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Author(s): Dimic, Nebojsa; Goodell, John W.; Piljak, Vanja; Vulcanovic, Milos

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Acquisition determinants of Energy SPACs: Reflecting a closed group?¹

Nebojsa Dimic²
University of Vaasa

John W. Goodell³ *

Vanja Piljak⁴
University of Vaasa

Milos Vulcanovic⁵
EDHEC Business School

Abstract

Special Purpose Acquisition Companies (SPAC) as acquisition funders are now under investors scrutiny due to challenging market dynamics and pressure from regulators. Given the sustainability-related importance of energy SPACs, as well as their binary nature, of either funding an acquisition or failing, we seek to identify factors that lead to their success. Analyzing energy SPACs from 2003–2022, we find the speed of the process and established underwriter are primary indicators of success, while female presence on boards and CEOs being foreign act against success. Our results have practical implications for energy transition investors and entrepreneurs in energy sector.

Keywords: Energy; Initial public offerings; IPO; M&A; SPACs; Special purpose acquisition company

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² School of Accounting and Finance, University of Vaasa, Wolffintie 34, 65200 Vaasa, Finland, Contact phone : +358 29 449 8503, Email: nebojsa.dimic@uwasa.fi

³ College of Business, University of Akron, Akron, USA, Email: johngoo@uakron.edu

⁴ School of Accounting and Finance, University of Vaasa, Wolffintie 34, 65200 Vaasa, Finland, Contact phone : +358 29 449 8503, Email: vanja.piljak@uwasa.fi

⁵ Department of Data Science, Economics and Finance at EDHEC Business School, 24 avenue Gustave Delory, 59057 Roubaix Cedex 1 – France, Contact phone : + 33 (0)3 20 15 45 00, Email: milos.vulanovic@edhec.edu

*Corresponding author

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1. Introduction

Specified Purpose Acquisition Companies (SPACs) have grown to establish themselves as the primary IPO mechanism in the US. In terms of the number of IPO offerings, SPACs were 55% of the IPO market in 2020, 63% in 2021, 73% in 2022, and 50% in 2023; while in terms of the total capital raised the corresponding percentages are 46% in 2020, 49% in 2021, 59% in 2022 and 38% in 2023 up to May 1st. The number of offerings and amount of capital raised by SPACs in comparison to traditional IPOs has sparked intense academic debate among researchers and practitioners. The increasing popularity of SPACs has led to an expansion of the corresponding literature (Alti and Cohn, 2022; Akdoğu et al., 2022; Bai et al., 2021; Gofman and Yao, 2022; Gryglewicz et al., 2021; Kiesel et al., 2022; Klausner et al., 2022; Lin et al., 2022; Luo and Sun, 2021; Papathanasiou et al., 2022; Gahng et al., 2023). The recent developments in the SPAC market caused many celebrities to become SPACs founders, namely Donald Trump, Chamath Palihapitiya, Richard Branson, Bill Ackman, Steve Wozniak and Colin Kaepernick.

Acclaimed as a separate asset class (Lewellen, 2009), the existential purpose of SPACs is to raise money at the IPO stage and invest it in acquiring another company. Failure to do so leads to their liquidation and significant financial losses to its founders. Our focus is on the segment of the SPACs that target acquisitions in the energy sector, either fossil fuel or renewable-sustainable, and on isolating the structural characteristics that make their acquisitions successful.

SPACs gained importance in the energy sector during the recent decade. Energy SPACs are targeting companies from various energy-related business activities: (i) renewable energy such as clean-tech energy and solar power, hydrogen, energy storage and battery technologies, as well as (ii) traditional power and oil and gas businesses (Isaac, 2021). Interestingly, SPACs have been an important channel of capital flows toward the clean energy sector, especially popular among equity investors attempting to tackle climate change through solutions offered by energy transition (S&P Global: Blackburne et al., 2023). In a similar vein, SPACs offer an opportunity for privately owned, small, and fast-growing energy companies to obtain a public status in as an alternative to traditional IPO.

Following a recent period of turbulence SPAC investing, reflected in a decline from its peak in 2021,¹ energy-transition investors have become a primary vehicle towards a renewed interest in SPAC investing (S&P Global: Blackburne et al., 2023). Further, an increase in energy-related investing, particularly clean-energy, places energy SPACs in a privileged position over other sectors regarding

¹ As a total interest rather than in relation to traditional IPOs.

successful acquisition. Therefore, we focus on examining the characteristics of specifically energy SPACs and the determinants of their acquisition success.

