

Impact of ESG Considerations on Deal Success and Post-Merger Performance of SPACs

Himanshi

Kaushik Roy

Abstract

Special Purpose Acquisition Companies (SPACs) emerged as prominent IPO alternatives during 2020-2025, with renewable energy representing substantial SPAC activity amid growing ESG investment focus. This study addresses critical literature gaps by conducting the first comprehensive performance comparison between renewable and traditional (Oil & Gas and Mining) SPACs using standardized metrics. Analyzing 86 completed transactions (2021-2025), we examined deal success indicators and post-merger performance across sectors. Results decisively reject the hypothesis of superior renewable SPAC performance. Traditional SPACs demonstrated significant advantages, with renewable SPACs delivering median 12-month returns of -46.06% versus traditional SPACs' -14.75% ($p < 0.05$), despite paying higher enterprise multiples (4.1x vs 3.1x). These findings contradict ESG investment theory, revealing systematic overpayment during the renewable investment boom and providing crucial insights for investors and policymakers regarding sustainable investment strategies.

Keywords: special purpose acquisition vehicle; renewable SPACs; de-SPAC; initial public offering (IPO)

1. Introduction

While the rapid proliferation of Special Purpose Acquisition Companies (SPACs) has transformed capital markets, the phenomenon also raises questions about their efficacy and long-term value creation. SPACs offer a streamlined alternative to traditional initial public offerings (IPOs), enabling private companies to access public equity through a merger with a shell entity already listed on a stock exchange. In recent years, SPAC activity has surged, with issuances rising from 59 deals in 2019 to 613 deals in 2021, driven by an array of favourable conditions (SPAC Research, 2023). Within this broader trend, energy-sector SPACs have garnered particular attention. Understanding whether SPAC transactions truly deliver on their promise of efficient capital formation and sustainable growth is of key interest to all stakeholders – policymakers, institutional investors, corporate sponsors, and scholars of business and corporate finance.

Despite extensive research on SPAC performance, existing studies treat SPACs as a largely homogeneous asset class, neglecting the possible differences across sectors. A seminal work (Klausner & Ohlrogge, 2021; Kiesel, Ries, & Wojahn, 2023) demonstrates systematic underperformance of SPACs, but does not differentiate by sector or strategic focus. A growing body of research (e.g., Datar, Emm, and Han, 2024; Gonta, 2024) examines ESG-focused SPACs, albeit with mixed evidence. While ESG investment theory predicts that renewable energy ventures, by virtue of lower cost of capital and sustainability premiums, should achieve superior risk-adjusted returns (Kim & Park, 2016), yet we didn't locate any empirical analysis that has rigorously tested this proposition in the context of SPAC-driven transactions.

This study provides the first quantitative comparison of deal success and post-merger performance for renewable versus traditional energy SPACs over the 2020–2025 “peak period” of SPAC activity. By analyzing 86 completed transactions and employing nonparametric statistical tests alongside Spearman rank correlation analysis, the research evaluates nine critical metrics — from IPO pop returns to twelve-month buy-and-hold performance — while assessing the predictive power of pre-merger indicators. The findings reveal that, contrary to ESG investment theory expectations, renewable energy SPACs underperform traditional counterparts across multiple horizons, and also exhibit weaker relationships between deal success measures and long-term returns. Further, we shed light on how valuation discipline, timing efficiency, and investor certification differ in their predictive validity between established and emerging energy technologies.

2. Literature Review

In the securities market, SPACs are increasingly being viewed as a plausible alternative to an IPO for taking a company public (Klausner et al. 2023). In its entire lifespan, sponsors, investor and the targets are the three key stakeholders that SPACs involve with (Valeria, 2024). The existing SPAC literature reveals significant analytical gaps that limit understanding of sector-specific performance dynamics. Foundational research by Klausner and Ohlrogge (2021)

establishes that SPACs systematically underperform due to structural dilution costs, with median cash delivery of only \$6.67 per \$10 share, but treats SPACs as a homogeneous asset class without sectoral differentiation. Similarly, Kiesel et al. (2023) document negative long-term SPAC returns across sectors but provide limited insight into industry-specific performance drivers.

Research specifically addressing ESG and renewable energy SPACs suffers from methodological limitations. Datar et al. (2023) examine ESG-focused SPACs and find inferior performance compared to non-ESG counterparts, but their analysis relies on stated ESG intentions rather than quantitative sector performance metrics. Gonta (2024) incorporates ESG scores into SPAC analysis but focuses on disclosure indicators rather than operational performance differences between renewable and traditional energy sectors.

