our sample do not initiate in one same particular year according to the sample composition, by adding these fixed effects this study could exploit the within-industry, within-country and over-time variation to identify the causal effect of the prospectus' sentiment on underpricing.

Furthermore, to account for the correlation of the error terms, this study clustered the

[39] The slope for each independent variable estimates its partial effect on the dependent variable, while holding all other independent variables fixed. (Wooldridge, 2021).

model by industry (using GIC Standard[40]). The rationale for doing so is that firms in the same industry may be subject to similar external shocks or have similar internal characteristics, leading to correlation among their error terms. If this correlation is ignored, it may result in underestimation of standard errors and overestimation of significance. More robust regression results will be obtained when clustering by industry.

Based on what has been mentioned above, the final empirical model used in this study is:

$$Underpricing_i = \alpha + \beta Tone_i + \gamma X_i + \varphi_t + \delta_i + \tau_i + \varepsilon$$

Note that $Tone_i$ stands for the sentiment analysed and β is the key coefficient that this study focusing on. X_i stands for the control variables of different aspects and $\gamma_{Ctrl\ Variables}$ is the corresponding regression coefficients, respectively. $\varphi_t, \delta_i, \tau_i$ represent year fixed effect, industry fixed effect and country fixed effects, respectively. α is the constant term and error term is presented with ε. To ensure the robustness of our findings, we also vary our model specifications by using alternative standard error clustering levels and adjusting fixed effect combinations. These changes will prove that our results are not dependent on specific model specification.

2.4 Empirical Results

2.4.1 Baseline Result

This study employs the ordinary least squares method (OLS) with fixed effect and clustering to investigate the relationship between deSPAC underpricing and the features of risk factors section of deSPACs' prospectuses (length and the sentiment). The results are shown in Table 2.3. The dependent variable in all models of table 2.3 is deSPAC underpricing, which is

[40] GIC Industry (Global Industry Classification Standard) is a global classification system developed by Standard & Poor's (S&P) and MSCI Inc. It is widely used by financial analysts and investors to classify companies into industry groups based on their business activities. GIC Industry has ten sectors, 157 sub-industries, and 1,058 industries.

defined by first-day return. “First-day” is the day that marks the completion of the deSPAC process and the target company is formally getting listed in stock exchange. As earlier mentioned, each feature (sentiment, length and fog index) will be analysed separately, meaning that only one feature variable will be added in the empirical model each time. Model (1)-(7) of table 2.3 present the regression results with each sentiment variable of risk factors section, and model (8) and (9) add the length of risk factors section and fog index, respectively.

Of the seven sentiment variables of the risk factors section, four sentiment (negative, uncertain, weak modal and constraining) have positive and significant coefficient values. Negative, uncertain, weak modal and constraining are all significant at 1% level. Constraining has the greatest regression coefficients with a value of 13.5141, followed by weak modal (8.5603) and uncertain (6.6451). These results are economically significant as well and could be explained in great detail. We find that a one standard deviation increases in proportions of negative, uncertain, weak modal and constraining tones lead to a 2.48%, 3.32%, 3.42% and 2.70% increase in underpricing, respectively. Note that positive, litigious and strong modal’s coefficients are not statistically significant. Thus, the proportions of these three sentiments do not help explain the investigated relationship.

The results show that deSPACs with higher level of negative, uncertain, weak modal and constraining text in risk factors section tend to have higher level of underpricing. In other words, these four tones could explain the deSPAC underpricing phenomenon to a great extent. Our findings are not totally the same as the previous research by Loughran and McDonald (2013) that focuses on US IPOs prospectus, which shows that legal sentiment could explain IPO first-day returns and offer price revisions, while this study support their view that positive sentiment has little explanatory power.

Then we investigate the impact of information amount (length of risk factors section) and readability (proxied by fog index) on deSPACs first-day return. Table 2.3 show that the natural log of words in risk factors section in model (8) and fog index of risk factors section are both insignificant, implying that the length and fog index of risk factors section does not have any explanatory power of the deSPACs first-day return. This may result from the fact that investors may focus more on the quality and clarity of the information provided in the prospectus rather than its length. If the prospectus contains clear and concise information about the company's financials, business model, and future prospects, investors are able to value companies more accurately, which in turn leads to lower levels of underpricing.

In terms of control variables, some meaningful results are also obtained. For example, PIPE Size is positive and significant in all nine models of table 2.3, showing that deSPACs with higher amount of private investment in public equity (raise more additional capital to close a merger transaction with a target company) tend to have higher first-day return. Cost of debt is positive and significant in all nine models of table 2.3, implying the higher cost for companies to raise fund, the higher level of underpricing they tend to have. Besides, the variable "Months from DA to completion" is quite interesting. On the one hand, it might signal that the vehicle has had to rush to deSPAC and therefore more effort might have been put in the prospectus to justify the rationale of the choice. On the other hand, this variable also captures the time left for investors to analyse the text of the prospectus. The longer the time to analyse the text may lead to a deeper understanding of its content and to the identification of the company's risk points, which in turn reduce the error in the assessment of the company's value, and hence the degree of underpricing. We find negative regression coefficients across all models in this variable, which supports the latter idea. Not all results are discussed to avoid redundancy since this is not the core of the study.

To sum up, from what has been discussed above, Hypothesis 1a (H1a) is supported.

Table 2.3. Baseline Model Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% Negative	3.5466***								
	(1.3153)								
% Positive		8.8821							
		(7.1468)							
% Uncertain			6.6451***						
			(1.8973)						
% Litigious				0.8623					
				(3.5155)					
% Strong Modal					6.4544				
					(9.3781)				
% Weak Modal						8.5603***			
						(2.3925)			
% Constraining							13.5141**		
							(5.2158)		
Number of Words (log)								-0.0622	
								(0.0494)	
Fog index									-0.0046
									(0.0095)
Control Variables									
IPO Size (log)	-0.0364	-0.0319	-0.0363	-0.0310	-0.0312	-0.0360	-0.0364	-0.0322	-0.0315
	(0.0264)	(0.0258)	(0.0264)	(0.0255)	(0.0261)	(0.0264)	(0.0255)	(0.0268)	(0.0253)
PIPE Size (log)	0.0046**	0.0041**	0.0045**	0.0042**	0.0041**	0.0045**	0.0043**	0.0043**	0.0041**
	(0.0019)	(0.0018)	(0.0019)	(0.0019)	(0.0018)	(0.0019)	(0.0018)	(0.0018)	(0.0019)
Months from IPO to DA	0.0059**	0.0057*	0.0064**	0.0050*	0.0052*	0.0063**	0.0055**	0.0054**	0.0051*

	(0.0027)	(0.0029)	(0.0027)	(0.0027)	(0.0027)	(0.0027)	(0.0027)	(0.0025)	(0.0027)
Months from DA to Completion	-0.0033	-0.0044	-0.0032	-0.0055	-0.0056	-0.0030	-0.0040	-0.0045	-0.0053
	(0.0058)	(0.0064)	(0.0061)	(0.0060)	(0.0060)	(0.0061)	(0.0057)	(0.0066)	(0.0063)
Top underwriter dummy	-0.0233	-0.0210	-0.0218	-0.0225	-0.0213	-0.0232	-0.0234	-0.0227	-0.0198
	(0.0233)	(0.0231)	(0.0232)	(0.0219)	(0.0234)	(0.0232)	(0.0230)	(0.0248)	(0.0227)
Well-known sponsor dummy	0.0864*	0.0815*	0.0833*	0.0816*	0.0820*	0.0853*	0.0847*	0.0815*	0.0828*
	(0.0454)	(0.0461)	(0.0444)	(0.0460)	(0.0461)	(0.0442)	(0.0449)	(0.0468)	(0.0477)
Serial sponsor dummy	-0.0410	-0.0372	-0.0433	-0.0364	-0.0358	-0.0439	-0.0423	-0.0352	-0.0362
	(0.0326)	(0.0325)	(0.0328)	(0.0312)	(0.0316)	(0.0328)	(0.0324)	(0.0312)	(0.0319)
% Shares Redeemed	0.0586	0.0606	0.0582	0.0613	0.0605	0.0576	0.0554	0.0646	0.0590
	(0.0507)	(0.0508)	(0.0492)	(0.0518)	(0.0528)	(0.0493)	(0.0517)	(0.0518)	(0.0519)
Asset-to-debt ratio	-0.0002	-0.0001	-0.0002	-0.0001	-0.0001	-0.0002	-0.0003	-0.0002	-0.0002
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0005)	(0.0004)
Market-to-book ratio	0.0003**	0.0003**	0.0004**	0.0003*	0.0003*	0.0004**	0.0004**	0.0003*	0.0003*
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Tobin's Q	0.0025	0.0014	0.0033	0.0015	0.0015	0.0031	0.0033	0.0017	0.0014
	(0.0052)	(0.0051)	(0.0054)	(0.0051)	(0.0051)	(0.0054)	(0.0054)	(0.0052)	(0.0051)
Market Cap (log)	-0.0076*	-0.0071	-0.0086*	-0.0067	-0.0064	-0.0084*	-0.0076*	-0.0061	-0.0070
	(0.0043)	(0.0045)	(0.0044)	(0.0042)	(0.0043)	(0.0044)	(0.0045)	(0.0041)	(0.0048)
Cost of debt	0.0998***	0.1002***	0.0958***	0.1050***	0.1040***	0.0966***	0.1003***	0.1005***	0.1032***
	(0.0342)	(0.0340)	(0.0342)	(0.0344)	(0.0346)	(0.0342)	(0.0338)	(0.0347)	(0.0344)
Market return	15.8204**	16.7657**	16.6293**	16.1853**	16.3256**	16.9848**	17.1098**	16.5086**	16.4520**
	(7.3176)	(7.3088)	(7.3017)	(7.2371)	(7.2115)	(7.3362)	(6.9592)	(7.1926)	(7.0063)
_cons	-0.1207	-0.1199	-0.1526	-0.0656	-0.0556	-0.1632	-0.1380	0.3992	0.0882
	(0.1939)	(0.1946)	(0.1919)	(0.2088)	(0.1809)	(0.1911)	(0.1929)	(0.4906)	(0.3441)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
r2_a	0.2573	0.2535	0.2641	0.2505	0.2510	0.2643	0.2596	0.2562	0.2514
N_full	252	252	252	252	252	252	252	252	252

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.4.2 Robustness Tests

This study mainly carries out robustness tests from two perspectives. The first is to exclude some specific samples that satisfy particular condition, and run regression on sub-samples to observe the changes of significance of key variables' coefficients. The second is to adjust the empirical model to ensure that the conclusion of the study does not change with different model specifications.

2.4.2.1 Substitute sample

For this part, the core idea is to exclude the driving effect of special samples on the overall regression results. Recent study shows that healthcare SPACs delivers highly negative returns in the short term and substantially under-performances small-cap firms and (non-SPAC) healthcare companies (Gigante and Notarnicola, 2021). This means that the information disclosed by healthcare deSPACs in prospectus is biased, where the potential risks faced are not revealed enough, and their risks are not fully reflected in the offering price. Thus, we first define a dummy variable named "company" that is set to 0 if the deSPAC company is in healthcare sector, and is set to 0 if not. Then we construct an interaction term comprised of the four different tones multiplies dummy variable "company", respectively. Four interaction terms are then incorporated in the empirical model.

Table 2.4 present the regression results after adding interaction terms to exclude the driving effect of special samples on the overall regression results. The core sentiment variables, namely negative, uncertain, weak-modal, constraining, all remain significant at the 1% significance level. Four interaction terms are not statistically significant. These results show that after incorporating interaction terms to address the potential driving effect of specific samples, the baseline result is still robust.

Table 2.4. Robustness Check: Substitute Sample

	(1)	(2)	(3)	(4)
% Negative	3.4144***			
	(1.2621)			
% Uncertain		6.0309***		
		(1.6285)		
% Weak Modal			7.7484***	
			(2.0194)	
% Constraining				15.3754***
				(5.4709)
% Negative × Company	-0.1599			
	(0.5296)			
% Uncertainty × Company		-0.1328		
		(0.6807)		
% Weak Modal × Company			-0.0327	
			(0.9132)	
% Constraining × Company				-0.1806
				(1.7086)
Control Variables	Control	Control	Control	Control
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry
r2	0.3249	0.3293	0.3299	0.3297
N_full	252	252	252	252

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.4.2.2 Change Model Specification

Now we will change model specifications to observe whether the significance of core sentiment variables remain unchanged and the conclusion is robust.

In our baseline regression, the empirical model is clustered by industry (using GIC Standard) to account for the correlation of the error terms. First, we use robust standard error instead of the baseline setting that is clustered by industry (GIC standard). Second, the model is clustered by deSPAC company level. Third, we change the industry categorization standard to the North American Industry Classification System (NAICS), a more granular categorization criteria with 20 sectors, 1,057 industries, and 5,994 unique industries, while the currently used GIC standard has 10 sectors, 157 sub-industries, and 1,058 industries. Apart from that, we also change our settings with regard to the industry fixed effects, where we use another categorization standard of industries. Finally, we drop the industry fixed effects. Note that all other model specifications remain the same as the baseline model

Table 2.5 presents the regression results after changing model specifications, where panel A shows the result of using robust standard error, panel B gives the result of clustering by each deSPACs, panel C collects the result of clustering on North American Industry Classification, panel D presents the result of changing industry fixed effects using another categorization standard, and panel E displays the result of dropping industry fixed effects. The core sentiment variables, namely negative, uncertain, weak-modal, constraining, all remain significant under five different model specifications, which shows the baseline result is not due to particular model settings, and therefore the conclusion derived is robust.

Table 2.5. Robustness Check: Change Empirical Model

Panel A. Using Robust Standard Error				
	(1)	(2)	(3)	(4)
% Negative	3.5466**			
	(1.5379)			
% Uncertain		6.6451***		
		(2.5352)		
% Weak Modal			8.5603***	
			(3.1799)	
% Constraining				13.5141**
				(5.2592)
Control Variables	Control	Control	Control	Control

Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes	Yes
r2_a	0.2573	0.2641	0.2643	0.2596
N_full	252	252	252	252

Panel B. Clustering: Individual Level				
	(1)	(2)	(3)	(4)
% Negative	3.5466**			
	(1.5379)			
% Uncertain		6.6451***		
		(2.5352)		
% Weak Modal			8.5603***	
			(3.1799)	
% Constraining				13.5141**
				(5.2592)
Control Variables	Control	Control	Control	Control
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm
r2_a	0.2573	0.2641	0.2643	0.2596
N_full	252	252	252	252

Panel C. Clustering: North American Industry Classification (NAICS)				
	(1)	(2)	(3)	(4)
% Negative	3.5466**			
	(1.5153)			
% Uncertain		6.6451**		
		(2.5844)		
% Weak Modal			8.5603***	
			(3.2372)	
% Constraining				13.5141**
				(5.4805)
Control Variables	Control	Control	Control	Control
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes

Country Fixed Effect	Yes	Yes	Yes	Yes
Clustering	Industry (NAICS)	Industry (NAICS)	Industry (NAICS)	Industry (NAICS)
r2_a	0.2573	0.2641	0.2643	0.2596
N_full	252	252	252	252

Panel D. Fixed Effects: Change Industry Categorization Standards

	(1)	(2)	(3)	(4)
% Negative	3.7675**			
	(1.4057)			
% Uncertain		7.5279***		
		(2.1936)		
% Weak Modal			10.0481***	
			(2.8555)	
% Constraining				10.8892*
				(5.4876)
Control Variables	Control	Control	Control	Control
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry
r2_a	0.2159	0.2256	0.2269	0.2135
N_full	252	252	252	252

Panel E. Fixed Effects: Drop Industry Fixed Effects

	(1)	(2)	(3)	(4)
% Negative	3.3502**			
	(1.3018)			
% Uncertain		5.9934***		
		(1.7115)		
% Weak Modal			7.8049***	
			(2.0880)	
% Constraining				15.2552***
				(5.5712)
Control Variables	Control	Control	Control	Control
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes

Country Fixed Effect	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry
r2_a	0.2473	0.2524	0.2530	0.2529
N_full	252	252	252	252

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

2.4.3 Channel Analysis

The baseline result shows that there is a statistically significant positive relationship between negative, uncertain, weak-modal, constraining sentiments of the prospectus' risk factors section and deSPACs underpricing. To move beyond a superficial correlation between variables and fully address the behavioural foundation of the observed underpricing, we strive to explore the potential channels of how negative, uncertain, weak-modal, constraining sentiments of the prospectus' risk factors section influence deSPACs underpricing. We propose two potential channels and attempts to validate them using econometric methods. Specifically, Channel 1 focuses on the behavioural element of 'cognitive bias'. This is originated from the subjective level of investors' perception of risk and subsequent irrationality in the decision-making process, which leads to systematic underestimation of firm value by investors. Channel 2 is derived from the objective level that tone affects the degree of information asymmetry between the company and investors by influencing the amount of key information embedded in the prospectus, which in turn prevents investors from accurately assessing the value of the company.

To put it in detail, first of all, the utilization of unfavorable and equivocal tones exerts an influence on investors' risk perceptions and their confidence in the company, thereby impacting their decision-making processes. This risk perception may be irrational because investors may not adequately consider the fundamental information about the company, but are influenced by emotions and herd mentality. Specifically, when corporations excessively employ unfavorable and equivocal language in the risk factors segment of the prospectus, the efficacy of risk disclosure for investors in accurately assessing the value and future performance of the company becomes constrained. Consequently, investors are inclined to perceive a greater number of risks and uncertainties associated with the company, thereby instigating doubts and concerns regarding the prospects of the deSPAC process. This, in turn, diminishes investors' confidence in the company. The aforementioned factor has consequential implications on investors' assessment of the company's enduring worth, thereby resulting in a decline in investors' inclination to allocate their capital towards the company.