We examine a sample of 93 Specified Purpose Acquisition Companies (SPACs) that entered the U.S. financial markets and focused solely on merging via an IPO with a company in the energy sector during 2003–2022.² As of December 31st, 2022 about 51 of these SPACs had fully resolved their corporate status by either merging or liquidating, and they form a subsample on which we provide final results. We acknowledge that our sample size is small, however at the same time this is the entire population of Energy SPACs that either merged or liquidated.

Our study contributes to the literature on SPACs by building upon early studies by Cumming et al. (2014) and Lakicevic et al. (2014) who examine the determinants contributing to the success of SPAC mergers. In particular, these studies use samples of early SPACs (2003–2012). In contrast, Gahng et al. (2023) posit that pre-2010 SPACs have different structural characteristics, and consequently, they consider only a post-2010 sample. We extend this stream of the literature by providing new findings on acquisition determinants on SPACs by using a sample of all SPACs focused on the energy sector from 2003 to 2022. To our knowledge, no study systematically examines the structural characteristics of energy-focused SPACs and the determinants of their success.

Analyzing energy SPACs from 2003–2022, we find the speed of the process and established underwriter are primary indicators of success, while female presence on boards as well as CEOs being foreign act against success. Results are consistent with funding achievement driven by relationship networks. Networking of experienced SPAC operatives facilitates higher likelihood of merger.

The speed of the process may be a proxy for efficiency, expertise, or reputation and results in better selection of the acquisition choice and proper closing of the acquisition. Or this factor could reflect that SPACs achieve funding that is facilitated by a trust among stakeholders that is not attained through extensive vetting but rather through an intuitive trust among parties (Doney, Cannon, and Mullen, 1998).

Consistent with this view, our evidence shows that SPACs formed by foreign CEOs are less likely to merge. The findings are aligned with the wide governance literature where founders bringing their firms to IPO exit in capital markets typically underperform (Moore et al., 2012). Findings also align with the literature on liability of foreignness impeding financing (Du et al., 2022)

2. Data

Data utilized in this manuscript are compiled from various sources and correspond to data sources used in prior studies examining SPACs. Founders of post-2003 SPACs have constructed them to be

² SPAC IPOs in the energy sector represent about a quarter of all IPOs in the energy sector over the observation period (93 vs. 282).

systematically different from typical blank check companies that were prevalent in the 1980s and 1990s in the U.S. financial markets, primarily with respect to compliance with Rule 419A. SPACs that entered the financial markets since 2003 comply with the Securities Act of 1933, and they file with the SEC regular financial statements, prospectuses, and other relevant forms that report any material corporate change. Consequently, filings recorded in Electronic Data Gathering Analysis and Retrieval (EDGAR) database are the primary source of information on all institutional details of these companies.

Institutional information around an IPO event on all characteristics concerning SPAC founders, underwriting agreements, securities properties, and financial statements is collected from the initial issuance of S-1 forms. The data is updated when any material change happens, concluding with the information provided in the final prospectus forms before the IPO.

Additional data that provide information on mergers are collected using DEFM filings of SPACs deposited by the SEC around merger events. When overlapping, this statistic is cross-checked with data from Factiva search, other public sources, and individual corporate websites. All announcement dates are cross-checked between filing forms with the SEC, Factiva searches, and public news. Treasury bill rates are collected from the Federal Reserve Bank of St. Louis and information on the value of Russell 2000 Index is collected from the FTSE Russell website. The baseline sample consists of 51 SPACs focused on the energy industry that entered the U.S. capital markets post August 2003 and successfully resolved their corporate status by finding the acquisition target (40 SPACs) or liquidated (11 SPACs) by December 31st, 2022.

3. Summary statistics and empirical procedure

3.1 Sample statistics

In Table 1, we present the main variables considered as possibly determining the success of the merger for SPACs. Variables are divided into general merger determinants, SPAC founder characteristics, and market characteristics. Some of these variables are used in two prior related studies that directly examine SPAC merger likelihood (Cumming et al., 2014 and Lakicevic et al., 2014). We document that on average SPACs with an acquisition focus on the energy sector raise \$274.97 million at the IPO and spend about 59 days from filing the initial form to the IPO.