The energy SPAC literature provides partial sectoral insights but lacks comprehensive renewable versus traditional comparisons. Dimic et al. (2023) identify acquisition determinants in energy SPACs, suggesting "closed group" dynamics that may influence target selection, while their subsequent research (Dimic et al., 2025) examines energy SPAC governance but does not distinguish between renewable and traditional energy subsectors. This represents a critical gap given the fundamental operational and financial differences between these sectors.

As stated earlier, we proceed with the theoretical gap that existing SPAC research implicitly assumes homogeneous performance characteristics across sectors, failing to account for how ESG investor preferences and sector-specific operational dynamics might create systematic performance differences. This gap is particularly significant given that ESG investment theory suggests renewable energy investments should benefit from lower cost of capital, enhanced investor demand, and superior long-term risk-adjusted returns due to sustainability premiums (Kim & Park, 2016). However, no empirical research has tested whether these theoretical ESG advantages manifest in measurable SPAC performance differentials.

Furthermore, the literature lacks integration of deal success metrics with post-merger performance outcomes within sector-specific contexts. While Feng et al. (2023) examine SPAC sponsor incentives and Levmore and Fagan (2022) analyze PIPE investor behavior, no research connects pre-merger execution efficiency to post-merger performance within renewable versus traditional energy frameworks. There is also a theoretical expectation that ESG investor preferences, sustainability premiums, and renewable sector growth prospects should translate into measurable performance advantages. Consequently, we hypothesize,

H: renewable energy SPACs demonstrate superior deal execution metrics and post-merger shareholder returns compared to traditional sector SPACs

3. Methodology

Our sample comprises 86 completed SPAC transactions spanning the period from 2021 to 2025, strategically selected to capture the peak period of SPAC activity. Traditional sector SPACs constitute 47 transactions distributed across industrials and oil & gas, and renewable energy SPACs represent 39 transactions encompassing solar, wind, energy

storage, biofuels, and grid infrastructure projects, reflecting the breadth of sustainable energy investment themes. SPAC-specific data has been collected primarily from Boardroom Alpha (2023), SPAC Research (2023), and SEC regulatory filings, with cross-validation across multiple sources because these databases represent the most comprehensive and reliable repositories of SPAC transaction data.

We've focused on the 2020-2025 period for our analysis because:

1. Definitive "peak period" of SPAC activity: According to SPAC Research (2023), SPAC formations increased from 59 transactions in 2019 to 613 in 2021, representing a ten-fold increase that established this period as the most active in SPAC market history. This provides the statistical power necessary for detecting performance differences between sectors, while the temporal concentration minimizes confounding factors from changing market conditions, regulatory environments, and macroeconomic cycles that could obscure sector-specific effects (Kiesel et al., 2023)
2. ESG Focus: Data from Boardroom Alpha (2023) indicates that renewable energy represented less than 5% of SPAC targets prior to 2020 but constituted over 23% of transactions during 2020-2022, reflecting the ESG investment boom that characterized this period. This surge makes the 2020-2025 timeframe uniquely suitable for comparative analysis between renewable and traditional energy SPACs, as earlier periods lack sufficient renewable transactions for robust statistical analysis (University of Pennsylvania - Kleinman Center for Energy Policy, 2024).

We have identified nine critical factors from two key stages of SPAC creation for assessing SPAC deal success and post-merger performance. The first stage examines deal success metrics that reflect the quality of SPAC execution and market reception during the transaction process. Here, we've employed five metrics, including

1. Redemption Rates: To measure the percentage of shareholders exercising redemption rights before business combination and serve as indicators of investor confidence in transaction quality
2. IPO to Deal Announcement Days: Employed to analyse temporal efficiency, it captures sponsors' effectiveness in target identification and due diligence processes
3. Deal Announcement to De-SPAC Days: This reflects operational execution capabilities post-announcement.
4. EV Multiple: Valuation discipline is assessed through enterprise value multiples that serve as standardized benchmarks across sectors.
5. PIPE/TEV Ratio: Used to measure institutional support, it represents the proportion of private investment relative to total enterprise value.