Within the first channel, underwriters and firm's market capitalization play a crucial moderating role. Firstly, we discuss the role of the underwriters. Underwriters deserve special attention because they are important information intermediaries in the listing process (Ding, 2016). Previous research showed that more reputable underwriters may help reduce information asymmetry via their certification role (Beatty and Ritter 1986). Well-known underwriters usually have a higher level of professionalism and credibility. deSPACs with a more reputable underwriter can send positive signals to the market about the quality and value of the company. However, this signaling effect can be weakened when the prospectus issued by the reputable underwriter useing excessive unfavorable and ambiguous language. Investors may assume that even a reputable underwriter cannot accurately grasp the risk points of a company, let alone themselves, and therefore presume that there is a greater likelihood of non-disclosure or concealment of information at deSPAC. This further amplifies investors' negative assessment of the company's credibility and risk exposure, and creates a more pessimistic outlook on the company's future growth. Secondly, we address the role of firm's market capitalization. Firms with lower market cap are usually less risk-resistant, which usually have unstable financial positions, fluctuating revenues and irregular disclosure. These characteristics make investors less likely to know and trust firms with lower market cap. Therefore, if firms with lower market cap use a more unfavorable and ambiguous tone, it may exacerbate the level of investor distrust, and perceive more risk and uncertainty.

The utilization of equivocal language significantly impacts the precision of investors' assessment of firm's value. The temporal disparity between the release date of prospectus and the issue date enables investors to assimilate the provided information. Investors typically evaluate a company by considering its financial standing, market potential, managerial expertise, and other determinants. The price dynamics observed in market are a manifestation of the assimilation of information presented in the prospectus by rational economic agents, namely investors. Using ambiguous language does not enable investors to use textual information to make reasonable judgments about the value of the company, and this opacity further leads to a higher level of risk and uncertainty, which in turn leads to a decrease in the company's valuation. By contrast, use of negative and constraining tone is reflective of the objective reality of the company's operations, and therefore use of these two tones will not affect the accuracy of the company's valuation.

Within the second channel, prospectus length plays an important moderating role. Companies with longer prospectuses usually have more complex business structures, more risk factors, and more disclosures. These characteristics reduce readability and comprehensibility of information contained in the text of the prospectus, increase difficulty of investors to access and interpret information. Due to limited time interval between date of release prospectus and date of issuance, investors may not be able to fully understand and digest information provided if the prospectus is lengthy. At this point, if prospectus contains a large amount of vague and uncertain information, on the one hand, the readability of the prospectus is poor, and on the other hand, the information provided is not sufficiently precise, which affects the quality of the information. This fails to reduce the degree of information asymmetry, and since the prospectus is longer, it is more difficult for investors to distill core information, which results in a greater bias in the assessment of company value, leading to a higher degree of underpricing.

In order to validate above proposed channels, this study conducts an econometric analysis. First, regarding the role played by the underwriter in the first channel, this study divides the sample into two different sub-samples according to the underwriter's quality and see if there are significant differences in the coefficients across subgroups. Panel A of table 2.6 shows the regression results for four sentiments on underpricing, where column (1) (3) (5) (7) corresponds to the sub-sample whose underwriter is not among the top 5 underwriters according to Financial Times, while column (2) (4) (6) (8) corresponds to the sub-sample with top 5 underwriters. The results present those coefficients of tone variables in column (1) (3) (5) (7) are insignificant and column (2) (4) (6) (8) are positive and statistically significant, which reflects the fact that the positive impact of negative, uncertain, weak-modal, constraining sentiments on deSPAC underpricing tends to be greater for SPACs with top-tier underwriter[41]. Then we verify the role played by the level of market capitalization in the first channel. This study divides the sample into two different sub-samples according to market cap and see if there are significant differences in the coefficients across subgroups. Panel B of table 2.6 shows the regression results for four sentiments on underpricing, where column (1) (3) (5) (7) corresponds to the sub-sample with lower market cap, while column (2) (4) (6) (8) corresponds to the sub-sample with higher market cap. The results present those coefficients of tone variables in column (1) (3) (5) (7) are positive and statistically significant and column (2) (4) (6) (8) are insignificant, which reflects the fact that the positive impact of negative, uncertain, weak-modal, constraining sentiments on deSPAC underpricing tends to be greater for deSPACs with lower market cap. This result supports Moeller et al. (2004) view on M&A that smaller public acquirers experience larger positive returns upon announcing acquisition targets. The above two empirical evidence suggests that the first channel proposed in this study, i.e., "at the subjective level, investors' perception of risk and irrationality in the decision-making process enable them to systematically undervalue firms", is plausible.

Next, this study verifies the role played by prospectus length in the second channel. We divide sample into two different sub-samples according to the total words of risk factors section and see if there are significant differences in the coefficients across subgroups. Panel C of table 2.6 presents the regression results for four sentiments on underpricing, where column (1) (3)

---

[41] For the underwriter reputation I also use the traditional one found on Ritter's website, which scores underwriter from 1-9. The same conclusion is derived and the result is shown in Table 2.A3 in the appendix.

(5) (7) corresponds to the sub-sample with shorter length, while column (2) (4) (6) (8) corresponds to the sub-sample with longer length. The results show that there is no significant difference between two sub-groups for negative sentiment (column 1, 2) and constraining sentiment (column 7, 8) since the coefficients are all insignificant. As stated above, this may result from the fact that use of negative and constraining tone is reflective of the objective reality of the company's operations, and therefore use of these two tones will not affect the accuracy of the company's valuation. Comparing the results of column (3) (4) and (5) (6), we find that the positive impact of uncertain and weak-modal sentiments on deSPAC underpricing tends to be greater for deSPACs with longer risk factors length. This suggests that the second channel proposed in this study, i.e., "at the objective level, investors are unable to accurately estimate the value of firms in an asymmetric information environment", is reasonable.

Table 2.6. The Results of Channel Analysis

Channel 1: Investors' cognitive bias at the subjective level								
Panel A. Underwriter								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Negative	2.9320	4.1297**						
	(2.4285)	(1.6726)						
% Uncertain			2.5352	6.1275***				
			(3.4493)	(2.0902)				
% Weak Modal					5.1033	8.1983***		
					(4.9558)	(2.6387)		
% Constraining							10.4000	15.9481**
							(10.4452)	(6.7041)
Ctrl. Variables	Control	Control	Control	Control	Control	Control	Control	Control
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
r2	0.5686	0.2192	0.5644	0.2247	0.5679	0.2278	0.5685	0.2271
N_full	98	154	98	154	98	154	98	154

Panel B. Market Cap								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Negative	3.7229**	3.5190						

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(1.4396)	(2.9759)						
% Uncertainty			5.3639***	3.5406				
			(1.8518)	(3.6708)				
% Weak Modal					6.8166***	5.0647		
					(2.4990)	(4.8971)		
% Constraining							14.2320***	6.1040
							(5.2434)	(8.3317)
Ctrl. Variables	Control	Control	Control	Control	Control	Control	Control	Control
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
r2	0.3194	0.3270	0.3220	0.3217	0.3219	0.3237	0.3226	0.3177
N_full	126	126	126	126	126	126	126	126

Channel 2: Inadequate disclosure of core information at the objective level

Panel C. Text Length of Risk Factors Section

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Negative	3.2416	2.7122						
	(2.6225)	(2.0761)						
% Uncertainty			3.8356	5.0686**				
			(3.9562)	(2.3006)				
% Weak Modal					6.0250	5.7858*		

					(5.5832)	(3.0047)		
% Constraining							9.8154	8.3694
							(11.6052)	(8.9899)
Ctrl. Variables	Control	Control	Control	Control	Control	Control	Control	Control
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
r2	0.7318	0.3523	0.7311	0.3576	0.7321	0.3554	0.7309	0.3520
N_full	126	126	126	126	126	126	126	126

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

2.4.4 Additional Analysis

It is important to clarify that our primary methodological framework is textual sentiment analysis. However, to address the potential overlap among the four specific negative-related tone dimensions identified in our baseline results, we further employed Principal Component Analysis as an additional analysis. Following the standard approach in the literature (e.g., Loughran and McDonald, 2013), PCA serves specifically to verify whether these sub-dimensions proxy for a common underlying attribute.

2.4.4.1 Principal component analysis on the tones of the four uncertainty word lists

Negative, uncertain, weak modal, constraining sentiments are statistically significant in the baseline result. Of the 297 uncertain words, 27 overlap with the weak-modal list, and of the 184 constraining words, 31 overlap with negative list. Considering these overlaps, it is reasonable to question whether these four sentiments word lists reflect the same attribute or whether they capture features that are specific to their intended sentiment. Thus, we refer to Loughran and McDonald (2013) to carry out the Principal Component Analysis to address this issue. The first and second principal components are extracted from the negative, uncertain, weak modal, constraining sentiment (principal components are obtained from a 4 by 252 matrix, where 252 is the number of Completed deSPACs). We focus on the extent to which each deSPACs loads on the first and second components.

If only the first principal component is significant in the regression to the first-day return, then it means that these four sentiments word list probably reflect the same feature. Since the purpose of principal component analysis is to find a linear combination that can explain the maximum variance of the original data, if only the first principal component is significant, it means that it contains most of the information of the original data, while other principal components are relatively unimportant. This shows that there is a strong correlation between the variables in the original data, which means that they reflect the same or similar characteristics. That is to say, negative, uncertain, weak-modal, constraining all proxy for the same effect.

If the second principal component is also significant, it means that it contains a part of the information of the original data as well, and this part of information is different from the first principal component. This shows that there are some differences between the variables in the original data, that is to say, they reflect different or complementary characteristics. Under this circumstance, it can be considered that the four sentiments word lists capture different features.

Table 2.7 presents the regression result where the core explanatory variables are first and second principal component and first-day return is the dependent variable. Control variables are also incorporated in the model. The first principal component is positive and statistically significant at 1% confidence level, while the second principal component is insignificant. Thus, this study finds that negative, uncertain, weak-modal, constraining all proxy for the same effect and reflect the same attribute based on the result of principal component analysis.

Table 2.7. Additional Analysis Using Principal Component Analysis

	(1) First-day return
First Principal Component	0.0170***
	(0.0051)
Second Principal Component	0.0011
	(0.0118)
Control Variables	
IPO Size (log)	-0.0374
	(0.0262)
PIPE Size (log)	0.0045**
	(0.0019)
Months from IPO to DA	0.0062**
	(0.0027)
Months from DA to Complete	-0.0030
	(0.0059)
Top underwriter dummy	-0.0232

	(0.0232)
Well-known sponsor dummy	0.0858*
	(0.0446)
Serial sponsor dummy	-0.0438
	(0.0330)
% Shares Redeemed	0.0567
	(0.0500)
Asset-to-debt ratio	-0.0002
	(0.0004)
Market-to-book ratio	0.0004**
	(0.0002)
Tobin's Q	0.0034
	(0.0055)
Market Cap (log)	-0.0083*
	(0.0044)
Cost of debt	0.0971***
	(0.0340)
Market return	16.6924**
	(7.1612)
_cons	0.0272
	(0.1743)
Year Fixed Effect	Yes
Industry Fixed Effect	Yes
Country Fixed Effect	Yes
Clustering	Industry
r2_a	0.2595
N_full	252

Notes: Regressions with first-day return as the dependent variable, and the first and second principal components as explanatory variables.

2.4.4.2 Tones of other sections of the prospectus on underpricing

A prospectus is a legal disclosure document that provides information about an investment offering to the public, and that is required to be filed with the Securities and Exchange Commission (SEC) or local regulator. The prospectus contains information about the company, its management team, recent financial performance, and other related information that investors would like to know.

The analysis above is based on the risk factors section of deSPACs prospectuses, but there are still many other sections in a company's prospectus. For example, 1) Management's discussion section provides an analysis of the company's financial condition and results of operations, as well as its future plans and prospects. It may also include information about the industry, market trends, competition, risks, opportunities, and challenges that the company faces. 2) Prospectus summary section provides a brief overview of the main information in the prospectus, such as the company's business, financial highlights, risk factors, offering details, and use of proceeds. It is intended to help investors understand the key features of the offering and decide whether they are interested in reading the full prospectus. 3) Use of proceeds section explains how the company intends to use the net proceeds from the offering. It may also include information about any existing or planned debt or equity financing, capital expenditures, acquisitions, or other purposes.

In order to reflect the impacts of tones of other sections of the prospectus on underpricing, we recalculate the tone variables for each section (management's discussion, prospectus summary, use of proceeds, and full text), which is similarly defined as the ratio of each total tone language related words to total number of words of this section. Then we run the baseline model for each section and organise the results into different panels of table 2.8.

Panel A of table 2.8 shows that for management's discussion section, constraining sentiment is positive and statistically significant at 5% confidence level, and panel B reflects that for prospectus summary section, negative sentiment is positive and statistically significant at 5% confidence level. As for panel C and D, No sentiment, length, readability variables from the section of "use of proceeds" and full text are statistically significant.

To sum up, though some sentiment variables calculated from other sections of prospectus are significant, the coefficient itself and the statistical significance is lower than its counterpart in risk factors section, showing that tones of risk factors section explain deSPAC underpricing to a greater extent than other sections of prospectus and full text. This may possibly due to the fact that risk factors section discloses various adverse situations and uncertainties that the issuer may face in great detail, where the issuer needs to cover all possible risks as much as possible, and provide specific descriptions and analyses for each risk, explaining their possible impacts and countermeasures. Especially that the risk factors section in the prospectus contains only unfavorable information on possible future economic events (Ding, 2016). Thus, this part of information could be more useful and critical to investors for estimates the firm's value.

Table 2.8. Tones of Other Sections on deSPAC Underpricing

Panel A. Management Discussion									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% Negative	2.3286								
	(2.3085)								
% Positive		-5.8300							
		(5.4364)							
% Uncertain			3.6601						
			(3.2112)						
% Litigious				2.7823					
				(3.0464)					
% Strong Modal					-4.8430				
					(8.2044)				
% Weak Modal						-1.0668			
						(3.1920)			
% Constraining							14.8789**		
							(6.9926)		
Number of Words (log)								0.0087	
								(0.0183)	
Fog index									0.0013
									(0.0061)
Ctrl. Variables	Control	Control	Control	Control	Control	Control	Control	Control	Control
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
r2_a	0.2507	0.2509	0.2516	0.2501	0.2496	0.2492	0.2587	0.2496	0.2492
N_full	252	252	252	252	252	252	252	252	252

Panel B. Prospectus Summary

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% Negative	4.1062**								
	(1.8036)								
% Positive		1.1367							
		(3.1065)							
% Uncertain			1.9337						
			(1.6292)						
% Litigious				-5.6910					
				(4.4442)					
% Strong Modal					-6.6171				
					(10.6541)				
% Weak Modal						1.1653			
						(1.9222)			
% Constraining							3.8620		
							(6.3496)		
Number of Words								-0.0314	
								(0.0210)	

Fog index									-0.0019
									(0.0057)
Ctrl. Variables	Control	Control	Control	Control	Control	Control	Control	Control	Control
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
r2_a	0.2610	0.2506	0.2524	0.2545	0.2524	0.2509	0.2521	0.2555	0.2507
N_full	252	252	252	252	252	252	252	252	252
Panel C. Use of Proceeds									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% Negative	-0.8551								
	(4.7421)								
% Positive		4.0150							
		(8.8490)							
% Uncertain			1.8396						
			(1.6617)						
% Litigious				-3.9914					
				(2.8065)					
% Strong Modal					0.6118				
					(1.3491)				
% Weak Modal						1.7023			
						(5.6860)			

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% Constraining							3.1184		
							(4.9452)		
Number of Words								-0.0052	
								(0.0084)	
Fog index									0.0028
									(0.0063)
Ctrl. Variables	Control	Control	Control	Control	Control	Control	Control	Control	Control
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
r2_a	0.2504	0.2511	0.2551	0.2610	0.2514	0.2511	0.2511	0.2515	0.2504
N_full	252	252	252	252	252	252	252	252	252

Panel D. Full Text

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
% Negative	3.9650								
	(3.5056)								
% Positive		0.2626							
		(13.0518)							
% Uncertain			6.5465						
			(4.5577)						
% Litigious				-2.5202					
				(7.0034)					

% Strong Modal					-14.6552				
					(23.3221)				
% Weak Modal						7.0412			
						(5.3476)			
% Constraining							18.9176		
							(12.1688)		
Number of Words								-0.0207	
								(0.0367)	
Fog index									-0.0159
									(0.0155)
Ctrl. Variables	Control	Control	Control	Control	Control	Control	Control	Control	Control
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
r2_a	0.2522	0.2504	0.2539	0.2507	0.2521	0.2529	0.2548	0.2512	0.2568
N_full	252	252	252	252	252	252	252	252	252

2.5 Conclusion and Discussion

2.5.1 Conclusion

To address the relationship between text features (tone, length, readability) of the risk factors section of the prospectus and deSPAC underpricing, this study refers to Loughran-McDonald Sentiment Word Lists to construct tone variables, uses a sample of 252 deSPACs and applies an OLS regression model with fixed effects to control for unobserved heterogeneity and clustering to account for the correlation of the error terms. We analyse each feature extracted from the prospectus separately and find: 1) the underpricing of deSPACs is positively affected by the negative, uncertain, weak modal, and constraining tones of the risk factors section of their deSPAC prospectus, while other tones, text length, and readability of the risk factors section have no significant effect. 2) The results remain robust after going through two robustness tests of excluding samples and changing model specifications. 3) The positive impact of those four tones affects deSPAC underpricing mainly through two major channels. The first is on the subjective level that affects investors' risk perceptions and confidence in the company, which in turn affects their decision-making process and influences investors' processing of information. The second is on the objective level, where tone affects the degree of information asymmetry between the company and investors by influencing the amount of key information embedded in the prospectus, which in turn prevents investors from accurately assessing the value of the company. 4) We refer to Loughran and McDonald (2013) and carry out the Principal Component Analysis to address whether the four sentiments word lists (negative, uncertain, weak-modal, constraining) significant in baseline regression reflect the same attribute or whether they capture features that are specific to their intended sentiment, and find that negative, uncertain, weak-modal, and constraining tones all proxy for the same effect and reflect the same attribute based on the result of principal component analysis. 5) Generalize the analysis of risk factors section to other sections of the prospectus, namely management's discussion, use of proceeds, prospectus' summary, and full text (the impacts of tones of other sections of the prospectus on underpricing) and find that though some sentiment variables calculated from other sections of the prospectus are significant, the coefficient itself and the statistical significance level is lower than its counterpart in the risk factors section, showing that tones of the risk factors section have a greater impact on deSPAC underpricing than other sections of prospectus and full text.

2.5.2 Theoretical Contributions and Practical Implications

This study makes theoretical contributions to the existing literature stream from the following three aspects. First, to the best of our knowledge, this study is the first to introduce textual analysis methods into the research field of deSPACs. Second, this study expands the current research on factors influencing deSPAC underpricing through detailed analysis of tone variables extracted from risk factors section of the deSPAC prospectus. Third, a larger sample is constructed than previous studies and conclusions derived from a larger sample is perhaps more persuasive.