When it comes to CEO and board characteristics of SPACs, on average, board members are about 53 years old; and they form teams of seven members, where on approximately 49% of the boards, there is at least one woman. About 45% of SPAC founders have an MBA degree, obtained 31% of the times at an IVY league college. SPAC founders usually have prior executive experience (55%), and on average, they have represented a foreign SPAC in one-third of cases.

Further, Table 1 documents that at the time of IPOs, the average T-bill rate was 1.27%, and the average level of the Russell 2000 Index was 1,441 points. The T-bill value is important for SPACs as they deposit all funds raised in IPOs in escrow accounts where they earn the T-bill rate. This additional earning potentially enables institutional investors of SPACs to play the ‘yield game.’³ At the same time, most prior studies in SPAC literature use the Russell 2000 as a benchmark index due to the comparable size of the companies that are covered by this index. We are aware that the set of variables that may explain the SPAC merger is not exhausted in our study. Still, we choose to focus on these factors as they are possible to collect and have been recognized in the literature as important to SPAC structure and success.

3.2 Empirical analysis

We establish baseline results by conducting a linear probability model regression with 51 observation and 17 variables that may explain merger success. Given the binary nature of many explanatory variables and our small sample, linear probability regression may offer more insights than the standard logistic regression often used in a similar type of studies (Cumming et al., 2014).

Baseline results, reported in Table 2, show that only four determinants are statistically important regarding merger outcomes. Three of them enter with a negative sign: time from filing to IPO (positive with speed), board gender dummy (negative with presence of at least one female on the board), and CEO from foreign SPAC (negative for SPACs with a foreign CEO). The only variable that positively affects the merger likelihood is the underwriter quality. We code underwriter quality as 1 if the underwriter is one of the mezzanine investment banks that started the SPAC market and 0 otherwise. Therefore, findings suggests that SPACs are more successful if underwritten by smaller banks specializing in the SPAC market (i.e., positive association with success with underwriters having more SPAC experience).

As a further step, we conduct a standard logistic regression using a smaller set of variables explicitly used in the previous studies determining the merger likelihood of SPACs. Table 3 presents these results. Similar to previous findings, the four identified variables remain significant with the same signs (negative with gender diversity of the board and/or foreign CEO and positive with quicker process done by underwriters that are typical in the field).

As the choice of independent variables can never be considered exhaustive, we utilize the LASSO method (least absolute shrinkage and selection operator) initially developed by Tibshirani (1996) and updated by Belloni et al. (2012), Belloni and Chernozhukov (2013), and Belloni et al. (2014). This machine

³ SPACs go public by issuing units which are securities consisting of a combination of shares and warrants (Schultz, 1993; Chemmanur and Fulghieri, 1997). In the pre-2010 period most of these warrants were in the money. Primary investors in the SPAC IPOs such as very leveraged hedge funds were selling immediately warrants and waiting to cash out of trust that is established by the SPACs making that trading strategy very profitable for them (Mitchell and Pulvino, 2012).

learning approach allows shrinking of regression coefficients by penalizing their magnitude while simultaneously providing a narrow set of essential variables. That enables us to interpret results easily and at the same time to resolve the problem of multicollinearity. To utilize the LASSO method on our sample, we use LASSO-logistic variant of the model and regress the dependent variable on the full set of 17 independent variables. By its shrinkage feature, LASSO selected only two variables to be crucially important as the determinants of the merger likelihood: time from filing to IPO and CEO of foreign SPAC. Both were isolated by previous tests and had statistically significant impact.

4. Discussion and conclusions

The recent re-emergence of Special Purpose Acquisition Companies (SPACs) warrants new investigation. Academics, practitioners and policy makers have dedicated considerable attention to understand the advantages and shortcomings of SPACs as alternative going public mechanism. At the same time, fluctuations in energy markets provide ground for their better understanding how financial systems can facilitate energy innovation. We examine SPACs focusing on the energy industry to identify those characteristics that impact their success and therefore we contribute to the literature on the likelihood of SPACs mergers.