The aforesaid metrics are already well-established in literature. Temporal metrics (1 to 3, above) conclusively validate critical performance predictors in SPAC research. For example, Cumming et al. (2014) establish that "the time to execute a business combination negatively correlates with SPAC performance," providing empirical support for using timing variables as performance indicators. Their research demonstrates that "a higher level of voting rights by SPAC management decreases the time to target announcement, while the presence of active investors decreases the time to the target announcement," confirming timing efficiency as a measurable sponsor capability. Additionally, their study finds that "SPAC performance is worse for acquisitions announced near the predetermined two-year deadline," establishing

time pressure as a critical factor affecting deal quality. Likewise, EV multiple has a critical role in performance prediction (FTI Consulting, 2025). Additionally, Cowen's institutional research establishes that higher multiples are correlated with elevated execution risk and subsequent underperformance. Studies have also established that PIPE investments are a critical funding mechanism affecting post-merger performance outcomes (Liu & Joseph, 2024).

The second stage focuses on post-merger performance metrics that capture market reception and long-term value creation. Here, we've utilised four metrics, including

1. IPO Pop Returns: IPO Pop Returns are calculated as $(P_1 - P_0)/P_0$ where P_0 is the IPO price (\$10) and P_1 is the first-day closing price. These measure initial market reaction to SPAC offerings, providing insights into immediate investor sentiment.
2. Deal Announcement Pop Returns: $(P_{DA} - P_{DA-1})/P_{DA-1}$, where P_{DA-1} and P_{DA} are the pre-announcement and announcement day prices, respectively. They reflect the market assessment of target quality and transaction terms.
3. One-Month Buy-and-Hold Returns: Used to assess short-term post-merger performance as they capture immediate execution success.

$$BHAR_{1m} = \prod (1 + R_{it}) - \prod (1 + R_{mt}) \text{ for } t = 1 \text{ to } 21 \text{ trading days}$$

4. Twelve-Month Buy-and-Hold Returns: Complements one-month buy-and-hold return analysis by evaluating sustained value creation over extended horizons.

$$BHAR_{12m} = \prod (1 + R_{it}) - \prod (1 + R_{mt}) \text{ for } t = 1 \text{ to } 252 \text{ trading days}$$

*where R_{it} is the daily return of the SPAC and R_{mt} is the benchmark market return

We have incorporated the non-parametric Mann-Whitney U test (two-tailed) to provide distribution-free comparisons between renewable and traditional sectors, accommodating the non-normal characteristics typical of financial return data. The non-parametric approach proves particularly valuable in SPAC research due to the presence of extreme outliers that can disproportionately influence parametric correlation measures.

Also, central to our analysis is the examination of predictive relationships between deal success metrics and post-merger performance outcomes through comprehensive correlation analysis. We employ Spearman rank correlation coefficients to assess the strength and direction of associations between key deal characteristics and subsequent shareholder returns, selecting this non-parametric approach for its robustness to outliers and non-linear relationships typical of SPAC return data (for rigorous theoretical justification, see Schechtman & Shelef, 2018). Deal success metrics including redemption rates, execution timing variables, valuation multiples, and financing structure ratios are systematically correlated against post-merger performance measures spanning multiple time horizons from immediate market reactions to twelve-month buy-and-hold returns. Our analysis provides crucial insights into which deal characteristics serve as leading indicators of subsequent performance. Imputation via medians is utilised for missing data points across the sample.

4. Results & Discussion

Our discussion flows from the empirical results, as tabulated below.

Table 1: Deal Success Analysis

Metric	Traditional SPACs	Renewable SPACs	Statistical Significance
Redemption Rate			
Mean	83.0%	74.7%	P < 0.05
Median	92.2%	87.5%	
N	26	36	
IPO to DA Days			
Mean	720.39	455.28	P < 0.05
Median	611.00	443.00	
N	46	39	
DA to De-Spac Days			
Mean	272.79	270.92	P < 0.05
Median	229.00	244.00	
N	43	38	
EV Multiple			
Mean	3.2x	5.2x	P < 0.05
Median	3.1x	4.1x	
N	16	23	
PIPE/TEV Ratio			
Mean	58.4%	19.4%	P < 0.05
Median	9.2%	10.9%	
N	32	37	

Note:

(1) Statistical significance based on Mann-Whitney U test.