As for the practical implications, this study offers concrete vocational insights for market participants. For corporates, the findings establish a direct link between textual features and the cost of going public. We provide a strategic insight that precision in risk disclosure of SPAC is not merely a compliance exercise but a capital management tool. By reducing uncertain and constraining tone, issuers can mitigate the uncertainty discount applied by the market, thereby potentially reducing underpricing and retaining more value. For investors, this study facilitates a more sophisticated due diligence process. It suggests that investors should treat high levels of uncertain tone in the risk factors section of SPAC disclosure as a distinct pricing signal rather than just standard legal template. For the regulatory regime, regulators can use these findings to enhance market efficiency. The results support the development of stricter guidelines that discourage generic defensive disclosure in favour of specific, material risk articulation, thereby reducing the information gap between insiders and the public on the SPAC deals.

Besides, following the dynamics of the SPAC market, we address how the factors analysed in this chapter contribute to the broader economic environment. Our findings confirm that the complexity and ambiguity in risk disclosure exacerbate investors’ difficulty in accurately assessing firm value, which is detrimental to the efficient allocation of capital. When the capital market is tasked with pricing highly uncertain assets, this contributes to overall market inefficiency. It can also potentially increase the cost of raising external funds and challenge long-term economic conditions.

This study has some limitations that can also provide promising directions for future research. On one hand, while this study successfully introduces textual analysis and explains deSPAC underpricing through qualitative prospectus features, the time frame naturally defines the boundary conditions of our findings. This period that covers the recent SPAC boom establishes a critical benchmark for the disclosure practices and investor behaviour under a high-volatility capital market. Future research can build upon this foundation by extending the time frame. This extension is essential not due to a defect in the current sample, but to validate the generalisability of our established findings in the face of the implementation of more stringent regulatory frameworks. On the other hand, with the rapid development of machine learning methods, it is worth considering the use of more advanced methods to analyse text, in order to further demonstrate the relationship between text features and deSPAC underpricing.

Appendix

Table 2.A1. Variable Definition

Name	Definition
deSPAC underpricing	First-day return after the deSPAC process is completed and the target company is formally getting listed in stock exchange.
SPAC	
IPO Size	Natural logarithm of net proceeds (USD million)
PIPE Size	Natural logarithm of private investment in public equity (USD million)
Months from IPO to DA	The months spent since SPAC IPO to reach definitive agreement with merger partner
Top underwriter dummy	Dummy takes value of one if the deal is backed by the Top 5 Investment Banks for Equity Deals, according to Financial Times, namely Goldman Sachs, JP Morgan, Morgan Stanley, BofA Securities, and Citi. Zero otherwise.
Well-known sponsor dummy	Dummy takes value of one if the SPAC's management team, board of directors, or founders who are well known in the public or who belong to the executive management of major or notable companies, according to SPAC TRACK[42]
Serial sponsor dummy	Dummy takes value of one if the sponsor launches multiple SPACs at the same time
% Shares Redeemed	The percentage of public SPAC shares redeemed at merger vote.
Corporate Financial Indicators	
Asset-to-debt ratio	The company's total amount of assets divided by company's total amount of debt.
Market-to-book ratio	Market value of equity plus book value of total liabilities divided by the book value of equity and book value of total liabilities
Tobin's Q	The market value of a company divided by its assets' replacement cost.

[42] See spactrack.io/data-catalog. SPAC TRACK is a data platform for everyday investors and professionals that are looking for real time data and insights into the SPAC market.

Market Cap (log)	Natural logarithm of the total dollar market value of a company's outstanding shares of stock at the end of the first trading day after deSPAC.
Market Environment	
Cost of debt	10-year T-bill rate on the deSPAC complete date
Market return	30-day average Nasdaq return before the deSPAC complete date
Prospectus: Risk Factors Section	
% Negative	Proportion of negative words in risk factors sections
% Positive	Proportion of Positive words in risk factors sections
% Uncertainty	Proportion of Uncertain words in risk factors sections
% Litigious	Proportion of Litigious words in risk factors sections
% Strong Modal	Proportion of Strong Modal words in risk factors sections
% Weak Modal	Proportion of Weak Modal words in risk factors sections
% Constraining	Proportion of Constraining words in risk factors sections
Number of Words	Natural logarithm of total number words in risk factors sections
Fog index	Fog Index = 0.4(AWPS + % Complex), where AWPS is the average number of words per sentence and % Complex is the percentage of complex words (i.e., words that are longer than two syllables).

Table 2.A2. Frequency distribution of deSPACs across years and countries of the sample

Panel A. ***deSPACs frequencies by country of the sample***

Name	Definition	Name	Definition
Australia	1	Israel	10
Bermuda	2	Jersey	1
Canada	4	Luxembourg	5
Switzerland	1	Netherlands	6
Cayman Islands	24	Norway	1
United Kingdom	3	Singapore	1
Guernsey	1	United States	185
Gibraltar	1	Virgin Islands (British)	5
Ireland	1	Total	252

Panel B. ***deSPACs frequencies by year of the sample***

Year	deSPACs	Year	deSPACs
2021	150	2023	16
2022	86	Total	252

Table 2.A3. Channel Analysis: Using Ritter's Underwriter Score

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Negative	11.7977	3.9495**						
	(8.8179)	(1.7959)						
% Uncertainty			7.9574	7.9182**				
			(5.9518)	(3.4939)				
% Weak Modal					11.2589	9.5565**		
					(8.4634)	(3.9896)		
% Constraining							48.3564	11.7984
							(37.4486)	(7.1590)
Ctrl. Variables	Control	Control	Control	Control	Control	Control	Control	Control
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
r2	0.6341	0.4509	0.6075	0.4579	0.6094	0.4570	0.6466	0.4503
N_full	45	202	45	202	45	202	45	202

Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

Chapter 3

deSPAC MD&A Tone and Deal Performance

3.1 Introduction

A Special Purpose Acquisition Company, or SPAC, typically a non-operating entity established principally to raise capital through an IPO with the intention of acquiring an existing operating company. Owing to its lack of a defined business purpose at the time of formation, a SPAC is often termed a “blank check company” (Tran, 2010). In recent years, SPACs have attracted substantial interest and achieved significant global popularity, backed by renowned underwriters and investors. Based on data from SPAC Analytics, between 2020 and 2022, SPACs were the dominant mode of public financing in the U.S. equity markets. During this period, SPAC IPOs accounted for over 50% of all IPOs. In 2022 specifically, SPAC IPOs constituted 73% of the total IPOs, and the funds raised represented 59% of the overall capital raised via IPOs in the United States. In August 2024, nine SPACs listed in the U.S. raised $2 billion, marking the highest transaction volume and revenue since the start of 2022. Collectively, this information indicates that SPACs have emerged as one of the pivotal channels for companies to go public.

The growing popularity of SPACs attracts significant attention from academia. Compared to traditional IPOs, SPAC IPOs generally involve higher costs. This is primarily due to the dilution effects of sponsor incentive shares and warrants (Klausner et al., 2022; Gahng et al., 2023). At the same time, SPACs offer a faster listing path for smaller and higher-risk companies (Kolb et al., 2016; Gahng et al., 2023). Additionally, SPACs benefit from more relaxed regulatory requirements, while differences in litigation risks and regulatory scrutiny also influence firms’ decisions on their choice of listing method (Bai et al., 2021; Klausner et al., 2022; Gahng et al., 2023).

Many studies focus on the short-term and long-term performance of SPACs following the completion of their mergers with target companies (deSPAC), which is directly relevant to this study. First, regarding earnings forecasts and SPAC merger announcements, the literature generally finds that SPAC target companies with higher revenue growth projections experience more favorable short-term market reactions during the merger announcement period (Dambra et al., 2022). However, these gains are often unsustainable in the long term. Factors such as declining market sentiment, dilution effects, poor target company performance, and inherent structural issues of SPACs contribute to their weaker long-term performance (Kiesel et al., 2022; Dambra et al., 2023). In contrast, SPACs that do not disclose such forecasts tend to perform better (Castellani et al., 2023).

However, the extant literature has yet to explore how the tone within the Management Discussion and Analysis (MD&A) section of S-4 filings impacts the short-term deal completion return and long-term post-deal performance in the deSPAC process. Previous research regarding the tone of prospectuses and market reactions has predominantly concentrated on the IPO context. For instance, studies have shown that negative and uncertain tone variables, which are defined by the proportion of corresponding sentiment words in the prospectus, possess greater explanatory power compared to positive, strong modal, weak modal, and litigious tone variables in elucidating IPO underpricing (Guo et al., 2022). Moreover, IPOs with a higher prevalence of negative and uncertain text tend to exhibit more significant underpricing (Arnold et al., 2010; Loughran and McDonald, 2013). Li (2010) has also demonstrated that specific linguistic features within the MD&A section of 10-K reports are correlated with future firm performance and returns. Indeed, disclosure is not solely about the transmission of information; the manner in which information is conveyed is equally crucial (Bennett et al., 2024). Among these features, tone, being both a characteristic of non-financial information and an essential communication tool, should not be overlooked. Although textual analysis of corporate disclosure has increasingly gained popularity as a research tool, no such work has been conducted on SPACs. The notable structural and regulatory disparities between SPACs and traditional IPOs suggest that there exists an intriguing area of research regarding the unique role of tone in SPAC prospectuses and its influence on stock market reactions.

This chapter endeavors to address a significant lacuna in the existing literature by investigating the relationship between the tone of the Management Discussion and Analysis (MD&A) section and both the deal completion return and subsequent post-deal performance. Through comprehensive analysis, our evidence indicates that, at least in the short-term, the tone within the MD&A section exerts substantial influence on deal completion returns. Conversely, no discernible effects of the tone on post-deal performance are observed. Notably, the negative tone has a more pronounced impact on short-term deal completion returns compared to the positive tone. We ascribe this phenomenon to specific characteristics and the regulatory framework of SPACs, particularly the SPAC Safe Harbor provisions. These provisions may embolden companies to make inflated claims regarding their performance, unfettered by the threat of litigation. In such a context, rational investors are likely to anticipate such overstatements, rendering them less receptive to positive tones. In contrast, the negative tone can evoke a "*candor effect*", leading the market to perceive it as a marker of transparency rather than an indication of elevated risk. Furthermore, we propose and validate that the positive association between the negative tone and deal completion return is mediated through the role of sponsors. Serial sponsors enhance the candor effect of the negative tone through the combined mechanisms of reputation, economic incentives, and resource signaling. We also conduct an exploration of heterogeneity with respect to text length and underpricing, and the results corroborate the proposed mediating pathway. Finally, the robustness of our findings is firmly established through a series of rigorous robustness checks.

More importantly, examining the impact of the tone in MD&A section on the short-term deal completion return and long-term post deal performance not only fills a gap in the literature but also carries significant practical implications. From a theoretical perspective, prior literature demonstrates that MD&A tone plays a crucial role in influencing market reactions in traditional IPOs, shaping investor sentiment and decision-making (Li, 2010). However, SPAC IPOs differ markedly from traditional IPOs in key aspects, such as structure and the types of companies involved (Klausner et al., 2022; Gahng et al., 2023). This suggests that the role of tone in SPAC prospectuses may be more complex and could operate through different mechanisms. Consequently, findings from studies on traditional IPOs cannot be directly generalised to SPACs. In particular, current research on the economic consequences of SPAC disclosure tone remains inconclusive. Pawlicsek et al. (2024) argue that negative or uncertain language leads to reduced fundraising, while Naumovska et al. (2024) suggest that openly acknowledging uncertainty can enhance investor trust and increase the likelihood of SPAC IPO success. Our findings contribute to a better understanding of the market reaction mechanisms for SPACs, a unique financial vehicle in capital markets.

This research holds several practical implications for investors and firms engaged in deSPAC transactions. Regarding investors, prior research indicates that SPAC merger targets that voluntarily disclose optimistic financial forecasts can influence retail investors' purchasing decisions, thereby driving short-term stock price increases. In contrast, institutional investors, being proficient in discerning such pre-merger optimism, are less affected (Castellani et al., 2023; Dambra et al., 2023). The tone of the SPAC prospectus, particularly within the Management Discussion and Analysis (MD&A) section, serves as a crucial indicator of a company's prospects and plays a pivotal role in investment decision-making processes. A meticulous analysis of this tone can significantly assist investors in seeing through the exuberance of optimism or the unwarranted caution that may influence short-term investment decisions. Notably, retail investors, who rely on these public disclosures due to their relatively limited financial knowledge, are particularly vulnerable to the influence of an optimistic tone and market sentiment (Chapman et al., 2021). By comprehending the relationship between tone and stock performance, both in the short-term and long-term, this study empowers them to identify optimism bias, thus facilitating more rational investment decisions.

For firms, strategic utilization of tone in drafting their prospectuses, especially in the critical MD&A section, is essential. Indeed, an increasing body of research demonstrates that tone can determine the success of a SPAC IPO (Castellani et al., 2023). Firms that strike a balance between expressing confidence in future prospects and candidly disclosing risks and challenges can enhance their short-term success while simultaneously building long-term investor trust. Conversely, aside from the absence of tone management, over-optimism, vagueness, or other negative characteristics may lead to post-merger value erosion. Our findings prompt these firms to maintain a measured tone, one that promotes company growth and cultivates realistic investor expectations. The pursuit of short-term rewards while ensuring long-term viability contributes to a more transparent marketplace.

Consequently, this chapter endeavors to delve into how the tone of deSPAC prospectuses influences short-term deal completion returns and long-term post-deal performance. This in-depth analysis serves to augment the understanding of the tone as a pivotal component in information disclosure. By doing so, it contributes to enhancing market transparency, protecting investor interests, and buttressing the orderly operation of capital markets.

We address how disclosure actively shapes SPAC outcomes by examining the role of tone as a trust heuristic in decision-making under uncertainty. In the high-uncertainty deSPAC context, we identify a distinct "Candour Effect", where negative tone functions as a marker of management credibility rather than a risk signal. Notably, this study challenges the view of deSPAC performance as unvarying by demonstrating that this shaping effect is dynamic across distinct time horizons and deal types. By contrasting short-term deal completion returns with long-term post-deal performance, we show that market reactions evolve. It is initially driven by behavioural signals like candour, but ultimately converging to fundamentals. Furthermore, we find structural heterogeneity by isolating the role of serial sponsors, finding that they uniquely amplify this candour effect. This proves that deSPAC outcomes are not monolithic. Instead, they vary greatly on both the investment horizon and the specific structural characteristics of the deal.

The rest of this chapteris organised as follows. Section 2 provides a detailed literature review and summarise the research gap. Section 3 introduces the research design, including the data, variables, methodology, and provides summary statistics. Section 4 presents the empirical results. Section 5 concludes the chapter.

3.2 Literature Review

3.2.1 SPACs and Traditional IPOs

The growing popularity of SPACs draws significant attention from the academia. Many studies discuss the similarities and differences between SPAC IPOs and traditional IPOs. In terms of similarities, both serve as pathways for firms to raise capital. More specifically, the goal of both is to enable private companies to go public and allow their shares to be traded on the market (Klausner et al., 2022; Kolb et al., 2016).

However, there are significant differences between the two. Firstly, it is widely recognised that SPAC IPOs are typically more costly than traditional IPOs, mainly due to the dilutive effects of sponsor promote shares and warrants (Klausner et al., 2022; Gahng et al., 2023). Secondly, SPAC IPOs offer a faster alternative for companies in need of rapid access to the public markets (Kolb et al., 2016), whereas traditional IPOs require a longer process (Bai et al., 2021). Thirdly, SPAC IPOs tend to attract smaller, higher-risk companies, particularly those that might not otherwise qualify for a traditional IPO (Gahng et al., 2023). Fourthly, SPACs benefit from relatively lenient regulations (Klausner et al., 2022), and differences in litigation risk and regulatory oversight play a role in companies' choice of listing method (Bai et al., 2021).

To further explain this, the first difference relates to costs. Generally, SPAC IPOs are more costly than conventional ones for the dilution effect from the sponsor promote shares and warrants. While a more straightforward initial public offering basically involves underwriting and registration fees, the SPAC involves a complicated cost structure that includes warrants, underwriting fees, and sponsor shares (Klausner et al., 2022). Such effects, however, contradict the generally common wisdom that SPACs provide a cheaper route to going public. To that end, Gahng et al. (2023) present evidence indicating that the listing costs of SPACs generally surpass those associated with other, more conventional means of going public. Additionally, the amount of cash distributed by SPACs often fails to reach the advertised $10 per share, as this is contingent on redemption rates and fees. This further elucidates why the perception that SPACs are a more cost-effective option is misguided.

The second difference is speed of listing. SPAC IPOs are generally considered faster than traditional IPOs, as the SPAC has already completed its initial public listing, allowing the target company to go public through a merger with the SPAC. This offers a quicker path for companies aiming to list swiftly (Kolb et al., 2016). In contrast, traditional IPOs typically involve a longer process, including roadshows and marketing efforts, to secure investor participation and determine market pricing (Bai et al., 2021). However, since the JOBS Act, traditional IPOs can file confidentially, enabling many IPOs to complete within a couple of weeks of publishing the prospectus, narrowing the speed advantage of SPACs.

The third difference is characteristics of companies that typically pursue each route. SPAC IPOs tend to attract smaller, riskier companies, especially those not be able to access to traditional IPO market. For instance, growth-oriented, early-stage companies often opt for SPACs because unable to meet financial or other requirements of traditional IPOs (Bai et al., 2021). Traditional IPOs are more suitable for mature, larger companies, with underwriters typically favouring lower-risk firms (Gahng et al., 2023).

The fourth difference is related to investor-protection. Traditional IPOs are subject to stricter regulatory oversight, with underwriters playing a key role in certifying the company and ensuring investor protection (Bai et al., 2021). In contrast, SPACs benefit from more lenient regulations, allowing companies to make forward-looking statements about future revenues and profits—a “safe harbor” provision that is rarely seen in traditional IPOs (Klausner et al., 2022).

3.2.2 SPAC Short-term and Long-term Performance

Regarding the factors influencing short-term and long-term stock market performance of SPACs, existing research explored factors including earnings forecast, SPAC contract structures, SPAC sponsors, and target firm types, etc.