Given climate change concerns and the related importance of energy SPACs to fund green energy, as well as SPACs' binary nature, of either funding an acquisition or failing, we identify factors that determine their success. Analyzing energy SPACs from 2003–2022, and utilizing advanced least absolute shrinkage and selection operator (LASSO) technique we find speed of process and using established SPAC-experienced underwriters are primary indicators of success, while female presence on boards as well as CEOs being foreign act against success. Results are consistent with literature evidencing that firms face liabilities of foreignness (Bell et al., 2012; Filatotchev et al., 2019), including bias against foreigners with debt financing (Du et al., 2022). Results also are consistent with a general acknowledgement that the SPAC financing world is male dominated, even to the point of board gender diversity acting against funding success.⁴ Researchers interested in the institutional environment of innovation funding will find our results valuable. Our results have practical implications for both investors and entrepreneurs in energy sector. In particular, by providing the analysis of Energy SPACs characteristics, our study bridges the gap between energy transition investors and entrepreneurs searching for alternative funding sources in addition to traditional IPO. Given that energy markets undergo through turbulent times in recent years it is important

⁴ Tse, C. & Benhamou, M. (2020). In record-breaking year, SPACs avoid gender diversity push. [Bloomberg](https://www.bloomberg.com/news/articles/2020-12-04/in-record-breaking-year-spacs-avoid-gender-diversity-push#xj4y7vzkg). <https://www.bloomberg.com/news/articles/2020-12-04/in-record-breaking-year-spacs-avoid-gender-diversity-push#xj4y7vzkg>.

to highlight importance of Energy SPACs as a special financial vehicle to facilitate energy transition and innovation.

References

- Akdoğu, E., Simsir, S. A., & Meriç Yılmaz, M. (2022). SPACs and the regulation gap: The effect of first SEC intervention on share and warrant returns. *Finance Research Letters*, 50(C). 103316 <https://doi.org/10.1016/j.frl.2022.103316>
- Alti, A., & Cohn, J. B. (2022). A model of informed intermediation in the market for going public. Available at SSRN <http://dx.doi.org/10.2139/ssrn.4058787>
- Bai, J., Ma, A., & Zheng, M. (2021). Segmented going-public markets and the demand for SPACs. Available at SSRN <http://dx.doi.org/10.2139/ssrn.3746490>
- Bell, R. G., Filatotchev, I., & Rasheed, A. A. (2012). The liability of foreignness in capital markets: Sources and remedies. *Journal of International Business Studies*, 43(2), 107–122. <https://doi.org/10.1057/jibs.2011.55>
- Belloni, A., Chen, D., Chernozhukov, V., Hansen, C., 2012. Sparse models and methods for optimal instruments with an application to eminent domain. *Econometrica* 80 (6), 2369–2429. <https://doi.org/10.3982/ECTA9626>
- Belloni, A., Chernozhukov, V., 2013. Least squares after model selection in high-dimensional sparse models. *Bernoulli* 19 (2), 521–547. . <https://doi.org/10.3150/11-BEJ410>
- Belloni, A., Chernozhukov, V., Hansen, C., 2014. High-dimensional methods and inference on structural and treatment effects. *Journal of Economic Perspectives* 28 (2), 29–50. <https://doi.org/10.1257/jep.28.2.29>
- Blackburne, A., Sabater, A., & Dholakia, G. (2023). Energy transition investors fighting to defy SPAC stigma. S&P Global, <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/energy-transition-investors-fighting-to-defy-spac-stigma-72680999>
- Cumming, D., Haß, L. H., & Schweizer, D. (2014). The fast track IPO–success factors for taking firms public with SPACs. *Journal of Banking and Finance*, 47, 198–213. <https://doi.org/10.1016/j.jbankfin.2014.07.003>
- Du, Y., Goodell, J. W., Piljak, V., & Vulcanovic, M. (2022). Subsidiary financing choices: The roles of institutional distances from home countries. *International Review of Financial Analysis*, 83, 102280. <https://doi.org/10.1016/j.irfa.2022.102280>
- Filatotev, I., Poulsen, A., & Bell, R.G. (2019). Corporate governance of a multinational enterprise: Firm, industry and institutional perspectives. *Journal of Corporate Finance*, 57, 1–8. <https://doi.org/10.1016/j.jcorpfin.2018.02.004>
- Gahng, M., Ritter, J. R., & Zhang, D. (2023). SPACs. *The Review of Financial Studies*, Forthcoming <https://doi.org/10.1093/rfs/hhad019>
- Gofman, M., & Yao, Y. (2022). SPACs' Directors Network: Conflicts of Interest, Compensation, and Competition. *Compensation, and Competition* Available at SSRN <http://dx.doi.org/10.2139/ssrn.4148668>
- Gryglewicz, S., Hartman-Glaser, B., & Mayer, S. (2021). PE for the public: The rise of SPACs. Available at SSRN <http://dx.doi.org/10.2139/ssrn.3947368>
- Isaac, B. (2021). SPACs in the energy sector—a quick guide. <https://www.fieldfisher.com/en/insights/spacs-in-the-energy-sector---a-quick-guide>
- Kiesel, F., Klingelhöfer, N., Schiereck, D., & Vismara, S. (2022). SPAC merger announcement returns and subsequent performance. *European Financial Management*, 29, 399–420. <https://doi.org/10.1111/eufm.12366>