(2) n.s. = not significant

Table 2: Post-merger Performance Analysis

Metric	Traditional SPACs	Renewable SPACs	Statistical Significance
IPO Pop Return			
Mean	6.7%	-0.1%	P < 0.05
Median	0.2%	0.3%	
N	24	38	
DA Pop Return			
Mean	2.8%	-1.7%	P < 0.05
Median	0.1%	0.2%	
N	23	38	
1-Month Buy and Hold Return			
Mean	-30.5%	-59.8%	P < 0.05
Median	-20.0%	-17.2%	
N	31	30	
12-Month Buy and Hold Return			
Mean	-29.69%	-29.88%	P < 0.05
Median	-14.75%	-46.06%	
N	32	30	

Note:

(1) Statistical significance based on Mann-Whitney U test.

(2) n.s. = not significant

Table 3: Analysis of Correlation between Deal Success and Post-merger Performance

	IPO Pop Return	DA Pop Return	1-Month Buy and Hold Returns	12-Month Buy and Hold Returns
Redemption Rate				
Traditional SPACs	0.07	-0.52	-0.29	-0.24
Renewable SPACs	0.00	0.05	0.01	0.02
IPO to DA Days				
Traditional SPACs	-0.02	-0.09	0.22	0.23
Renewable SPACs	-0.25	-0.28	0.09	0.18
DA to De-Spac Days				
Traditional SPACs	-0.10	-0.10	-0.04	0.07
Renewable SPACs	-0.25	-0.28	0.09	0.18
EV Multiple				
Traditional SPACs	0.00	0.25	-0.04	-0.05
Renewable SPACs	0.08	0.13	0.03	-0.09
PIPE/TEV Ratio				
Traditional SPACs	-0.03	-0.02	-0.30	-0.13
Renewable SPACs	0.06	-0.06	0.19	-0.04

Note:

(1) Statistical significance based on Mann-Whitney U test.

(2) n.s. = not significant

(3) Sample sizes have been standardised using imputation via median

4.1 Deal Success

Traditional SPACs exhibit significantly higher redemption rates (92.2% vs 87.5%), paradoxically indicating greater shareholder scepticism toward traditional targets. Lower redemption rates in renewable SPACs may reflect investor conviction in sector growth prospects, though subsequent performance data suggests this confidence may be misplaced. Renewable SPACs demonstrate faster target identification (443 vs 611 days), potentially reflecting sponsor expertise in the focused renewable sector or abundant target availability during the study period's renewable investment boom. Renewable targets command substantially higher EV multiples (4.1x vs 3.1x), consistent with growth premium expectations but indicating potential systematic overpayment that negatively impacts subsequent shareholder returns. PIPE/TEV ratio for renewable targets is observed to be higher (10.9% vs 9.2%), supporting the hypothesis that renewable deals require enhanced private investment support for completion (Kim & Park, 2016; Kleinman Center for Energy Policy, 2024).

4.2 Post-Merger Performance

Renewable SPACs (0.3%) slightly outperformed traditional SPACs (0.2%) despite traditional SPACs having much higher mean returns (6.7% vs -0.1%). This could have three possible reasons:

- Renewable SPACs benefited from peak ESG/clean energy enthusiasm during 2020-2021, creating broad-based positive sentiment that lifted most deals modestly, as reflected in the positive median.
- Traditional SPACs were likely priced more conservatively due to mature, predictable energy markets, leading to modest performance for most deals but exceptional outperformance for a few outliers (driving the high mean). Renewable SPACs were priced more aggressively to capture market enthusiasm, resulting in consistent small pops for typical deals but catastrophic failures for overhyped projects.

- Traditional SPACs had a few massive winners that skewed the mean upward while most performed modestly. Renewable SPACs had consistent modest gains for the majority but several severe underperformers that dragged the mean negative despite the positive median performance.

The DA pop returns show renewable SPACs achieving slightly higher median returns (0.2% vs 0.1%) but traditional SPACs posting significantly superior mean performance (2.8% vs -1.7%, $p < 0.05$). This can be attributed to:

- Renewable SPACs' slight median edge suggests continued investor interest in specific clean energy assets at the deal announcement stage.
- Traditional SPACs' superior mean performance reflects occasional highly positive market responses to premium deals, likely involving proven reserves, established infrastructure, or exceptional cash flow visibility that significantly boost sector averages.
- Renewable SPACs' negative mean despite positive median indicates the sector contains deals that trigger severe negative reactions, possibly due to overvaluation concerns or revelation of weaker target fundamentals during due diligence. This suggests greater variability in renewable deal quality, with some announcements facing immediate scepticism about execution feasibility or projected returns.