3.2.2.1 Impact of Earnings Forecast

Several studies examine short-term and long-term performance of SPAC target companies from the perspective of disclosure of earnings (or revenue) forecast and SPAC merger announcements. Dambra et al. (2022) analyses the impact of revenue forecasts on short-term market reactions and long-term performance. They find that SPAC targets with higher revenue growth projections experience more positive short-term market reactions, with the top-quartile companies in terms of revenue growth achieving an average abnormal return of 11% during merger announcement period. However, in the long term, companies with higher revenue forecasts perform worse, with those in the highest quartile of revenue growth experiencing significant stock price declines 6, 12, and 24 months post-merger. Further analysis reveals that retail investors are often influenced by these optimistic forecasts, whereas institutional investors react less strongly. This discrepancy may arise because retail investors typically lack the ability to analyse complex financial data and are more prone to overreact to growth forecasts, while institutional investors are more cautious and better equipped to identify risks and uncertainties in optimistic projections. Over the long term, as the market gradually recognises that these companies fail to meet their optimistic forecasts, stock prices begin to adjust accordingly.

Similarly, Dambra et al. (2023) links SPAC revenue forecasts to the level of attention from capital market participants, finding a positive correlation between two of them. SPAC companies with higher revenue growth projections usually exhibit poor stock performance and fail to meet expectations in the long run after completion of merge. Furthermore, such companies are more likely to face class-action lawsuits, particularly those concerning false or misleading forward-looking statements. This study also highlights that SPAC revenue forecast attracts considerable attention in capital markets, particularly among retail investors, while the impacts on institutional investors remains relatively subdued.

Castellani et al. (2023) focuses on the effect of voluntary financial forecast disclosures on investor behaviour, paying special attention to heterogeneity of reactions between retail and institutional investors regarding optimistic projections. Their studies conclude that SPAC target companies which voluntarily disclose optimistic financial forecasts influence retail investor purchasing behaviour significantly, leading higher stock price in short-term. However, institutional investors formulate their expectations before merger, therefore make a choice to redeem or sell shares and avoid losses from post-merger stock declines. Besides, their studies conclude that SPACs that disclosed optimistic financial forecasts performed poorly in 12 months following the merger, with an average monthly abnormal return of -5.54%, whereas SPACs that do not disclose such forecasts performed better.

Kiesel et al. (2022) explore determinants of short and long term market-reactions by examine time consuming to seek a target, and size of target company. Their studies highlight that, SPACs generate short-term positive returns on announcement day (+7.4% average abnormal return), although these gains typically do not persist into the long term due to factors such as fading market sentiment, dilution effects, underperformance of target companies, and structural issues within SPACs. As a result, long-term cumulative abnormal returns turn negative, with 12-month, 18-month, and 24-month cumulative abnormal returns of -14.1%, -20.2%, and -18.0%, respectively. Additionally, when time consuming from IPO to merger announcement is longer, short-term returns tend to decrease significantly. Larger target companies, however, are associated with better long-term performance.

3.2.2.2 Impact of Contractual Features

Several studies discuss the impacts of contractual features on SPAC performance. SPACs with a high warrant coverage ratio are typically of lower quality, exhibiting lower first-day returns, poorer post-merger performance, and higher redemption rates, as well as attracting less PIPE (Private Investment in Public Equity) investment (Finne and Haga, 2024). Regarding incentive structures, studies indicate that agency costs are prevalent in the SPAC market, and the alignment of incentives between SPAC sponsors and shareholders is closely tied to performance (Feng et al., 2023; Chiang et al., 2024a). For instance, SPACs nearing their acquisition deadline tend to perform worse (Dimitrova, 2017), while SPACs backed by private equity (PE) firms are significantly less likely to complete a merger, but when these SPACs do complete mergers, their post-merger returns outperform those backed by other types of sponsors (Del Giudice et al., 2024).

To discuss this in depth, Finne and Haga (2024) examines how the warrant structure (or more precisely, the warrant coverage) influences IPO performance, investor returns, and long-term success. Warrants serve as staged financing, as additional financing only happens when warrants are redeemed, while company uses initial funds effectively and achieves targets. This mechanism incentivises management to be more cautious with capital allocation, reducing the likelihood of overspending or inefficient investments. However, SPACs with higher warrant coverage tend to be of lower quality, exhibit lower first-day returns, perform worse during the post-merger (deSPAC) phase, and are associated with higher redemption rates and lower PIPE investment. This may result from the fact that the presence of warrants dilutes SPAC shareholders' equity, making PIPE investors less willing to participate and leading to higher redemption rates. This is consistent with the observation that SPACs with higher warrant coverage are typically lower-quality, and the market lacks confidence in these SPACs.

Contractual features influence the alignment of incentives between SPAC sponsors and shareholders, which in turn is closely related to performance. Dimitrova (2017) analyses how the pressure from the acquisition deadline and deferred underwriting fees create adverse incentives that negatively affect SPAC performance. The study finds that SPACs nearing two-year acquisition deadline or barely meeting 80% asset requirement tend to perform poorly, as sponsors have strong incentives to complete any merger, even a lower-quality one, to avoid liquidation. SPACs with deferred underwriting fees also perform worse, suggesting that underwriters may encourage lower-quality deals to ensure they receive fees upon merger completion. Increasing sponsor involvement in post-merger corporate governance improve long-term performance, underscoring the importance of effective governance after merger.

Chiang et al. (2024a) analyses how better-aligned sponsor contracts impact financing, investment, and performance of deSPACs compared to traditional IPOs. Their research, conducted from a South Korean perspective, finds that SPAC sponsors in Korea have incentives more closely aligned with investors' long-term interests. Sponsors are required to pay higher price to purchase their shares when launching a SPAC, typically at a discounted price relative to the market's fair value. Since sponsors face higher costs, they are more incentivised to ensure that the target company selected for the merger has strong long-term prospects and financial performance, ensuring a return on their investment. This results in lower redemption rates and better long-term buy-and-hold returns (BHAR) for South Korean SPACs.

In contrast, the incentive structure for U.S. SPACs creates misalignment with investors' interests, as U.S. sponsors typically acquire approximately 20% of sponsor shares at low price. This low-cost equity provides sponsors with substantial economic rewards even if they select a lower-quality merger target, leading them to prioritise completing a merger to realise their returns. Feng et al. (2023) explored this issue by U.S. data, analysing how agency costs and information asymmetry between SPAC sponsors and shareholders affect investor welfare. They found that agency costs are prevalent in US SPAC market, significantly reducing shareholder returns. The expected return differential between the lowest and highest agency cost transactions is 19 percentage points. Tying sponsor incentives to performance (such as through performance-based compensation) improves shareholder returns; for every 10% increase in performance-based incentives, shareholder returns increase by 1.8 percentage points. The study also finds that reducing warrant issuance has a smaller effect, with every 10% reduction in warrant issuance increasing shareholder returns by only 0.28 percentage points.

Del Giudice et al. (2024) examine the effect of sponsor reputation on sponsor-investor agency issues and whether sponsor type influences merger completion rates and post-merger performance. They show that private equity-backed SPACs are significantly less likely to complete a merger, but when they do, post-merger returns outperforms those of other types of SPAC sponsors. This is in line with private equity firms being more selective and conducting better due diligence in their selection process of merger targets, which creates an overall effect such that post-merger returns from targets acquired by the SPACs are better than those acquired by SPACs sponsored by other sponsors. In addition, this better return may also be due to private equity firms' experience and knowledge in assisting target firms with operational and financial post-acquisition performance. The SPAC sponsors who are former Fortune 500 executives hastily close mergers, but such mergers are primarily designed to benefit them rather than those who invest. In short, while Fortune 500 sponsors push through with mergers, they mostly create structures for their own gain, most times at the expense of the investors' return.

Lin et al. (2021) focuses on how the network centrality of SPAC sponsors influences SPAC success rates, deal quality, and long-term performance. They find that network centrality of sponsors in private equity/venture is a key predictor of SPAC success. A one standard deviation increase in network centrality raises the likelihood of merger success by 3.7% and improves post-merger monthly abnormal returns by 2.1%. SPAC sponsors with high network centrality raise 1.5 times more IPO funding and attract 5 times more PIPE financing compared to those with low centrality. Moreover, high-centrality sponsors complete mergers two months faster than those with lower centrality. Finally, high network centrality leads to better deal screening, with target companies selected by these sponsors having higher pre-merger revenues and post-merger Tobin's Q ratios.

Dimitrova and Fong (2023) examines how executive visibility affects SPAC financing, investor trading behaviour, and long-term performance. Executive visibility refers to the public exposure or prominence of SPAC sponsors and executives in media among investors. The study finds that highly visible management teams tend to attract more investor attention, particularly from retail investors, which in turn influences SPAC market performance and fundraising capacity. SPACs led by highly visible executives raise more capital during their IPOs and complete their IPOs faster. Retail investors perceive management visibility as positive signal and actively trade during merger announcements, resulting in higher trading volumes and abnormal returns. However, there is no significant relationship between management visibility and long-term SPAC performance. Institutional investors, capitalising on retail investors' biases, typically sell their positions before merger, having initially purchased highly visible SPACs. The behavioural differences between institutional and retail investors also explain the disconnect between short-term and long-term performance.

3.2.2.3 Other Factors

Additionally, some studies compare long-term performance of foreign SPACs and domestic SPACs post-merger. While foreign SPACs raise significantly less capital through IPOs and PIPE financing compared to domestic SPACs, and have notably higher redemption rates as well as longer period to find a target company and complete combination, both foreign and domestic SPACs exhibit poor long-term performance after mergers, with no significant difference between two of them (Chiang et al., 2024b). Other studies examine target companies located in US or not and its influence on long-term performance (Emm et al., 2024). They found that SPACs with foreign targets take longer to complete mergers and experience significantly lower announcement returns compared to SPACs with U.S. targets. Among these, SPACs targeting Chinese companies show the worst stock performance in the year following merger, while those targeting other emerging markets performed significantly better.

3.2.3 Impact of Tone in Disclosure

From what has been discussed above, we could find that the existing literature on the short-term and long-term performance of SPACs focus on factors such as earnings forecast disclosures, SPAC merger announcements, SPAC contract structures, and SPAC sponsors. To the best of our knowledge, there is no study that has yet analysed short- and long-term performance of target companies post-SPAC mergers from the perspective of the tone used in the prospectus.

In fact, tone, as a characteristic of non-financial information and an important mode of communication, should not be overlooked. Research on tone began with Loughran and McDonald (2011) and was later expanded by Bochkay et al. (2020). For example, Amoosegar et al. (2019) finds that the dispersion of tone carries informational value and is related to managerial incentives. Other studies examine how euphemisms (Suslava, 2021) and humor (Call et al., 2023) are linked to market reactions to negative news. In terms of SPAC-related research, Bui et al. (2024) discovers a positive correlation between SPAC activity (in terms of transaction volume and capital raised) and market sentiment, as measured by investor sentiment indices and consumer confidence indices.

Current research also explores the impacts of disclosure tone on the success of SPAC IPOs, particularly whether they can raise necessary capital. Naumovska et al. (2024) argue that SPAC founders should manage uncertainty through strategic communication to increase the success in IPO. By expressing certainty in areas where they hold an informational advantage, founders bolster investor confidence; conversely, openly acknowledging uncertainty in more ambiguous areas build trust either. Specifically, information related to human capital—such as the experience of the team, the qualifications of management, and past track records—can serve as signals to investors, reducing concerns over the founders' ability to execute the merger. When founders possess an informational advantage and express high levels of certainty, investors feel reassured, believing that founders have competence and confidence to execute the transaction and ensure future success. Conversely, in situations where both founders and investors face significant uncertainty—particularly when a SPAC has not yet identified a merger target—overstated certainty by founders may raise credibility concerns among investors, who may suspect that the true risks are being concealed. In these cases, candid acknowledgment of uncertainty, such as admitting that a merger target has not yet been identified can paradoxically foster greater investor trust. In other words, a degree of uncertainty, when appropriately conveyed, can serve as a signal that investors are more likely to accept, rather than falsely projected confidence.

Another study on tone presents different conclusions. Pawlicsek et al. (2024) find that, SPAC investors heavily rely on language style of disclosure documents and the background of the management team while information is limited to access to help make decision. Positive and extensive forward-looking language is associated with greater capital raised, while negative or uncertain language leads to less fundraising. Optimistic and forward-looking words are attractive and raise higher levels of fundraising, as a result of exhibition of management's confidence in the future after merger. Conversely, overemphasis on risks or uncertain words (e.g., terms like "may" or "risk") heightens investor apprehension, resulting in lower capital raised. Usually, management team's experience and reputation mitigate the impacts of information asymmetry.

3.2.4 Hypothesis Development

Tone, as a vital textual feature, assumes a pivotal role in deciphering the impact and underlying mechanisms of market reactions to disclosure texts in the context of SPACs. Concerning the influence of tone on short-term market reactions, previous research grounded in non-SPAC disclosure texts (e.g., 10-K annual reports) posits that management typically reduces the use of words that algorithms identify as negative (such as negative terms in the LM sentiment dictionary) due to apprehensions about the adverse effects of a negative tone on stock prices (Cao et al., 2023). Cao et al. (2023) further document that the management team strategically curtails negative language in disclosures, specifically in response to advancements in algorithmic text analysis. Their empirical analysis reveals a statistically significant decrease in negative tone words following two major technological milestones: the release of the Loughran-McDonald financial dictionary in 2011 and the adoption of BERT NLP technology in 2018. This evidence indicates that as analytical tools became more proficient in detecting negative language, managers were increasingly motivated to manage tone by measurably reducing algorithm-targeted negative terminology.

Other studies on the disclosure of "good news" and "bad news" also partially corroborate the view that a negative tone has a detrimental impact on stock prices. For example, when disclosing bad news, management often adopts a more circumspect strategy due to uncertainty regarding investor reactions (Suijs, 2007). Managers also tend to withhold bad news and delay its disclosure, while good news is more likely to be promptly or prematurely released (Kothari et al., 2009; Acharya et al., 2011).

Based on these insights, we propose Hypothesis 1a (**H1a**).

Hypothesis 1a: Negative tone has a negative impact on deSPAC short-term deal completion return.

However, the unique structure and regulatory environment of SPACs make it difficult to directly apply conclusions derived from other types of firms to the SPAC context (see Section 2.1 for details). Prior research shows that, in situations of high uncertainty, honestly disclosing risks or expressing moderate scepticism can itself be viewed as a "positive signal" of the management's clear understanding and responsible attitude toward complex circumstances (Spence, 1973; Naumovska et al., 2024). Studies by Bloomfield (2002) and Verrecchia (2001) also suggest that, in environments with severe information asymmetry, candid disclosure of unfavourable information can reduce investors' concerns about managerial moral hazard and opportunism, leading to more favourable short-term market reactions.

For SPACs, the uncertainty surrounding the target company's acquisition prospects and valuation is particularly high. Rather than avoiding or concealing risks, management can use a relatively negative tone in prospectuses and other disclosure documents to demonstrate their awareness of potential challenges and confidence in addressing them. This approach not only reduces potential litigation risks (Lopez-Lira, 2021; Bertomeu et al., 2021) but also strengthens investors' recognition of the management's professional capabilities and genuine intentions (Naumovska et al., 2024).

This stands in sharp contrast to the traditional conclusion that "greater use of negative words leads to stock price declines". It highlights how the "*candor effect*" in the SPAC context can reverse the conventional impact of negative tone. Thus, we hypothesise that negative tone in SPAC disclosures may not represent a danger signal but rather an honest and pragmatic communication approach, resulting in more positive short-term market reactions. we propose Hypothesis 1b (**H1b**).

Hypothesis 1b: Negative tone has a positive impact on deSPAC short-term deal completion return.

Investors may not respond significantly to positive tone. The special characteristics and regulatory environment of SPACs, such as the SPAC Safe Harbor provisions, may incentivise companies to exaggerate their performance without facing legal consequences (Klausner et al., 2022). Rational investors, anticipating such exaggeration, may discount positive tone and suspect that management is concealing real risks (Naumovska et al., 2024).

Cao et al. (2023) further point out that if companies excessively "polish" their disclosure documents by eliminating all negative tone, making them overly positive, the market may gradually lose trust in these disclosures. This undermines the effectiveness of the disclosed information. In such cases, investors may cease to rely on disclosures as a key basis for decision-making, leading to a decline in market efficiency. This scenario ultimately results in what Crawford and Sobel (1982) describe as a Babbling Equilibrium, where, under conditions of incomplete information or manipulable signals, the value of information transmission is entirely lost.

Thus, we propose Hypothesis 2 (**H2**).

Hypothesis 2: Positive tone has no impact on deSPAC short-term deal completion return.

While tone does significantly influence short-term stock performance subsequent to the completion of the deSPAC, its long-term effect on stock performance is likely to be minimal. According to the Efficient Market Hypothesis (Fama, 1970), long-run stock prices should be driven by fundamentals of a company's performance, such as profitability, growth, and operational performance, regardless of short-term fluctuations in sentiment or tone.

Other studies suggest that long-term investors focus primarily on a company's financial health and ability to execute its strategies, irrespective of initial disclosures' wording (Jegadeesh & Titman, 1993; Barberis, Shleifer & Wurgler, 2005). Tone may, therefore, affect investor sentiment and expectations in the short run but will eventually have less of an influence because the market's focus will shift to a company's fundamental performance.

Based on this analysis, we propose Hypothesis 3 (**H3**).

Hypothesis 3: Tone has no impact on long-term post deal performance.

We attribute the positive relationship between negative tone and short-term market reactions to the reputational and resource-based signaling effects of SPAC sponsors. In particular, serial sponsors, by simultaneously launching multiple SPACs, not only signal superior resource integration capacity and fundraising prowess but also establish stronger credibility and reputation in the eyes of the market (Leland & Pyle, 1977; Megginson & Weiss, 1991; Dimitrova, 2017; Feng et al., 2023). Similar to venture capitalists or underwriters who repeatedly certify high-quality firms (Carter & Manaster, 1990; Kaplan & Schoar, 2005), serial SPAC sponsors endeavor to minimize information asymmetry and enhance investor trust, especially among institutional investors who are sensitive to the sponsor's track record and market participation (Kaplan & Schoar, 2005).