- Klausner, M., Ohlrogge, M., & Ruan, E. (2022). A sober look at SPACs. *Yale Journal on Regulation*, 39, 228. <http://hdl.handle.net/20.500.13051/17930>
- Lakicevic, M., Shachmurove, Y., & Vulcanovic, M. (2014). Institutional changes of specified purpose acquisition companies (SPACs). *The North American Journal of Economics and Finance*, 28, 149-169. <https://doi.org/10.1016/j.najef.2014.03.002>
- Lin, C., Lu, F., Michaely, R., & Qin, S. (2021). SPAC IPOs and sponsor network centrality. Available at SSRN <http://dx.doi.org/10.2139/ssrn.3856181>
- Lewellen, S. (2009). SPACs as an asset class. Available at SSRN <http://dx.doi.org/10.2139/ssrn.1284999>
- Luo, D., & Sun, J. (2021). A dynamic delegated investment model of SPACs. Available at SSRN <http://dx.doi.org/10.2139/ssrn.3929762>
- Mitchell, M., & Pulvino, T. (2012). Arbitrage crashes and the speed of capital. *Journal of Financial Economics*, 104(3), 469–490. <http://dx.doi.org/10.1016/j.jfineco.2011.09.002>
- Moore, C. B., Bell, R. G., Filatotchev, I., & Rasheed, A. A. (2012). Foreign IPO capital market choice: Understanding the institutional fit of corporate governance. *Strategic Management Journal*, 33(8), 914-937. <https://doi.org/10.1002/smj.1953>
- 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. <https://doi.org/10.1016/j.frl.2021.102602>
- Schultz, P. (1993). Unit initial public offerings: A form of staged financing. *Journal of Financial Economics*, 34(2), 199–229. [https://doi.org/10.1016/0304-405X\(93\)90018-7](https://doi.org/10.1016/0304-405X(93)90018-7)
- Tibshirani, R. (1996). Regression shrinkage and selection via the lasso. *Journal of the Royal Statistical Society. Series B (Methodological)*, 267–288. <https://doi.org/10.1111/j.2517-6161.1996.tb02080.x>

Table 1: Descriptive statistics

This table describes the mean, standard deviation, minimum and maximum values for all variables used in the study. The sample covers 51 SPACs that successfully resolved their corporate status in period 2003-2022 and were focusing on companies in energy sector. The description statistics on the SPAC structure at the IPO and stakeholders' involvement are collected from individual company reporting with the Security and Exchange Commission. The dependent variable (Merger success) for regressions equals 1 if the SPAC merged (40 observations) and 0 if SPAC ceased existence (11 observations). *Gross proceeds at IPO million* measures the size of SPAC. *Time from filling to IPO* measures the period between filling the S1 form and IPO date. *Difference in the amount of cash raised* measures the difference between the amount of IPO size stated in prospectus and the final amount. *Foreign issuer* is a dummy variable based on the origin of the SPAC. *China focused target* is a dummy variable denoting whether SPAC targets Chinese company. *Underwriter quality* is a dummy variable denoting whether underwriters belong to the largest investment banks (Bulge bracket) or mezzanine/small investment banks. *Number of SPAC founders* measures the number of people in the Board. *Average age of founders* denotes the average age of founders in years at the time of filling the final prospectus. *CEO with Ph. D degree* is a dummy variable indicating whether CEO has Ph. D degree. In the same manner, we form variables: *CEO with MBA degree*, *CEO who attended IVY college*, and *CEO with law degree*. *Board gender* is a dummy variable indicating whether there is a female on the Board. *CEO Else prior to involvement with SPAC* is a dummy variable showing whether the SPAC's CEO was previously CEO in some other company. *CEO Foreign* is a dummy variable measuring whether the CEO is a foreign born.