At the 1-month horizon, renewable SPACs actually outperform traditional SPACs at the median level, posting -17.2% median returns compared to traditional SPACs' worse -20.0% median decline. This suggests that in the immediate post-merger period, renewable SPACs may benefit from continued investor optimism about clean energy prospects, while traditional energy SPACs face headwinds from concerns about fossil fuel transition and regulatory pressures. However, mean returns show renewable SPACs underperforming more severely (-59.8% vs -30.5%), indicating that while the typical renewable SPAC holds up better initially, the sector contains deals with catastrophic performance that drag down averages. This pattern of post-merger underperformance is consistent with extensive research documenting systematic negative returns across SPACs generally. Harvard Law School research found that "by three months following a SPAC's merger, median returns were negative 14.5%" and that "six-month returns were worse and twelve-month returns are worse still". Earlier studies by Lakicevic and Vulcanovic (2013) found even more severe underperformance, with average buy-and-hold unit returns of -28.7% for SPACs that completed mergers.

The 12-month buy-and-hold returns reveal a complete reversal and the most severe performance differential. Traditional SPACs post median returns of -14.75% compared to renewable SPACs' devastating -46.06% median decline, representing a 31.31 percentage point underperformance gap that is statistically significant ($p < 0.05$). This dramatic deterioration from the 1-month results suggests that renewable SPACs face a "reality check" as initial market enthusiasm gives way to operational challenges. The median-level underperformance indicates systematic issues affecting the majority of renewable energy deals, likely including project execution difficulties, supply chain constraints, and the realization that projected revenue timelines were overly optimistic. In contrast, traditional energy SPACs, while still posting negative returns, demonstrate more resilient performance as investors recognize the value of established cash flows and proven operational capabilities during periods of market stress. While sector-agnostic research has established that "Energy SPACs exhibit positive returns at the merger announcement, while merger and long-term returns are

negative", our analysis provides the first empirical evidence of the magnitude of performance differences within the energy sector itself.

The underperformance patterns we document can be understood through the lens of structural costs embedded in the SPAC process. Stanford Law School research demonstrates that SPACs suffer from significant dilution, with "the median SPAC delivers only \$5.70 per share in net cash in its merger" despite shares being valued at \$10.00, and this cash shortfall is highly correlated with poor post-merger performance (Klausner & Ohlrogge, 2020). These structural impediments appear to disproportionately impact renewable energy SPACs, where longer development timelines and higher capital intensity amplify the effects of the embedded dilution costs.

4.3 Correlation Between Deal Success and Post-Merger Performance

Traditional SPACs show strong negative correlations between redemption rates and DA pop returns (-0.52), indicating that high redemptions signal underlying deal quality concerns that manifest immediately in poor announcement performance. The negative correlation with 1-month returns (-0.29) suggests that these quality concerns persist post-merger. Renewable SPACs exhibit near-zero correlations between redemption rates and all performance metrics (ranging from 0.00 to 0.05), thus, redemption rates provide limited predictive power for renewable SPAC performance, possibly because the complexity and uncertainty of renewable projects make quality assessment more difficult for retail investors at the redemption decision point.

Traditional SPACs demonstrate positive correlations between execution timelines and long-term performance, with IPO-to-DA periods showing a 0.23 correlation and DA-to-completion periods showing a 0.07 correlation with 12-month returns. The stronger positive correlation for IPO-to-DA periods suggests that taking more time to identify and announce targets may actually benefit performance, possibly indicating more thorough target evaluation or waiting for better market conditions. Similarly, renewable SPACs exhibit similar positive correlations with timeline metrics (0.18 for both IPO-to-DA and DA to De-SPAC periods with 12-month returns), though slightly weaker than traditional SPACs for the IPO-to-DA phase. This suggests that both sectors benefit from patient deal execution, but the effect may be more pronounced for traditional SPACs where sponsors have clearer benchmarks for evaluating target quality.

Traditional SPACs exhibit a positive correlation (0.25) between EV multiples and DA pop returns, indicating that markets initially reward higher-priced deals, possibly viewing premium valuations as signals of asset quality or competitive auction processes. However, this positive reception reverses over time, with a negative correlation (-0.05) emerging in 12-month performance, suggesting that initial market enthusiasm for expensive deals gives way to concerns about overpayment as operational realities unfold. Renewable SPACs demonstrate weaker initial valuation sensitivity, with modest positive correlations for DA pop (0.13) but stronger negative correlations for long-term performance (-0.09). Unlike traditional energy assets with established valuation benchmarks based on reserves or production capacity, renewable projects may be priced more on growth potential and strategic positioning, making overvaluation particularly damaging when projected growth fails to materialize.