Moreover, serial sponsors have stronger incentives to prevent any single SPAC's failure from negatively spilling over to their other active deals (Chemmanur & Fulghieri, 1994; Gompers & Lerner, 1999). This heightened focus on reputation and risk management amplifies the "*candor effect*" of negative tone, as the market interprets transparent disclosures of potential risks not as red flags but as evidence of conscientious and forthright management. Consequently, negative tone can elicit a more positive short-term price reaction and yield higher cumulative abnormal returns (CAR). Thus, we propose Hypothesis 4 (**H4**).

Hypothesis 4: Sponsors play a key role in mediating the positive impact of negative tone on the short-term deal completion return after deSPAC completion.

3.3 Research Design

3.3.1 Data and Sample

In this study, data related to SPACs is primarily sourced from the SPAC TRACK, which is offering real-time and detailed information about SPAC activities, covering each stage of SPAC's lifecycle. Additionally, SPAC TRACK provides in-depth information on the backgrounds and professional experience of the SPAC's management teams, along with access to all relevant SEC filings, enabling thorough review and analysis. The database also includes crucial dates for SPACs, such as IPO dates and target merger announcement dates. These features make SPAC TRACK an indispensable resource for professionals such as investors, bankers, and SPAC sponsors who require comprehensive and up-to-date information for decision-making. Furthermore, deSPAC MD&A disclosures are obtained from SEC's EDGAR, while other firm-level financial data was gathered from Compustat. Finally, the price data used to calculate both deal completion return and post deal performance is sourced from CRSP, further enriching the empirical analysis with robust financial information.

Regarding the sample selection, due to the significant rise in the number of companies opting for this method to go public, particularly following the surge in SPAC IPOs after 2019 (Gahng et al., 2023), we choose 2019 as the starting point for our sample. All SPAC IPOs that occurred from 2019 onward are taken into consideration. Initially, the dataset comprises 420 deSPAC firms that successfully complete their mergers. After constructing the key independent and control variables, any companies with missing values for any of these variables are excluded from the final analysis. Furthermore, we also remove firms whose MD&A sections could not be processed due to file-related issues. After these exclusions, the final sample consists of 224 SPACs that went IPO during 2019 to 2022[43].

[43] The sample construction follows a rigorous, multi-stage filtration process aimed at maximising external validity. The initial population consists of all completed De-SPAC mergers available on the SPAC TRACK database at the point of data

A significant strength of the sample is that it extends well beyond typical mainstream sectors. The dataset features a notable representation of emerging and highly specialised technologies like artificial intelligence, blockchain, fintech, quantum computing, healthcare, and biotechnology.

3.3.2 Variables

The key explanatory variable in this study is the tone of MD&A section of deSPAC disclosures. Previous studies that focus on word lists (such as Loughran and McDonald, 2011, 2013; Baginski et al., 2016) have pointed out the limitations of applying general-purpose dictionaries to financial texts. In response to these limitations, Loughran and McDonald (2011) created a specialised dictionary tailored for textual analysis within the context of finance and accounting[44]. This dictionary is particularly useful for identifying and categorizing the tone of financial documents, such as 10-K filings and earnings conference calls. It classifies words into six specific categories: positive, negative, litigious, strong modal, weak modal, and uncertain. Given the extensive use of this dictionary in academic research, we employ the Loughran and McDonald (2011) dictionary (Version 2023) in this study to systematically compute the frequencies of each sentiment-related word in the MD&A section of the companies' disclosures[45]. In line with existing studies (e.g., Davis et al., 2012; Bonsall et al., 2013; Huang et al., 2014; Li et al., 2019; D'Augusta and DeAngelis, 2020), we calculate the difference between the frequencies of positive and negative words in the MD&A section. This difference is subsequently divided by the total word count of the MD&A to generate the final tone measure, referred to as *TONE*. Intuitively, *TONE* reflects the overall level of "net optimism" in the

---

extraction. The final sample size is exclusively determined by data feasibility constraints. We believe that this entirely eliminating any potential arbitrary selection bias.

[44] See Table 3.A1 in the Appendix for the details of the Loughran and McDonald dictionary.

[45] This systematic methodology applies uniform, predefined criteria across the entire sample, ensuring that the classification of sentiment is reliable and entirely free from any human judgement or bias in the quantification process.

disclosure: it increases when the company employs a greater number of positive words (indicating higher optimism) or a reduced number of negative words (indicating lower pessimism). This method allows for a nuanced measurement of tone, which is crucial for understanding the relationship between tone and deSPAC company performance. In addition to analysing the difference between the number of positive and negative tone-related words, we also examined the proportion of positive tone words and the proportion of negative tone words. This approach provides a more comprehensive analysis of the tone.

Unlike in the previous chapter where we analyse all types of tone, in this study, we focus exclusively on positive and negative tones for two reasons. Firstly, our earlier study demonstrated that negative, uncertain, and weak modal tones tend to convey similar information, analysis of each tone separately is unnecessary (Yang, 2023). Secondly, this approach aligns with the practices commonly adopted in the existing literature that specifically examines the tone of the MD&A section (e.g., Davis et al., 2012; Bonsall et al., 2013; Huang et al., 2014; Li et al., 2019; D'Augusta and DeAngelis, 2020). By focusing on positive and negative tones, we are able to provide a more targeted and meaningful analysis that is consistent with prior research in this domain.

The dependent variables in this study are the deal completion return and long-term post-deal performance of companies following deSPAC completion. Deal completion return is measured as the 3-Day Cumulative Abnormal Return (*CAR-3day*), capturing short-term market reactions, while long-term post-deal performance is assessed using the 3-Month Buy-and-Hold Abnormal Return (*BHAR-90day*). These measures are largely consistent with the practices of existing research (Cumming et al. 2014; Kiesel et al. 2023).

$$CAR(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_t \, , while\ AR_t = R_{i,t} - \left(R_{Mk,t} - R_{f,t}\right) \tag{1}$$

$$BHAR_i(h) = \prod_{t=1}^{h} \left(1 + R_{i,t}\right) - \prod_{t=1}^{h} \left(1 + R_{Mk,t}\right) \tag{2}$$

Recognizing that factors beyond tone may influence these outcomes, we include control variables across multiple levels. At the SPAC level, we account for *IPO Size* (the total capital raised in the SPAC's initial public offering, in millions of USD), *PIPE Size* (private investment in public equity, in millions of USD), *Months from IPO to DA* (the time in months from the SPAC's IPO to reaching a definitive agreement with the merger partner), *Months from DA to Completion* (the duration in months from the definitive agreement to deal completion), *Top Underwriter Dummy* (set to 1 if the deal is backed by a top-five investment bank—Goldman Sachs, JP Morgan, Morgan Stanley, BofA Securities, or Citi—per Financial Times rankings for equity deals, and 0 otherwise), *Well-Known Sponsor Dummy* (set to 1 if the SPAC's management team, board, or founders are widely recognized or hold executive roles in major companies, per SPAC TRACK, and 0 otherwise), *Serial Sponsor Dummy* (set to 1 if the sponsor launches multiple SPACs simultaneously, and 0 otherwise), and *% Shares Redeemed* (the percentage of public SPAC shares redeemed at the merger vote). At the deal level, we include *Public Target Dummy* for Target Status (set to 1 if the target is a public company, and 0 for private or subsidiary targets), *Mixed Payment Dummy* for Payment (set to 1 if the acquisition uses a mixed payment method—cash and stock—and 0 for cash-only or stock-only), and *Friendly Dummy* for Attitude (set to 1 if the target's stance toward the deal is friendly, and 0 for hostile or other attitudes)[46]. At the firm level, we control for *Debt Ratio* (the proportion of total debt to total assets) and *Tobin's Q* (a measure of firm valuation based on market value relative to asset replacement cost). At the macroeconomic level, we incorporate the 10-Year Treasury Bill Rate (the yield on U.S. Treasury notes during the period) and Market Return (the broader market performance over the corresponding timeframe). The control variables we consider are consistent with the common practices in existing SPAC-related research (Kolb et al. 2016; Dambra et al. 2023; Naumovska et al., 2024).

[46] At the deal level, we considered the form of transaction upon SPAC acquisition, including M&A and tender offers. However, as our sample contains no tender offers, this variable was ultimately excluded from the model.

Table 3.A3 in the Appendix provides a detailed description of all variables used in this study. To mitigate the influence of outliers on the conclusions of this study, all variables are winsorised at the 1% level.

3.3.3 Model

This study utilises multivariate regression model employing the Ordinary Least Squares (OLS) method. The dependent variables are CAR-3day and BHAR-90day, with the tone (*TONE*) serving as the primary independent variable. In addition to these key variables, the empirical model incorporates a range of control variables at the SPAC, deal, firm, and market environment levels. To account for unobserved heterogeneity, the model also includes fixed effects at three different levels. Industry fixed effects control for time-invariant industry-specific characteristics, such as competition, technology, and market conditions. Country fixed effects are controlled based on the country of the target company acquired by the SPAC, aiming to isolate the impact of stable country-level attributes, such as political systems and cultural norms[47]. Year fixed effects mitigate the effects of global shocks, such as geopolitical tensions, shifts in regulatory environment, and market trends that might affect the dependent variables. Given that the companies in dataset span various sectors and regions, some outside the U.S., and that the deSPAC transactions occur over multiple years, including these fixed effects enables a more accurate identification of the causal relationship between prospectus tone and stock performance by leveraging variations within-industry, within-country, and over-time.

To address potential correlations in error terms, our regression model is clustered by industry, in accordance with the GIC standard[48]. Companies within the same industry may

---

[47] Please see Table 3.A2 in the Appendix for a detailed introduction on the country distribution of the deSPAC merger partners. We show that 77.23% of deals are domestic.

[48] GIC Industry (Global Industry Classification Standard) is a global classification system developed by Standard & Poor's (S&P) and MSCI Inc. It is widely used by financial analysts and investors to classify companies into industry groups based on their business activities. GIC Industry has ten sectors, 157 sub-industries, and 1,058 industries.

encounter similar external shocks or share internal characteristics, resulting in correlated error terms. Ignoring this correlation may lead to underestimated standard errors, subsequently inflating the statistical significance of the results. Thus, industry clustering yields more robust results in regression analysis. Then, the final empirical model can be derived as follows:

$$Performance_i = \alpha + \beta Tone_i + \gamma X + \varphi_t + \delta_i + \tau_i + \varepsilon$$

where $Tone_i$ represents the tone analysed, with β being the key coefficient of interest in this study. X denotes the control variables across various aspects, while γ represents the corresponding regression coefficients. The terms $\varphi_t, \delta_i, \tau_i$ correspond to year fixed effects, industry fixed effects, and country fixed effects, respectively. α is the constant term, and the error term is denoted by ϵ.

3.4 Empirical Results

3.4.1 Descriptive Statistics

Table 3.1 presents the descriptive statistics for the variables in our sample of deSPACs, providing insights into deal, firm, and market characteristics. The dependent variables reveal distinct stock performance patterns post deSPAC completion. At the SPAC level, IPO Size (total capital raised, in millions of USD) averages 301.83 with a standard deviation of 184.28, reflecting a diverse range of SPAC sizes. The Serial Sponsor Dummy (1 if the sponsor launches multiple SPACs simultaneously) has a mean of 0.3259, meaning nearly 33% of SPACs are backed by serial sponsors, a characteristic we leverage in our channel analysis to explore how such sponsors enhance tone's *candor effect*. Firm-level controls highlight financial diversity. The Debt Ratio (total debt to total assets) averages 0.1981 (standard deviation 0.2357), suggesting varying leverage levels among deSPAC firms.

Table 3.1. Descriptive Statistics

Variable	N	mean	std	min	median	max
Proportion of Negative	224	0.0103	0.0042	0.0047	0.0091	0.0271
Proportion of Positive	224	0.0054	0.0020	0.0012	0.0052	0.0115

Tone	224	-0.0048	0.0043	-0.0199	-0.0042	0.0036
IPO Size (US Million)	224	301.83	184.28	57.50	259	1035
PIPE Size (US Million)	224	223.44	263.92	0	150	1550
Months from IPO to DA	224	7.6807	4.6221	1.1506	6.2788	23.011
Top underwriter dummy	224	0.4062	0.4922	0	0	1
Well-known sponsor dummy	224	0.3259	0.4698	0	0	1
Serial sponsor dummy[49]	224	0.3259	0.4698	0	0	1
Shares Redeemed Percentage	224	0.5977	0.3376	0.0000	0.7062	0.9926
3-Day Cumulative Abnormal Return	224	-0.0400	0.1064	-0.5019	-0.0063	0.2573
3-Month Buy-and-hold Abnormal Return	224	0.2016	0.3038	-0.4533	0.1308	0.9182
Debt ratio	224	0.1981	0.2357	0	0.1589	1.2229
Tobin's Q	224	3.9651	2.4249	0.5835	3.8146	13.650
Cost of debt (%)	224	2.0209	0.8880	1.1900	1.5400	4.0700
Market return (%)	224	0.0342	0.2317	-0.6114	0.0654	0.4898
Mixed Payment Dummy -Y/N	224	0.4330	0.4966	0	0	1
Public Target Dummy -Y/N	224	0.7902	0.4081	0	0	1
Friendly Dummy - Y/N	224	0.9911	0.0943	0	1	1

3.4.2 Correlation Analysis

We compute the Pearson pairwise correlation coefficient matrix to assess potential multicollinearity issues, with the results presented in Table 3.2. Only the correlation coefficients are reported, with asterisks indicating statistical significance at the 5% level. Multicollinearity is considered a concern if a coefficient exceeds 0.5 and is statistically significant. As shown in Table 3.2, no coefficients meet these criteria[50], indicating that the

[49] You may have noticed that the descriptive statistics for the well-known sponsor dummy and the serial sponsor dummy are identical. This, however, is purely coincidental. There happen to be exactly 151 instances of 0 and 73 instances of 1 for both variables. Despite this, the distribution of these values differs without any discernible pattern. In some cases, the "serial" dummy is 1 while the "well-known" dummy is 0.

[50] An exception is the relatively high correlation between the *Tone* variable and the *%Negative* variable. This is expected and justifiable given their definitions, as the *Tone* variable is derived directly from the *%Negative* variable and serves as an alternative dependent variable to enhance the robustness of our result. More importantly, these two variables are analysed separately in the empirical framework.

empirical model in this study effectively addresses the issue of multicollinearity.

Additionally, the positive correlation coefficients between the negative tone variables and three-day CAR align with the theoretically intuitive relationships outlined in the section of Hypothesis 1b. To further ensure robustness, we compute the variance inflation factors (VIFs) for each model. The highest VIF value observed (1.26) remains well below the commonly accepted threshold of 10 (Ryan, 1997), confirming that multicollinearity is not a significant concern in this analysis.

Table 3.2. Pearson Pair-wise Correlation

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. CAR 3-day	1																		
2. BHAR 90-day	-0.3525*	1																	
3. % Negative	0.1917*	-0.0959	1																
4. % Positive	-0.0362	0.0371	0.1687*	1															
5. Tone	-0.1903*	0.0993	-0.8916*	0.2861*	1														
6. From IPO to DA	0.1209	-0.1611*	0.0025	-0.0574	-0.0286	1													
7. PIPE Size	-0.1625*	0.1749*	-0.0120	0.1477*	0.0764	-0.2699*	1												
8. Serial Sponsor	0.0377	-0.0563	0.0023	-0.0172	0.0019	-0.2583*	0.0502	1											
9. IPO Size	0.0551	-0.0397	0.0601	0.0818	-0.0200	-0.1460*	0.2548*	0.3279*	1										
10. Well-known Sponsor	0.1073	-0.0837	0.1102	0.0911	-0.0550	-0.1660*	0.2067*	0.3091*	0.3797*	1									
11. % Shares Redeemed	0.0938	-0.0950	0.0165	0.0553	0.0139	0.1392*	-0.1640*	-0.1186	-0.1287	0.0017	1								
12. Top Underwriter	0.0229	-0.0330	0.0155	0.0635	0.0111	-0.1175	0.1609*	0.2394*	0.4970*	0.1424*	-0.0167	1							
13. Cost of Debt	0.1184	-0.3341*	0.0651	0.0065	-0.0503	0.4462*	-0.3471*	-0.1684*	-0.2300*	-0.0974	0.3316*	-0.1765*	1						
14. Market Return	-0.1749*	0.1786*	-0.2015*	-0.0132	0.1797*	-0.1235	0.2677*	0.0089	0.0534	0.0246	-0.2653*	0.0926	-0.3181*	1					
15. Debt Ratio	0.0837	-0.1597*	0.0212	-0.1869*	-0.0964	0.1023	-0.1726*	-0.0645	-0.0204	0.0626	0.1048	-0.0617	0.2050*	-0.1145	1				
16. Tobin Q	0.0353	0.0304	-0.1628*	-0.0466	0.1362*	0.0294	0.0164	-0.0214	0.0453	0.0655	0.0425	0.0189	-0.0357	-0.0491	-0.0706	1			
17. Payment	-0.0033	-0.0384	0.0134	-0.0223	-0.0244	-0.0421	-0.0696	0.0844	0.1143	0.0075	-0.1857*	0.0659	-0.1112	0.0259	0.0665	-0.0175	1		
18. Target Status	-0.3241*	0.1496*	-0.0436	-0.0640	0.0126	-0.0569	0.0155	-0.0660	-0.0933	-0.0660	0.0827	-0.0785	0.0658	0.0450	0.0550	-0.0016	-0.0830	1	
19. Attitude	0.0906	-0.0406	0.0750	0.1404*	-0.0024	-0.0256	-0.0198	0.0660	0.0185	-0.0353	0.0526	0.0785	0.0006	-0.1076	-0.077	0.0401	-0.0128	0.0090	1

3.4.3 Baseline Results

We report the baseline regression results examining the impact of textual tone on deSPAC stock performance in Table 3.3. In models 1-3, we use CAR 3-Day as the dependent variable to assess deSPAC completion returns, while in models 4-6, we use BHAR 90-Day to evaluate post-deal long-term performance. We test the effect of negative tone (% Negative, defined as the ratio of negative words to total words) in models 1 and 4, positive tone (% Positive, defined as the ratio of positive words to total words) in models 2 and 5, and overall tone (Tone, defined as the frequency difference between positive and negative words scaled by total words) in models 3 and 6.