	Mean	Std	Min	Max
Dependent variable				
Merger success (Y/N)	0.78	0.41	0	1
SPAC merger determinants				
Gross proceeds at IPO million	274.97	163.53	33.00	900.00
Time from filling to IPO	58.65	58.97	16.00	254.00
Difference in the amount of cash raised	0.03	0.28	-0.67	1.00
Foreign issuer (Y/N)	0.20	0.40	0.00	1.00
China focused target (Y/N)	0.02	0.14	0.00	1.00
Underwriter quality (Y/N)	0.31	0.47	0.00	1.00
Management characteristics				
Number of SPAC founders	6.73	1.61	3.00	10.00
Average age of founders	52.53	4.27	43.75	61.33
CEO with Ph. D degree (Y/N)	0.06	0.24	0.00	1.00
CEO with MBA degree (Y/N)	0.45	0.50	0.00	1.00
CEO who attended IVY college (Y/N)	0.31	0.47	0.00	1.00
Board gender (Y/N)	0.51	0.51	0.00	1.00
CEO else prior to involvement with SPAC	0.55	0.50	0.00	1.00
CEO foreign	0.33	0.48	0.00	1.00
CEO with law degree (Y/N)	0.18	0.39	0.00	1.00
Merger Characteristics				
T-bill rate at the time of IPO	1.27	1.57	0.01	4.99
Russell 2000 level at the time of IPO	1441.13	480.53	548.99	2427.29

Table 2: Linear regression analysis of SPACs' outcomes

This table reports results from linear regression analysis. The sample consists of 51 SPACs with focus of energy that resolved their corporate status in period 2003-2023. The dependent variable for regression equals 1 if the SPAC merged and 0 if SPAC ceased existence. The symbols *, **, and *** represent statistical significance of coefficients at the 10%, 5% and 1% level.

Variables	LP regression analysis results		
	Coef.	Std.	t--stat
SPAC merger determinants			
Gross proceeds at IPO million	-0.0002	0.0005	-0.32
Time from filing to IPO	-0.0036	0.0012	-2.87 ***
Difference in the amount of cash raised	-0.0501	0.2610	-0.19
Foreign issuer	0.2202	0.1491	1.48
China focused target	0.3847	0.4184	0.92
Underwriter quality	0.3455	0.1387	2.49 **
Management characteristics			
Number of SPAC founders	0.0321	0.0465	0.69
Average age of founders	-0.0116	0.0147	-0.79
CEO with Ph. D degree	0.2576	0.2189	1.18
CEO with MBA degree	0.0806	0.1112	0.73
CEO who attended IVY college	0.1067	0.1478	0.72
Board Gender (Y/N)	-0.2296	0.1032	-2.22 **
CEO else prior to involvement with SPAC	0.1129	0.1358	0.83
CEO foreign	-0.2118	0.1117	-1.90 *
CEO with law degree	-0.2093	0.1485	-1.41
Merger Characteristics			
T-bill rate at the time of IPO	-0.5997	0.4639	-1.29
Russell 2000 level at the time of IPO	0.0058	0.0036	1.61
Constant	1.1749	0.8467	1.39
R square	58.50%		
Number of observations	51		

Table 3: Logistic and LASSO logistic regression analysis of SPACs' outcomes

This table reports results from logit regression analysis. The sample consists of 51 SPACs with focus of energy that resolved their corporate status in period 2003-2013. The dependent variable for regression equals 1 if the SPAC merged and 0 if SPAC ceased existence. The symbols *, **, and *** represent statistical significance of coefficients at the 10%, 5% and 1% level.

Variables	Logit regression analysis results			Lasso Logit regression analysis results		
	Coef.	Std.	t--stat	Coef.	Std.	t--stat
SPAC Merger determinants						
Gross proceeds at IPO	0.007	0.011	0.66			
Time from filling to IPO	-0.041	0.019	-2.16 **	-0.0200	0.0080	-2.69 ***
Underwriter quality	7.023	3.688	1.9 *			
CEO with MBA degree	5.327	2.603	2.05 **			
Board gender (Y/N)	-5.083	2.655	-1.92 *			
CEO public company	2.926	3.639	0.8			
Number of SPAC founders	-0.516	0.733	-0.7			
Average age of founders	-0.3	0.371	-0.81			
Underwriting compensation	0.873	0.667	1.31			
CEO foreign	-3.862	2.552	-1.51	-2.1370	0.9980	-2.14 **
Constant	19.473	21.79	0.89	4.0830	1.1020	3.71
Pseudo R square	68.70%			31.40%		
Number of observations	51			51		