PIPE/TEV ratios reveal contrasting investor certification patterns between sectors. Traditional SPACs demonstrate negative correlations across all time horizons, with particularly strong negative relationships for 1-month returns (-0.30). Renewable SPACs exhibit an inverted pattern, with positive short-term correlations (0.19 for 1-month returns) that deteriorate to negative long-term performance (-0.04 for 12-month returns). This suggests that, while renewable SPAC markets initially value PIPE participation as a quality signal, this proves to be a poor predictor of actual performance. Traditional energy markets appear more skeptical of PIPE-heavy deals from the outset, and this skepticism proves justified.

Renewable SPACs' heightened sensitivity to deal characteristics can be observed. This pattern may reflect greater execution risk in renewable projects requiring enhanced due diligence, increased valuation uncertainty leading to larger pricing errors, or more complex regulatory and technological factors affecting post-merger integration. These findings align with Dimic et al. (2023), who identify acquisition determinants specific to energy SPACs that may create systematic biases in target selection, potentially explaining the heightened sensitivity to deal metrics observed in our correlation analysis. Weaker correlations in traditional SPACs may indicate more mature, predictable business models where deal characteristics exert less influence on post-merger performance outcomes.

The substantial performance differential between renewable and traditional SPACs may be partially explained by sponsor incentive structures identified by Feng et al. (2023), who demonstrate that SPAC sponsors face significant pressure to complete transactions within specified timeframes regardless of deal quality. This pressure may be particularly pronounced in renewable SPACs, where the combination of abundant targets during the ESG investment boom and sponsor compensation structures dependent on deal completion could lead to systematic overpayment and reduced due diligence quality. Our finding that renewable SPACs pay significantly higher EV multiples (5.2x vs 3.2x) while delivering inferior performance outcomes supports these sponsor incentive concerns, suggesting that renewable sector deal completion pressure may override valuation discipline.

The governance implications identified by Dimic et al. (2025) suggests that structural governance weaknesses may contribute to the systematic underperformance we observe in renewable SPACs.

5. Conclusion

A central contribution of our study is the claim to be the first comprehensive performance comparison between renewable and traditional energy SPACs using standardized deal success and post-merger performance metrics. Our findings contribute to the emerging literature on energy SPAC performance (Dimic et al., 2025) by providing empirical evidence on the relationship between deal success metrics and post-merger outcomes in renewable versus traditional sectors. This study advances SPAC-ESG research by using quantitative ESG performance measures rather than binary disclosure indicators (extending Gonta, 2024), while incorporating ESG factors into the analysis of SPAC target selection criteria (building on Haasnoot, 2021).

By decisively rejecting the hypothesis that renewable SPACs deliver superior performance, our analysis reveals that traditional sector SPACs demonstrate marked advantages across multiple dimensions, whilst renewable SPACs exhibit systematically inferior execution and performance outcomes. Renewable SPACs delivered median 12-month returns of -46.06% versus traditional SPACs' -14.75%, representing a statistically significant 31.31 percentage point underperformance gap ($p < 0.05$), despite paying substantially higher enterprise value multiples (4.1x vs 3.1x median). This systematic underperformance contradicts ESG investment theory expectations and indicates systematic overpayment during the ESG investment boom.

The correlation analysis reveals that redemption rates emerge as the strongest predictor of post-merger performance, with correlations reaching -0.24 for traditional SPACs, validating theories of informed investor behavior and the informational content of shareholder exit decisions in SPAC markets. These findings support semi-strong form market efficiency theories whilst highlighting persistent valuation inefficiencies during the renewable investment boom, where systematic mispricing occurred despite available information about execution risks and structural challenges. Energy SPACs face distinct challenges as they "exhibit positive returns at the merger announcement, while merger and long-term returns are negative" (Dimic et al., 2025, p. 1), and our results suggest these challenges are particularly acute in the renewable subsector.

For investors, these results provide clear guidance that deal success metrics, particularly redemption rates and execution timing, serve as early warning indicators for deal quality assessment, whilst sponsors should prioritize disciplined valuation approaches, execution speed, and meaningful PIPE participation as primary determinants of post-merger success. Future research should examine specific sources of renewable SPAC underperformance, including regulatory delays, technology implementation risks, and capital structure mismatches between SPAC timeframes and renewable project development cycles.

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