Models 1 in Table 3.3 show that negative tone is significantly and positively correlated with deal completion return. Given the unique backdrop of SPACs, the use of negative tone is relatively rare and thus likely to attract investor attention and elicit a response. In the short term, negative tone may be interpreted by the market as an honest assessment by management of the company's challenges. Such transparency can be seen as management's willingness to reveal potential issues and risks honestly, rather than attempting to conceal unfavourable information. Investors typically respond positively to this openness and transparency as they reduce information asymmetry, allowing investors to more accurately assess the true state of the company (Naumovska et al., 2024). Consequently, even negative information may lead to an increase in stock prices in the short term, as the market may reward such candid communication. This phenomenon may manifest as a positive cumulative abnormal return (CAR).

Models 2 and 5 in Table 3.3 show that positive tone does not have a statistically significant impact on either short-term or long-term stock market return. In the context of the SPAC Safe Harbor provisions, companies may have an incentive to exaggerate their performance without legal repercussions. Rational investors, anticipating such exaggeration, may not respond to positive tone.

Following established practices in the literature, the variable Tone is defined as the difference between the count of positive and negative words in the MD&A section, expressed as a ratio of the total word count (Huang et al. 2014, D'Augusta & DeAngelis 2020). A higher value indicates a more positive overall tone in the text, and vice versa. The regression coefficient of Tone is significantly negative, which is consistent with the interpretation of the negative tone's regression results.

We add some control variables on deal and firm characteristics that might influence deSPAC completion return and post deal long-term performance. As for the results of deSPAC completion return (Column 1 to 3), it shows that most control variables lack statistical significance, suggesting their limited role in explaining immediate post-deSPAC returns. However, two exceptions emerge. First, *PIPE Size* (Private Investment in Public Equity, measured in millions of USD) shows a significantly negative coefficient. While larger PIPE investments typically signal institutional confidence and deal attractiveness, this negative effect may reflect short-term market dynamics in deSPACs: higher PIPE Sizes could increase perceived overvaluation risks or trigger immediate profit-taking by investors post-completion, offsetting initial optimism (Klausner et al., 2022; Gahng et al., 2023). Second, *Public Target dummy* (on target status, defined as 1 for public target companies and 0 otherwise) also exhibits a significantly negative effect, potentially due to greater market scrutiny or integration challenges for public targets post-merger [51]. These findings complement rather than overshadow our primary result. The positive effect of negative MD&A tone on short-term returns, attributed to *candor effects*—where transparent disclosure of challenges boosts investor confidence in the near term. The limited significance of other controls underscores that MD&A tone captures a distinct narrative signal in the deSPAC context, beyond traditional deal-level and firm-level factors.

---

[51] According to SEC ("SPACs, IPOs and Liability Risk under the Securities Laws," John Coates), it notes that deSPAC transactions face heightened regulatory and investor scrutiny, particularly when projections and disclosures are involved. Public targets, already listed and subject to prior disclosure, may attract more immediate skepticism post-deSPAC if their performance or integration doesn't meet expectations, leading to a negative short-term reaction. See https://www.sec.gov/newsroom/speeches-statements/spacs-ipos-liability-risk-under-securities-laws.

Overall, tone influences the short-term deSPAC completion return, while its effects are less influential concerning long-term performance. Long-term stock performance is likely determined by fundamentals rather than the interpretation of tone, further indicating that the explanatory power of tone over long-term performance is weak. This also implies that the management of a company's textual tone predominantly affects short-term deal completion return.

In Table 3.A3 of Appendix, we present results from alternative model specifications, including variations in fixed effects, inclusion/exclusion of control variables, and adjustments to standard error clustering. Across these specifications, our core explanatory variables remain significant, indicating that the results are robust and reliable, independent of specific model choices.

Table 3.3. Baseline Model Results

	(1)	(2)	(3)	(4)	(5)	(6)
		CAR 3-Day			BHAR 90-Day	
% Negative	3.4229***			-3.9900		
	(1.2668)			(4.3614)		
% Positive		-2.5475			7.9602	
		(3.8173)			(13.2154)	
Tone			-3.4871***			5.1032
			(1.2962)			(3.5786)
<u>Control Variables</u>						
IPO Size (log)	0.0092	0.0108	0.0108	-0.0687**	-0.0728**	-0.0708**
	(0.0131)	(0.0127)	(0.0131)	(0.0339)	(0.0352)	(0.0345)
PIPE Size (log)	-0.0023*	-0.0020	-0.0021*	0.0029	0.0023	0.0026
	(0.0012)	(0.0012)	(0.0011)	(0.0040)	(0.0035)	(0.0039)
Months from IPO to DA	0.0009	0.0008	0.0008	0.0019	0.0023	0.0021
	(0.0019)	(0.0020)	(0.0020)	(0.0040)	(0.0042)	(0.0040)
Top underwriter dummy	-0.0042	-0.0046	-0.0049	-0.0161	-0.0146	-0.0150
	(0.0153)	(0.0159)	(0.0155)	(0.0548)	(0.0539)	(0.0547)
Well-known sponsor dummy	0.0107	0.0165	0.0125	-0.0296	-0.0386	-0.0308
	(0.0156)	(0.0160)	(0.0153)	(0.0512)	(0.0525)	(0.0496)
Serial sponsor dummy	0.0001	-0.0029	-0.0006	0.0044	0.0093	0.0047

	(0.0158)	(0.0154)	(0.0157)	(0.0356)	(0.0370)	(0.0360)
% Shares Redeemed	0.0034	0.0028	0.0045	0.1090	0.1079	0.1069
	(0.0273)	(0.0293)	(0.0278)	(0.0867)	(0.0871)	(0.0871)
Debt ratio	0.0057	0.0008	0.0012	-0.0269	-0.0138	-0.0206
	(0.0384)	(0.0404)	(0.0388)	(0.0951)	(0.1028)	(0.0949)
Tobin's Q	0.0023	0.0012	0.0021	0.0063	0.0079	0.0063
	(0.0028)	(0.0028)	(0.0027)	(0.0095)	(0.0098)	(0.0093)
Cost of debt	-0.0223	-0.0214	-0.0219	0.0666**	0.0644**	0.0661**
	(0.0138)	(0.0135)	(0.0137)	(0.0261)	(0.0261)	(0.0259)
Market return	-1.1257	-2.7427	-1.2860	-9.5187	-7.3850	-9.7279*
	(2.8146)	(2.7455)	(2.7412)	(5.7305)	(5.3282)	(5.3563)
Mixed Payment Dummy	-0.0012	-0.0000	-0.0006	-0.0348	-0.0370	-0.0355
	(0.0150)	(0.0147)	(0.0150)	(0.0393)	(0.0394)	(0.0392)
Public Target Dummy	-0.3296***	-0.3357***	-0.3335***	0.3889***	0.4018***	0.3936***
	(0.0737)	(0.0785)	(0.0718)	(0.0868)	(0.0895)	(0.0841)
Friendly Dummy	0.0967	0.1069*	0.1069*	-0.1887**	- 0.2130***	-0.2024***
	(0.0674)	(0.0575)	(0.0631)	(0.0713)	(0.0782)	(0.0718)
_cons	-0.1556	-0.1260	-0.1591*	0.5549***	0.5233**	0.5692***
	(0.0972)	(0.0928)	(0.0947)	(0.2004)	(0.1963)	(0.2009)
Year Fixed Effect	YES	YES	YES	YES	YES	YES
Industry Fixed Effect	YES	YES	YES	YES	YES	YES
Country Fixed Effect	YES	YES	YES	YES	YES	YES
Clustering	Industry	Industry	Industry	Industry	Industry	Industry
r2_a	0.1092	0.0924	0.1110	0.2495	0.2489	0.2518
N_full	224	224	224	224	224	224

Note: Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

3.4.4 Robustness Checks

The baseline regression results in Table 3.3 demonstrate that tone influences the deal completion return of companies but has no significant effect on long-term performance. This provides support for our Hypothesis H1b, H2 and H3. Since long-term stock performance is more dependent on company fundamentals rather than tone, plus the insignificant baseline results between tone and long-term performance, the remainder of the study focuses on discussing the impact of tone on short-term stock performance.

We further reinforce the robustness of the baseline regression results through additional robustness checks. Specically, we address the sample selection bias by employing specific sectoral dummies. Recent study shows that healthcare SPACs delivers highly negative returns in the short term, and substantially under-performances compared to small-cap firms and (non-SPAC) healthcare companies (Gigante and Notarnicola, 2021). This suggests that healthcare deSPAC companies may have distinct effects compared to firms in other industries that may potentially drive the baseline results.

To address this issue and ensure the robustness of the baseline regression results, we introduce a dummy variable (*Ind*) to indicate whether a company belongs to the healthcare sector. The variable is set to 1 if the deSPAC company operates in the healthcare industry and 0 otherwise. Subsequently, we generate interaction terms between this dummy variable and the tone variables, incorporating them into the model. By examining the statistical significance of these interaction terms, we assess whether healthcare deSPAC companies exert a significant influence on the baseline effects.

As presented in Table 3.4, the core tone variables remain statistically significant. More importantly, the interaction terms are not statistically significant, indicating that the relationship between tone and post-deSPAC performance does not differ meaningfully between the healthcare sector and other industries. This lack of significance suggests that healthcare deSPAC companies do not exert a driving effect on the overall regression results. The robustness of the baseline findings is thus further validated, demonstrating that the relationship between tone and deSPAC outcomes is not industry-specific but rather reflects broader patterns within the data.

Table 3.4. Robustness Check: Substitute Sample

	(1)	(2)
	CAR 3-Day	
% Negative	3.8745*	

	(2.0264)	
Tone		-4.6271**
		(2.0829)
% Negative × Ind	-0.7414	
	(2.9140)	
Tone × Ind		2.0032
		(2.8945)
Control Variables	YES	YES
Year Fixed Effect	YES	YES
Industry Fixed Effect	YES	YES
Country Fixed Effect	YES	YES
Clustering	Industry	Industry
r2	0.2537	0.2564
N_full	224	224

Note: Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

3.4.5 Channel Analysis

In this section, we deepen the analysis by exploring the channel behind the tone-performance relationship. We posit that the interaction is not mechanical but rooted in the "Candour Effect", a distinct behavioural mechanism where investors interpret negative tone as a signal of trustworthiness. Furthermore, we examine how Sponsors mediate this process. By leveraging their reputation capital, serial sponsors amplify this behavioural signal, effectively transforming risk disclosure into trust building. This step is crucial for understanding the reasoning behind the observed market reactions.

Serial sponsors signal credibility and resource capacity by launching multiple deals simultaneously, reducing information asymmetry in the speculative deSPAC market (Leland & Pyle, 1977; Dimitrova, 2017; Feng et al., 2023). Even without extensive experience, the ability to manage multiple SPACs demonstrates sufficient capital support, strong market connections, and exceptional fundraising capabilities. These characteristics effectively reduce information asymmetry and enhance investor trust, particularly among institutional investors, who are more likely to favor sponsors with sustained market participation and resource advantages (Kaplan & Schoar, 2005). In deSPACs, where target companies often lack extensive public histories, serial sponsors' ability to coordinate multiple SPACs underscores their fundraising prowess and market connections, bolstering perceptions of deal quality.

Moreover, serial sponsors face amplified reputational stakes. Serial sponsors have stronger economic incentives to ensure the success of each SPAC to avoid negative spillover effects from the failure of one SPAC impacting others (Chemmanur & Fulghieri, 1994; Gompers & Lerner, 1999). The failure of one SPAC could tarnish their broader portfolio, incentivizing rigorous risk management and transparent disclosure This heightened focus on reputation and risk management further amplifies the *candor effects* of negative tone. The market interprets negative tone as a sign of transparency rather than a signal of risk, leading to stronger market adjustments and reflected in higher cumulative abnormal returns (CAR).

To test this mechanism, we construct an interaction term between the serial sponsor dummy (1 if the sponsor launches multiple SPACs simultaneously, 0 otherwise) and the tone variable (frequency difference between positive and negative words scaled by total words). We include this interaction (*SerialSponsor_Tone*), the serial sponsor dummy, the tone variable, and control variables in the regression, maintaining fixed effects, clustering, and specifications consistent with the baseline model.

Column 1 of Table 3.5 shows a significantly positive coefficient for the interaction term, confirming that serial sponsors strengthen the positive link between tone and short-term market reactions, as measured by the 3-day CAR. This suggests that serial sponsors' reputational and resource signals amplify the *candor effect*, encouraging the market to interpret negative tone as transparency rather than increased risk, thus enhancing short-term returns. These results validate Hypothesis 4.

Table 3.5. The Results of Channel Analysis and Heterogeneity Analysis

	(1)	(2)	(3)
	CAR 3-Day	CAR 3-Day	CAR 3-Day

serialSponsor_tone	7.8209***		
	(2.4764)		
serialSponsor	0.0394*		
	(0.0216)		
textLength_tone		2.2230*	
		(1.2752)	
textLength		0.0284**	
		(0.0113)	
highunderpricing_tone			6.8061***
			(2.5173)
highunderpricing			0.0997***
			(0.0198)
tone	-6.7747***	-24.7079*	-6.3231**
	(1.9221)	(13.1400)	(2.3714)
Ctrl. Variables	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES
Country FE	YES	YES	YES
Clustering	Industry	Industry	Industry
r2	0.2753	0.2643	0.2132
N_full	224	224	224

Note: Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

3.4.6 Heterogeneity Analysis

We also considered heterogeneity in two dimensions: text length and underpricing. The results from these heterogeneity analyses further support the proposed channel.

First, the length of the MD&A section. Management's detailed explanations of potential risks and corresponding strategies demonstrate a commitment to transparency in disclosure, which is reflected in longer text lengths. We argue that such detailed disclosure may signal thoughtful risk assessment and well-targeted responses to investors. This can deepen trust in the management team and amplify the *candor effect* of negative tone.

Column 2 of Table 3.5 presents the heterogeneity results for text length. The model includes an interaction term between the MD&A text length and the tone variable (*textLength_tone*), along with the tone variable and text length variable themselves, as well as other control variables. The fixed effects and clustering specifications remain consistent with the baseline model. The results show that the interaction term is significantly positive, supporting our view. Longer texts, by providing rich details, offer sufficient context to enhance the *candor effect* of tone, making the tone appear more transparent and credible to investors.

Second, we analyse the role of underpricing. We propose that the "compensation signal" associated with high underpricing, combined with negative tone, creates a reinforced signalling effect. In such cases, the market is more likely to interpret negative tone as a sign of management transparency rather than as an indication of increased company risk. Under conditions of high underpricing, the market's perception of risk is diluted, shifting the focus toward potential returns. Negative tone, therefore, acts as a tool to strengthen market confidence (Rock, 1986; Derrien, 2005). Moreover, high underpricing provides sufficient room for post-IPO price adjustments. In this context, negative tone is perceived as a credibility signal, driving stronger market reactions.

Column 3 of Table 3.5 presents the heterogeneity results for underpricing. 'highunderpricing' is a dummy variable that takes a value of 1 if the degree of underpricing exceeds the median, and 0 otherwise. The model includes an interaction term between underpricing (*highunderpricing*) and the tone variable (*underpricing_tone*), along with the tone variable and underpricing variable (*highunderpricing*) themselves, as well as other control variables. Fixed effects and clustering remain consistent with the baseline model. The results show that the interaction term is significantly positive, supporting our hypothesis. High underpricing amplifies the positive effect of negative tone on short-term market reactions.

3.4.7 Tones of Other Sections of the Prospectus on Deal Performance

The S-4 prospectus comprises several sections, including MD&A, Use of Proceeds, and Risk Factors. In this section, we construct tone variables for the latter two sections to analyse their relationships with stock market performance as a supplementary analysis. Specifically, the Use of Proceeds section outlines how the company plans to allocate the funds raised through the offering. The Risk Factors section enumerates potential risks associated with the company's operations, industry environment, and the securities offering.

Panels A, B, and C of Table 3.6 present the regression results for the tone of the Use of Proceeds and Risk Factors sections, respectively, on short-term deal completion return and long-term post deal performance. The findings indicate that almost neither negative tone nor positive tone in these sections has a significant impact on long-term stock performance. As for deal completion return, Only the negative tone in the Risk Factors section has a positive impact on returns, though the statistical significance is relatively low, significant only at the 10% level. In contrast, the negative tone in the MD&A section significantly influences short-term market reactions, though not long-term performance. The above results suggest that, when analyzing the impact of textual tone on deal completion returns, the MD&A section is more important than the Risk Factors and Use of Proceeds sections.

The reasoning behind this can be viewed through the lens of the different disclosure contents that these three sections have, compared to the MD&A. The Management Discussion & Analysis reflects greater management depth and perspective. Beyond its overall background information function, it discusses the reasons behind changes in financial results, operational adjustments, and the expectations of future results. Further, it explains how management intends to deal with challenges in achieving its objectives and managing risks. Such detail may be relevant in affecting market reactions.

This difference may be in part due to the particular circumstances surrounding deSPACs. In contrast to the traditional IPO process, where the Risk Factors section receives considerable attention in terms of conveying uncertainty to investors (Hanley & Hoberg, 2010; Loughran & McDonald, 2013), deSPACs involve a merger of a SPAC with a target. The MD&A section narratively reviews the combined entity's financial position and operational outlook, especially relevant for deSPACs because SPAC targets are often viewed as relatively speculative investments, and information asymmetries are most acute in the immediate post-merger period (Klausner et al., 2022). For short-term deal completion return, investors may prioritize this over static risk disclosures or proceeds allocation, as MD&A provides dynamic cues about near-term prospects amidst high uncertainty. Over the long term, however, fundamental factors like earnings and growth metrics dominate, reducing the influence of prospectus tone across all sections, consistent with our findings.

Table 3.6. Tones of Other Sections on deSPAC Short-term and Long-term Performance

Panel A. Use of Proceeds

	(1)	(2)	(3)	(4)
	CAR 3-Day		BHAR 90-Day	
% Negative	-3.9168		-5.3793	
	(2.3755)		(5.4141)	
% Positive		-3.4503		21.4183
		(3.7967)		(14.1184)
Ctrl. Variables	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Clustering	Industry	Industry	Industry	Industry
r2	0.0214	0.0122	0.2428	0.2523
N_full	218	218	218	218

Panel B. Risk Factors

	(1)	(2)	(3)	(4)
	CAR 3-Day		BHAR 90-Day	
% Negative	2.4852*		-5.7526	
	(1.3500)		(3.5641)	
% Positive		-0.8687		-10.1319
		(3.7891)		(12.2842)
Ctrl. Variables	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Country FE	YES	YES	YES	YES
Clustering	Industry	Industry	Industry	Industry
r2_a	0.1100	0.0905	0.2593	0.2494
N_full	224	224	224	224

Note: Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

3.5 Conclusion

Disclosure is not merely about transmitting information.The way information is conveyed is equally critical. Among these features, tone, as both a characteristic of non-financial information and an essential communication tool, should not be overlooked. The significant differences in structure and regulatory environment between SPACs and traditional IPOs highlight the importance of studying the unique role of tone in SPAC prospectuses and its impact on market reactions.

This chapter highlights the transparency feedback mechanism. The observed "candour effect" is a factor that contributes positively to the investment information environment. This mechanism allows rational investors to better distinguish between genuine risk disclosure and mere exaggeration, thereby strengthening investor confidence and promoting due diligence in future transactions. Improved trust and transparency are necessary conditions for maintaining stable market sentiment, particularly during periods of high volatility.

We seek to fill a gap in the literature by examining the impact of the tone in the MD&A section on the short-term and long-term stock market performance following the completion of deSPAC. Our findings indicate that, overall, tone significantly influences short-term stock market performance, while its effect on long-term performance is not significant. Moreover, negative tone has a stronger influence on short-term stock performance compared to positive tone. We attribute this to the unique characteristics and regulatory environment of SPACs. Negative tone can create a "*candor effect*", where the market interprets it as a signal of transparency rather than increased risk. Further, we propose and validate that the positive relationship between negative tone and short-term market reactions operates through the role of sponsors. Sponsors amplify the *candor effect* of negative tone through the combined effects of reputation, economic incentives, and resource signalling. We also explore heterogeneity in terms of text length and underpricing, with the results supporting the proposed channel. Finally, our results are highly robust, confirmed by a series of robustness checks including alternative sample and alternative model specifications.

This chapter not only fills a gap in the literature but also carries significant practical implications. From a theoretical perspective, our findings enrich the literature on text features like tone in corporate disclosure in the context of SPACs and contribute to a deeper understanding of the market reaction mechanisms for SPACs. Besides, we address the demand for vocational insights by translating the theoretical candour effect into actionable guidance for stakeholders operating under high uncertainty. For investors, the findings challenge the traditional binary view where negative tone equals risk. We provide a critical insight for investment screening that in the opaque deSPAC environment, a negative tone in the MD&A should be interpreted as a heuristic for management credibility. Investors can use this textual feature to distinguish between honest operators and those merely exploiting the SPAC structure. For corporates, we show that tone management should not mean polishing away bad news. By contrast, striking a balance between confidence and the candid disclosure of challenges is vital for maximising short-term deal completion returns and fostering trust. For the regulatory regime, regulators should recognise that facilitating frank discussion in MD&A rather than forcing standardised, sanitised language is essential for protecting investor welfare in complex merger transactions.

Appendix

Appendix 1: Loughran and McDonald Dictionary

Table 3.A1 reports examples of words classified under each tone category and the total word counts for each category in the Loughran and McDonald Dictionary (Version 2023), which we use to measure the tone of MD&A sections in deSPAC S-4 filings. This dictionary, widely adopted in financial textual analysis, categorizes words into tone dimensions such as negative, positive, and uncertainty, enabling our analysis of tone's impact on deSPAC completion returns and post-deal performance.

Table 3.A1. Details on Loughran and McDonald Dictionary

Tone	Typical Words	Number of Words
Negative	alerted, undermine, turmoil, suspect	2345
Positive	accomplish, advantage, tremendous, vibrant	347
Uncertain	fluctuate, imprecise, likelihood, perhaps	297
Litigious	prosecute, legal, judicial, forbade	903
Strong modal	always, definitely, must, undoubtedly	19
Weak modal	almost, nearly, sometimes, suggest	27
Constraining	abide, comply, refrain, unavailable	184

Appendix 2: Country Distribution of deSPAC Merger Partners

Table 3.A2 presents the country distribution of merger partners in deSPAC transactions, reporting the number and percentage of partners by country of origin. The distribution spans 14 countries, including the United States, Cayman Islands, and Israel, among others. Notably, the majority of deSPAC deals involve domestic partners, with 77.23% (173 out of 224) of merger partners originating from the United States.

Table 3.A2. The Country Distribution of deSPAC Merger Partners

Country	Number of Merger Partners	Percent
United States	173	77.23
Cayman Islands	15	6.7
Israel	10	4.46
Netherlands	6	2.68
British Virgin Islands	4	1.79
Canada	3	1.34
United Kingdom	3	1.34
Luxembourg	3	1.34
Australia	1	0.45
Bermuda	1	0.45
Switzerland	1	0.45
Guernsey	1	0.45
Ireland	1	0.45
Jersey	1	0.45
Singapore	1	0.45
Total	224	100

Appendix 3: Variable Definitions

Table 3.A3 provides a detailed description of all variables used in this study.

Table 3.A3. Variable Definitions

Name	**Definition**
Short-term Deal Performance in Stock Market	
3-Day Cumulative Abnormal Return	$CAR(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_t\,, while\ AR_t = R_{i,t} - (R_{Mk,t} - R_{f,t})$
Long-term Deal Performance in Stock Market	
3-Month Buy-and-hold Abnormal Return	$BHAR_i(h) = \prod_{t=1}^{h}(1 + R_{i,t}) - \prod_{t=1}^{h}(1 + R_{Mk,t})$
SPAC	
IPO Size	The total value or amount of capital that a company aims to raise, defined in millions of USDs.
PIPE Size	Private investment in public equity, defined in millions of USDs.
Months from IPO to DA	Months spent since SPAC IPO to reach definitive agreement with merger partner.
Top underwriter dummy	Set to 1 if the deal is backed by the Top 5 Investment Banks for Equity Deals, according to Financial Times, namely Goldman Sachs, JP Morgan, Morgan Stanley, BofA Securities, and Citi.
Well-known sponsor dummy	Set to 1 if the SPAC's management team, board of directors, or founders who are well known in the public or who belong to the executive management of major or notable companies, according to SPAC TRACK.
Serial sponsor dummy	Set to 1 if the sponsor launches multiple SPACs at the same time.
% Shares Redeemed	The percentage of public SPAC shares redeemed at merger vote.
Deal-specific Characteristics	

Public Target Dummy	The status of target company in merger and acquisition transaction, including public, private and subsidiary. Define this variable to be "Public target", setting to 1, otherwise 0.
Friendly Dummy	The attitude of target company towards acquisition deal, including friendly, hostile, and other. Set to 1 if attitude is friendly, otherwise 0.
Mixed Payment Dummy	The payment methods for acquisition transactions, including cash only, stock only, mixed. Set to 1 if the payment method is mixed, otherwise 0.
Corporate Financial Indicators	
Debt ratio	The debt ratio. = total debt / total assets
Tobin's Q	Tobin's Q = Market Value of Assets / Replacement Cost of Assets
Market Environment	
Cost of debt (%)	10-year T-bill rate on the deSPAC completion date.
Market return (%)	30-day average Nasdaq return before the deSPAC completion date.
Prospectus: Text Features	
Proportion of Negative	The ratio of number of negative words to total number of words.
Proportion of Positive	The ratio of number of positive words to total number of words.
Tone	The frequency difference between positive and negative words scaled by the sum of total number of words.

References

Acharya, V. V., DeMarzo, P., & Kremer, I. (2011). Endogenous information flows and the clustering of announcements. American Economic Review, 101(7), 2955-2979.

Adjei, F., Cyree, K. B., & Walker, M. M. (2007). The determinants and survival of reverse mergers vs ipos. Journal of Economics and Finance, 32(2), 176–194. https://doi.org/10.1007/s12197-007-9012-4

Akdoğu, E., Simsir, S. A., & Yılmaz, M. M. (2022). SPACs and the regulation gap: The effect of first SEC intervention on share and warrant returns. Finance Research Letters, 50, 103316.

Alti, A., & Cohn, J. B. (2023). A model of informed intermediation in the market for going public. Available at SSRN 4058787.

Amoosegar, A., Berger, D., Cao, X., & Pukthuanthong, K. (2020). Earnings conference calls and institutional monitoring: Evidence from textual analysis. Journal of Financial Research, 43(1), 5-36.

Anconetani, R., Colantoni, F., Martielli, F., Bui Huu, D., & Binh, D. (2024). Are SPACs a good investment deal for investors? A performance comparison between SPACs vs IPOs. Journal of Small Business and Enterprise Development.

Arnold, T., Fishe, R. P. H., & North, D. (2010). The effects of ambiguous information on initial and subsequent IPO returns. Financial Management, 39(4), 1497–1519. https://doi.org/10.1111/j.1755-053x.2010.01120.x

Arnold, T., Fishe, R. P. H., & North, D. S. (2006). Measuring risk disclosure in ipos and its effect on initial and subsequent returns. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.964992

Baginski, S., Demers, E., Wang, C., & Yu, J. (2016). Contemporaneous verification of language: Evidence from management earnings forecasts. Review of Accounting Studies, 21, 165-197.

Bai, J., Ma, A., & Zheng, M. (2021). Reaching for yield in the Going-Public Market: Evidence from spacs. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3746490

Bai, J., Ma, A., & Zheng, M. (2021). Segmented going-public markets and the demand for

SPACs. Available at SSRN 3746490.

Bai, J., Ma, A., & Zheng, M. (2023). Segmented going-public markets and the demand for SPACs. Available at SSRN 3746490.

Bajo, E., & Raimondo, C. (2017). Media sentiment and IPO underpricing. Journal of Corporate Finance, 46, 139–153. https://doi.org/10.1016/j.jcorpfin.2017.06.003

Banerjee, S., & Szydlowski, M. (2024). Harnessing the overconfidence of the crowd: A theory of SPACs. Journal of Financial Economics, 153, 103787.

Banerjee, S., & Szydlowski, M. (2024). Harnessing the overconfidence of the crowd: A theory of SPACs. Journal of Financial Economics, 153, 103787.

Barberis, N., Shleifer, A., & Wurgler, J. (2005). Comovement. Journal of financial economics, 75(2), 283-317.

Barth, J. R., Gu, M., & Liu, J. (2023). SPACs: An overview and assessment of returns. American Journal of Economics and Sociology, 82(2), 129-139.

Bennett, G. B., Irons, C., MacKenzie, N. L., & Wang, E. (2024). Can Concrete Language Backfire? The Joint Effect of Concrete and Extreme Language on Investors' Judgments. Available at SSRN 4778066

Berger, R. (2008). SPACs: An alternative wav to access the public markets. Journal of Applied Corporate Finance, 20(3), 68-75.

Bertomeu, J., E. Cheynel, E. Floyd, and W. Pan. 2021. Using machine learning to detect misstatements. Review of Accounting Studies 26:468–519.

Blankespoor, E., Hendricks, B. E., Miller, G. S., & Stockbridge Jr, D. R. (2022). A hard look at SPAC projections. Management Science, 68(6), 4742-4753.

Blankespoor, E., Hendricks, B. E., Miller, G. S., & Stockbridge, D. R. (2022). A hard look at SPAC projections. Management Science, 68(6), 4742-4753.

Blomkvist, M., & Vulanovic, M. (2020). SPAC IPO waves. Economics Letters, 197, 109645. https://doi.org/10. 1016/j.econlet.2020.109645

Bloomfield, R. J. (2002). The "incomplete revelation hypothesis" and financial reporting. Accounting Horizons, 16(3), 233–243.

Bochkay, K.; S. Chava; and J. Hales. (2020). Hyperbole or reality? Investor response to extreme language in earnings conference calls. The Accounting Review 9, 31-60.

Bonsall, S. B., Bozanic, Z., & Fischer, P. E. (2013). The informativeness of disclosure tone. Available at SSRN 1598364.

Brau, J. C., Cicon, J., & McQueen, G. (2016). Soft strategic information and IPO underpricing. Journal of Behavioral Finance, 17(1), 1–17.

Brown, P., Ferguson, A., & Lam, P. (2013). Choice between alternative routes to go public: Backdoor listing versus IPO. Handbook of Research on IPOs. https://doi.org/10.4337/9781781955376.00034

Bui, Y., & Hwang, H. (2024). Market sentiment and SPACs. Applied Economics Letters, 1-6.

Bui, Y., & Hwang, H. (2024). Market sentiment and SPACs. Applied Economics Letters, 1-6.

Call, A. C., Flam, R. W., Lee, J. A., & Sharp, N. Y. (2023). Managers' use of humor on public earnings conference calls. Review of Accounting Studies, 1-38

Campbell, J. L., Cecchini, M., Cianci, A. M., Ehinger, A. C., & Werner, E. M. (2019). Tax-related mandatory risk factor disclosures, future profitability, and stock returns. Review of Accounting Studies, 24(1), 264–308. https://doi.org/10.1007/s11142-018-9474-y

Cao, S., Jiang, W., Yang, B., & Zhang, A. L. (2023). How to talk when a machine is listening: Corporate disclosure in the age of AI. The Review of Financial Studies, 36(9), 3603-3642.

Carpentier, C., Cumming, D., & Suret, J.-M. (2012). The value of Capital Market Regulation: Ipos versus reverse mergers. Journal of Empirical Legal Studies, 9(1), 56–91. https://doi.org/10.1111/j.1740-1461.2011.01247.x

Castellani, V., Muller, K. A., & Park, K. J. (2024). Investor reaction to SPACs' voluntary disclosures. The Accounting Review, 99(1), 105-137.

Castellani, V., Muller, K. A., & Park, K. J. (2024). Investor reaction to SPACs' voluntary disclosures. The Accounting Review, 99(1), 105-137.

Cazier, R. A., Merkley, K. J., & Treu, J. S. (2020). When are firms sued for qualitative disclosures? implications of the safe harbor for forward-looking statements. The Accounting Review, 95(1), 31–55. https://doi.org/10.2308/accr-52443

CHAPLINSKY, S., HANLEY, K. W., & MOON, S. K. (2017). The Jobs Act and the costs of going public. Journal of Accounting Research, 55(4), 795–836. https://doi.org/10.1111/1475-679x.12172

Chapman, K., Frankel, R. M., & Martin, X. (2021). SPACs and forward-looking disclosure: Hype or information?. Available at SSRN 3920714.

Chapman, K., Frankel, R. M., & Martin, X. (2021). SPACs and forward-looking disclosure: Hype or information?. Available at SSRN 3920714.

Chatterjee, S., Chidambaran, N. K., & Goswami, G. (2016). Security design for a non-standard IPO: The case of SPACs. Journal of International Money and Finance, 69, 151-178.

Chemmanur, T. J., & Fulghieri, P. (1994). Reputation, renegotiation, and the choice between bank loans and publicly traded debt. Review of financial Studies, 7(3), 475-506.

Chemmanur, T. J., & Fulghieri, P. (1997). Why include warrants in new equity issues? A theory of unit IPOs. Journal of Financial and Quantitative Analysis, 32(1), 1-24.

Cheng, C.-H., Chen, Y.-S., & Chen, J.-S. (2007). Classifying initial returns of electronic firm_s ipos using entropy based rough sets in Taiwan Trading Systems. Second International Conference on Innovative Computing, Informatio and Control (ICICIC 2007). https://doi.org/10.1109/icicic.2007.215

Chiang, Y. M., Kim, W., Park, B., & Yoon, T. J. (2024a). De-SPAC Performance Under Better Aligned Sponsor Contracts. European Corporate Governance Institute–Finance Working Paper, (962).

Chiang, Y. M., Kim, W., Park, B., & Yoon, T. J. (2025a). deSPAC performance under better aligned sponsor contracts. Journal of Banking & Finance, 176, 107440.

Chiang, Y. M., Park, B., Rhee, S. G., & Tsai, H. J. (2024b). Foreign versus domestic SPACs in the US Market. European Financial Management.

Chiang, Y. M., Park, B., Rhee, S. G., & Tsai, H. J. (2025b). Foreign versus domestic SPACs in the US Market. European Financial Management.

Chiu, T., Guan, Y., & Kim, J. (2018). The effect of risk factor disclosures on the pricing of Credit Default Swaps. Contemporary Accounting Research, 35(4), 2191–2224. https://doi.org/10.1111/1911-3846.12362

Chu, Y. F. (2023). SPACs and Risk Factor Disclosures (Doctoral dissertation).

Coates, J. C. (2022). SPAC law and myths. SSRN working paper. https://ssrn.com/abstract=4022809

Coates, J. C. (2022). SPAC law and myths. Bus. LAw., 78, 371-390.

Crawford, V. P., & Sobel, J. (1982). Strategic information transmission. Econometrica: Journal of the Econometric Society, 1431-1451.

Cumming, D., Haß, L. H., & Schweizer, D. (2014). The fast track IPO – success factors for taking firms public with spacs. Journal of Banking & Finance, 47, 198–213. https://doi.org/10.1016/j.jbankfin.2014.07.003

Cumming, D., Haß, L. H., & Schweizer, D. (2014). The fast track IPO–Success factors for taking firms public with SPACs. Journal of Banking & Finance, 47, 198-213.

Dambra, M., Even-Tov, O., & George, K. (2021). Should SPAC forecasts be sacked. Available at SSRN, 3933037.

Dambra, M., Even-Tov, O., & George, K. (2022). Should spac forecasts be sacked. Available at SSRN, 3933037.

Dambra, M., Even-Tov, O., & George, K. (2022). Should spac forecasts be sacked? SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3933037

Dambra, M., Even-Tov, O., & Munevar, K. (2023). Are SPAC revenue forecasts informative?. The Accounting Review, 98(7), 121-152.

Dambra, M., Even-Tov, O., & Munevar, K. (2023). Are SPAC revenue forecasts informative?. The Accounting Review, 98(7), 121-152.

D'Augusta, C., & DeAngelis, M. D. (2020). Does accounting conservatism discipline qualitative disclosure? Evidence from tone management in the MD&A. Contemporary Accounting Research, 37(4), 2287-2318.

Davis, A. K., Piger, J. M., & Sedor, L. M. (2012). Beyond the numbers: Measuring the information content of earnings press release language. Contemporary Accounting Research, 29(3), 845-868.

Degeorge, F., Martin, J., & Phalippou, L. (2016). On secondary buyouts. Journal of Financial Economics, 120(1), 124–145. https://doi.org/10.1016/j.jfineco.2015.08.007

Del Giudice, A., & Signori, A. (2024). Sponsor reputation and agency conflicts in SPACs. International Review of Financial Analysis, 92, 103054.

Del Giudice, A., & Signori, A. (2024). Sponsor reputation and agency conflicts in SPACs. International Review of Financial Analysis, 92, 103054.

Derrien, F. (2005). IPO pricing in “hot” market conditions: Who leaves money on the table?. The journal of finance, 60(1), 487-521.

Dimic, N., Goodell, J. W., Piljak, V., & Vulanovic, M. (2023). Acquisition determinants of energy SPACs: Reflecting a closed group?. Finance Research Letters, 55, 104001.

Dimic, N., Goodell, J. W., Piljak, V., & Vulanovic, M. (2024). Green SPACs. European Financial Management, 30(2), 770-799.

Dimic, N., Tinoco, M. H., Piljak, V., & Vulanovic, M. (2025). Energy SPACs performance and governance. Energy Economics, 108478.

Dimitrova, L. (2017). Perverse incentives of special purpose acquisition companies, the “Poor man’s private equity funds.” Journal of Accounting and Economics, 63(1), 99–120. https://doi.org/10.1016/j.jacceco.2016.10.003

Dimitrova, L. (2017). Perverse incentives of special purpose acquisition companies, the “poor man’s private equity funds”. Journal of Accounting and Economics, 63(1), 99-120.

Dimitrova, L. (2017). Perverse incentives of special purpose acquisition companies, the “poor man’s private equity funds”. Journal of Accounting and Economics, 63(1), 99-120.

Dimitrova, L., & Fong, M. (2023). Executive Visibility: A Worthwhile Investment or a Futile Pursuit?. Available at SSRN 4264933.

Emm, E. E., Han, B., & Li, B. (2024). Cross-border acquisitions: The case of SPACs. Pacific-Basin Finance Journal, 85, 102396.

Emm, E. E., Han, B., & Li, B. (2024). Cross-border acquisitions: The case of SPACs. Pacific-Basin Finance Journal, 85, 102396.

Fama, E. F. (1970). Efficient capital markets. Journal of finance, 25(2), 383-417.

FANG, L. H. (2005). Investment Bank reputation and the price and quality of underwriting services. The Journal of Finance, 60(6), 2729–2761. https://doi.org/10.1111/j.1540-6261.2005.00815.x

Feldman, R., Govindaraj, S., Livnat, J., & Segal, B. (2010). Management's tone change, post earnings announcement drift and accruals. Review of Accounting Studies, 15, 915-953.

Feng, F. Z., Nohel, T., Tian, X., Wang, W., & Wu, Y. (2023). The incentives of SPAC sponsors. PBCFS-NIFR Research Paper, forthcoming. Available online: https://ssrn. com/abstract, 4069007.

Feng, F. Z., Nohel, T., Tian, X., Wang, W., & Wu, Y. (2023). The incentives of SPAC sponsors. PBCSF-NIFR Research Paper Forthcoming.

Ferris, S. P., Hao, (Grace) Qing, & Liao, (Stella) Min-Yu. (2013). The effect of issuer conservatism on IPO pricing and performance*. Review of Finance, 17(3), 993–1027. https://doi.org/10.1093/rof/rfs018

Filzen, J. J. (2015). The information content of Risk Factor Disclosures in quarterly reports. Accounting Horizons, 29(4), 887–916. https://doi.org/10.2308/acch-51175

Finne, G., & Haga, J. (2024). SPACs and their warrants.

Finne, G., & Haga, J. (2024). SPACs and their warrants.

Floros, I. V., & Sapp, T. R. A. (2011). Shell Games: On the value of Shell Companies. Journal of Corporate Finance, 17(4), 850–867. https://doi.org/10.1016/j.jcorpfin.2011.03.004

Gahng, M., Ritter, J. R., & Zhang, D. (2023). Spacs. The Review of Financial Studies. https://doi.org/10.1093/rfs/hhad019

Gahng, M., Ritter, J. R., & Zhang, D. (2023). SPACs. The Review of Financial Studies, 36(9), 3463-3501.

Gahng, M., Ritter, J. R., & Zhang, D. (2023). SPACs. The Review of Financial Studies, 36(9), 3463-3501.

Gigante, G., & Notarnicola, D. (2021). Performance analysis of healthcare-focused special purpose acquisition companies. Investment Management and Financial Innovations, 18(4), 150–165. https://doi.org/10.21511/imfi.18(4).2021.14

Gompers, P. A., & Lerner, J. (2004). The venture capital cycle. MIT press.

Groh, A. P., Proelss, J., Sannajust, A., & Schweizer, D. (2025). Misconduct in the SPAC market: evidence from venture capital exits. Journal of Corporate Finance, 93, 102792.

Gryglewicz, S., Hartman-Glaser, B., & Mayer, S. (2021). PE for the public: The rise of spacs. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3947368

Gryglewicz, S., Hartman-Glaser, B., & Mayer, S. (2022). PE for the public: The rise of SPACs. Available at SSRN 3947368.

Guo, H., Wang, Y., Wang, B., & Ge, Y. (2022). Does prospectus AE affect IPO underpricing? A content analysis of the Chinese Stock Market. International Review of Economics & Finance, 82, 1–12. https://doi.org/10.1016/j.iref.2022.06.001

Haniffa, R., Hudaib, M., & Nawaz, T. (2022). The value of social capital for the success of SPAC IPOs. International Journal of Financial Studies, 10(2), 31.

Hanley, K. W., & Hoberg, G. (2010). The information content of IPO prospectuses. The Review of Financial Studies, 23(7), 2821-2864.

Hanley, K. W., & Hoberg, G. (2012). Litigation risk, strategic disclosure and the underpricing of Initial Public Offerings. Journal of Financial Economics, 103(2), 235–254. https://doi.org/10.1016/j.jfineco.2011.09.006

Hansen, C. (2024). Which companies go public via SPACs? The role of private equity and venture capital financing. Review of Corporate Finance.

Hemmings, D., & Jaafar, A. (2025). Jumpstart our SPAC IPOs? Unintended consequences of the JOBS Act. Journal of Asset Management, 1-11.

Hendershott, T., Livdan, D., & Schürhoff, N. (2015). Are institutions informed about news? Journal of Financial Economics, 117(2), 249–287. https://doi.org/10.1016/j.jfineco.2015.03.007

Hepfer, B., McGuire, S. T., & Xia, J. (2023). SPACs and Tax: Market Implications of Tax-Disadvantaged SPAC Acquisitions. Available at SSRN 4621384.

Hori, K., & Osano, H. (2024). Information production in start-up firms: SPACs vs. Traditional IPOs. Journal of Corporate Finance, 85, 102543.

Howe, J. S., & O'Brien, S. W. (2012). SPAC performance, ownership and corporate governance. Advances in Financial Economics, 1–14. https://doi.org/10.1108/s1569-3732(2012)0000015003

Hsu, D. H. (2004). What do entrepreneurs pay for venture capital affiliation? The Journal of

Finance, 59(4), 1805–1844. https://doi.org/10.1111/j.1540-6261.2004.00680.x

Huang, R., Ritter, J. R., & Zhang, D. (2023). Going public with IPOs and SPAC mergers. Available at SSRN 4608607.

Huang, R., Ritter, J. R., & Zhang, D. (2023). Ipos and spacs: Recent developments. Annual Review of Financial Economics, 15(1), 595-615.

Huang, X., Teoh, S. H., & Zhang, Y. (2014). Tone management. The accounting review, 89(3), 1083-1113.

JACKSON, A. R. (2005). Trade generation, reputation, and sell-side analysts. The Journal of Finance, 60(2), 673–717. https://doi.org/10.1111/j.1540-6261.2005.00743.x

Jegadeesh, N., & Titman, S. (1993). Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency. The Journal of Finance, 48(1), 65–91.

Jegadeesh, N., & Wu, D. (2013). Word power: A new approach for content analysis. Journal of Financial Economics, 110(3), 712–729. https://doi.org/10.1016/j.jfineco.2013.08.018

Jenkinson, T., & Sousa, M. (2011). Why SPAC investors should listen to the market. Journal of Applied Finance, 21,1–21.

Jenkinson, T., & Sousa, M. (2011). Why SPAC investors should listen to the market. Journal of Applied Finance, 21(2).

Jiang, F., Lee, J., Martin, X., & Zhou, G. (2019). Manager sentiment and stock returns. Journal of Financial Economics, 132(1), 126–149. https://doi.org/10.1016/j.jfineco.2018.10.001

Kang, H. C., & Lee, S. (2023). What has been changed in SPAC mergers? Evidence from Korea since their introduction. Finance Research Letters, 56, 104140.

Kang, H. C., & Lee, S. (2024). SPACs and the COVID-19 pandemic: Evidence from Korea. Research in International Business and Finance, 72, 102538.

Kaplan, S. N., & Schoar, A. (2005). Private equity performance: Returns, persistence, and capital flows. The journal of finance, 60(4), 1791-1823.

Kiesel, F., Klingelhöfer, N., Schiereck, D., & Vismara, S. (2023). SPAC merger announcement returns and subsequent performance. European Financial Management, 29(2), 399–420. https://doi.org/10.1111/eufm.12366

Kiesel, F., Klingelhöfer, N., Schiereck, D., & Vismara, S. (2023). SPAC merger announcement returns and subsequent performance. European Financial Management, 29(2), 399-420.

Kiesel, F., Klingelhöfer, N., Schiereck, D., & Vismara, S. (2023). SPAC merger announcement returns and subsequent performance. European Financial Management, 29(2), 399-420.

Kim, J., Shin, S., Lee, H. S., & Oh, K. J. (2019). A machine learning portfolio allocation system for ipos in Korean markets using ga-rough set theory. Sustainability, 11(23), 6803. https://doi.org/10.3390/su11236803

Klausner, M., Ohlrogge, M., & Ruan, E. (2022). A sober look at SPACs. Yale Journal on Regulation, 39, 228–303.

Klausner, M., Ohlrogge, M., & Ruan, E. (2022). A sober look at SPACs. Yale J. on Reg., 39, 228.

Klausner, M., Ohlrogge, M., & Ruan, E. (2022). A sober look at SPACs. Yale J. on Reg., 39, 228.

Kolb, J., & Tykvová, T. (2016). Going public via special purpose acquisition companies: Frogs do not turn into princes. Journal of Corporate Finance, 40, 80–96.

Kolb, J., & Tykvová, T. (2016). Going public via special purpose acquisition companies: Frogs do not turn into princes. Journal of Corporate Finance, 40, 80–96. https://doi.org/10.1016/j.jcorpfin.2016.07.006

Kolb, J., & Tykvova, T. (2016). Going public via special purpose acquisition companies: Frogs do not turn into princes. Journal of Corporate Finance, 40, 80-96.

Kothari, S. P., Shu, S., & Wysocki, P. D. (2009). Do managers withhold bad news?. Journal of Accounting research, 47(1), 241-276.

Kravet, T., & Muslu, V. (2013). Textual risk disclosures and investors' risk perceptions. Review of Accounting Studies, 18(4), 1088–1122. https://doi.org/10.1007/s11142-013-9228-9

Lakicevic, M., & Vulanovic, M. (2013). A story on spacs. Managerial Finance, 39(4), 384–403. https://doi.org/10.1108/03074351311306201

Lee, I., Lochhead, S., Ritter, J., & Zhao, Q. (1996). The costs of raising capital. Journal of Financial Research, 19(1), 59–74. https://doi.org/10.1111/j.1475-6803.1996.tb00584.x

Lehavy, R., Li, F., & Merkley, K. (2011). The effect of annual report readability on analyst following and the properties of their earnings forecasts. The Accounting Review, 86(3), 1087–1115. https://doi.org/10.2308/accr.00000043

Leland, H. E., & Pyle, D. H. (1977). Informational asymmetries, financial structure, and financial intermediation. The journal of Finance, 32(2), 371-387.

Lewellen, S. (2009). SPACs as an asset class. Available at SSRN 1284999.

Li, F. (2008). Annual report readability, current earnings, and earnings persistence. Journal of Accounting and Economics, 45(2–3), 221–247. https://doi.org/10.1016/j.jacceco.2008.02.003

Li, F. (2010). The information content of forward‐looking statements in corporate filings—A naïve Bayesian machine learning approach. Journal of accounting research, 48(5), 1049-1102.

Li, M., Wu, H., Xiao, M., & You, J. (2019). Beyond cheap talk: management's informative tone in corporate disclosures. Accounting & Finance, 59(5), 2905-2959.

Lin, C., Lu, F., Michaely, R., & Qin, S. (2021). SPAC IPOs and sponsor network centrality. Available at SSRN 3856181.

Lin, C., Lu, F., Michaely, R., & Qin, S. (2021). SPAC IPOs and sponsor network centrality. Available at SSRN 3856181.

Lopez-Lira, A. (2021). Why do managers disclose risks accurately? Textual analysis, disclosures, and risk exposures. Economics Letters, 204, 109896.

Loughran, T., & McDonald, B. (2011). When is a liability not a liability? Textual analysis, dictionaries, and 10‐Ks. The Journal of finance, 66(1), 35-65.

Loughran, T., & McDonald, B. (2013). IPO first-day returns, offer price revisions, volatility, and form S-1 language. Journal of Financial Economics, 109(2), 307–326.

Loughran, T., & McDonald, B. (2013). IPO first-day returns, offer price revisions, volatility, and form S-1 language. Journal of Financial Economics, 109(2), 307–326. https://doi.org/10.1016/j.jfineco.2013.02.017

LOUGHRAN, T., & MCDONALD, B. (2014). Measuring readability in financial disclosures. The Journal of Finance, 69(4), 1643–1671. https://doi.org/10.1111/jofi.12162

Lowry, M., & Shu, S. (2002). Litigation risk and IPO underpricing. Journal of Financial

Economics, 65(3), 309–335. https://doi.org/10.1016/s0304-405x(02)00144-7

Lowry, M., Michaely, R., & Volkova, E. (2017). Initial public offerings: a synthesis of the literature and directions for future research. Foundations and Trends® in Finance, 11(3–4), 154–320. https://doi.org/10.1561/0500000050

Luo, D., & Sun, J. (2022). A dynamic delegated investment model of SPACs. Available at SSRN 3929762.

Megginson, W. L., & Weiss, K. A. (1991). Venture capitalist certification in initial public offerings. The Journal of Finance, 46(3), 879-903.

Naumovska, I., & Harmon, D. (2024). Communication under Uncertainty and the Role of Founders' Information Advantage: Evidence from SPAC IPOs. Strategy Science, 9(2), 163-184.

Naumovska, I., & Harmon, D. (2024). Communication under Uncertainty and the Role of Founders' Information Advantage: Evidence from SPAC IPOs. Strategy Science.

Nawaz, T. (2024). The i SPAC. Review of Quantitative Finance and Accounting, 63(1), 311-324.

Nawaz, T. (2024). The i SPAC. Review of Quantitative Finance and Accounting, 63(1), 311-324.

Nawaz, T. (2025). Not on My Nickel: The Aptness of Blank Check Companies for Islamic Finance. International Journal of Finance & Economics.

Nohel, T. (2024). The information content of SPAC securities. International Review of Financial Analysis, 93, 103137.

O'Brien, P. C., & Tan, H. (2015). Geographic proximity and analyst coverage decisions: Evidence from IPOs. Journal of Accounting and Economics, 59(1), 41-59.

Papathanasiou, S., Koutsokostas, D., & Pergeris, G. (2022). Novel alternative assets within a transmission mechanism of volatility spillovers: The role of SPACs. Finance Research Letters, 47, 102602.

Papathanasiou, S., Koutsokostas, D., & Pergeris, G. (2022). Novel alternative assets within a transmission mechanism of volatility spillovers: The role of SPACs. Finance Research Letters, 47, 102602.

Pawlicsek, A., Skinner, A. N., & Sechman, S. L. (2024). Signing blank checks: The roles of disclosure and reputation in the face of limited information. The Accounting Review, 99(2), 395-419.

Pawliczek, A., Skinner, A. N., & Zechman, S. L. (2024). Signing blank checks: The roles of disclosure and reputation in the face of limited information. The Accounting Review, 99(2), 395-419.

PitchBook. (2022, September 20). A guide to every step in the IPO process. PitchBook. https://pitchbook.com/blog/ipo-process-explained

Quintana, D., Sáez, Y., & Isasi, P. (2017). Random Forest Prediction of IPO underpricing. Applied Sciences, 7(6), 636. https://doi.org/10.3390/app7060636

RITTER, J. R. (1991). The long-run performance of Initial Public Offerings. The Journal of Finance, 46(1), 3–27. https://doi.org/10.1111/j.1540-6261.1991.tb03743.x

Ritter, J.R., (2016). Initial Public Offerings: Updated Statistics. University of Florida.

Rock, K. (1986). Why new issues are underpriced. Journal of financial economics, 15(1-2), 187-212.

Ryan, T. P. (1997). Modern regression methods. Hoboken, NJ: Wiley.

Ryan, T. P. (1997). Modern regression methods. Hoboken, NJ: Wiley.

Shachmurove, Y., & Vulanovic, M. (2018). Spac IPOs.

Spence, M. (1973). Job market signaling. The Quarterly Journal of Economics, 87(3), 355–374.

Suijs, Jeroen. “Voluntary disclosure of information when firms are uncertain of investor response.” Journal of Accounting and Economics 43.2-3 (2007): 391-410.

Suslava, K. (2021). “Stiff business headwinds and uncharted economic waters”: The use of euphemisms in earnings conference calls. Management Science, 67(11), 7184-7213.

Tran, A. L. (2010). Blank check acquisitions. Available at SSRN 2070274.

Tran, A. L. (2010). Blank check acquisitions. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2070274

Verrecchia, R. E. (2001). Essays on disclosure. Journal of accounting and economics, 32(1-3), 97-180.

Vulanovic, M. (2017). SPACs: Post-merger survival. Managerial Finance, 43(6), 679-699.

Williams, C. J. (2023). Picking Winners: Identifying Features of High-Performing Special Purpose Acquisition Companies (SPACs) with Machine Learning. Journal of Risk and Financial Management, 16(4), 236.

Wooldridge, J. M. (2021). Introductory econometrics a modern approach. Cengage.

Zhu, H., Zhang, C., Li, H., & Chen, S. (2015). Information environment, market-wide sentiment and IPO initial returns: Evidence from analyst forecasts before listing. China Journal of Accounting Research, 8(3), 193–211. https://doi.org/10.1016/j.cjar.2015.01.002