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SPAC IPO Waves

Magnus Blomkvist^{1*}
Audencia Business School

Milos Vulcanovic²
EDHEC Business School

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Abstract

We examine the wave pattern of U.S. SPAC IPOs using a hand-collected data set of the entire SPAC population since their emergence in 2003. We find that both the SPAC volume and SPAC share of total IPOs are negatively related to market-wide uncertainty (VIX) and time-varying risk aversion (variance risk premium). We attribute our findings to risk-averse investors' reluctance to invest in opaque securities. In response, the SPAC sponsor can credibly signal the issue's quality by increasing their "skin in the game" through the purchase of additional warrants.

Keywords: IPO, SPACs, Time-varying risk aversion, Uncertainty, Variance risk premium, VIX,

JEL Codes: G14, G24, G34

¹ Department of Finance at Audencia Business School
8 Route de la Jonelière, B.P. 31222
44312 Nantes, Cedex 3 -France
Phone : +33(0)2 40 37 34 34
Email: mblomkvist@audencia.com

² Department of Data Science, Economics and Finance at EDHEC Business School
24 avenue Gustave Delory, CS 50411, 59057 Roubaix Cedex 1 - France
Contact phone : + 33 (0)3 20 15 45 00
Email: milos.vulanovic@edhec.edu

* Corresponding author

1. Introduction

During recent years, Specified Purpose Acquisition Companies (SPACs) have shifted the IPO landscape. The growth of SPACs to total IPOs (SPAC share) is staggering, given their recent introduction in 2003. As of October 1st, the SPAC share is 45% (119 out of 265) of the total IPOs in 2020. Like IPOs, SPACs volume fluctuates over time.¹ We aim to explain the time-series determinants of the fluctuations in the SPAC share and volume.

SPACs are clean shells that obtain a public status by issuing units; a composite security consisting of one common share, and a pre-defined number of warrants.² The sole purpose of the SPAC is to use the IPO proceeds to fund an acquisition of an unspecified company within two years. The IPO proceeds are deposited in an escrow account and can only be employed for deal financing upon investor agreement on the choice of an acquisition target. Generally, the funds from the escrow account are returned to investors if an acquisition agreement is not reached and the SPAC liquidates. SPACs are related to the blank check companies from the 1980s and 1990s that were mainly speculative and whose market was abrupt by the SEC. Consequently, a similar concept carries a stigma of opaqueness and the lack of transparency among the general public and academics (Kolb and Tykvova, 2016).³

Compared to IPOs, SPACs are opaquer due to their non-existent operational history. An additional layer of opaqueness is added by the lack of reputation of the company due to the “one-shot deal” structure (Rodrigues and Stegemoller, 2011). Shin (2013) argues that investors perceive more opaque investments as riskier and simultaneously increasing in the level of risk aversion. The information channel postulates that investors’ willingness to

¹ See figure 1.

² Schultz (1993) provides theoretical underpinning for the use of units as an IPO security.

³ “I have never found any blank-check investment vehicle attractive. No matter what the reputation or what the sponsor might be. [...] They are the ultimate in terms of lack of transparency” is a quote by Artur Levitt, former SEC chairman.

participate in SPACs is negatively related to time-varying uncertainty and risk aversion, creating demand fluctuations. Yet, the SPAC structure enables investors to buy units that are risk-free securities due to the creation of the escrow account and their ability to withdraw the entire investment (Boyer and Baigent, 2008). Due to the construction of the SPAC, the question becomes empirical: whether investors' willingness to participate in SPACs is dependent on uncertainty and risk aversion. We further argue that SPAC sponsors can overcome the information problem by signaling through holding a more significant fraction of the SPAC via additional warrant purchases. The importance of signaling increases during times of high uncertainty/risk aversion.

In our main tests, we study the effect of market uncertainty (VIX) and time-varying risk aversion (variance risk premium - VRP) on the SPAC share and volume.⁴ In line with an information explanation, we report that the SPAC share and volume are inversely related to both the VIX and the VRP. To test the signaling hypothesis, we construct a measure (Sponsor share) capturing the sponsors' "skin-in-the-game" and find a positive link between the Sponsor share and the VIX/VRP.

Even though SPACs are taking an essential share of the IPO market, the academic literature on them is scarce. Previous studies address the performance (Lewellen, 2009; Kolb and Tykvova, 2016; Dimitrova, 2017), the acquisition likelihood (Cumming et al. 2014) and their survival (Vulanovic, 2017). Prior work do not address the wave pattern of SPAC listings.

2. Data

⁴ Bollerslev et al. (2009) links the variance risk premium to time-varying risk aversion.

We hand-collect data on all SPACs listed in the U.S. from the pre-IPO prospectuses, filed with SEC, from EDGAR. Our data set includes all SPACs since their introduction in the 3rd quarter of 2003, spanning until the 4th quarter of 2019. We end up with a total of 441 SPACs distributed over 66 quarters. In our principal analysis, we use two dependent variables. First, the *SPAC share*, defined as the quarterly SPAC IPOs scaled by total quarterly IPOs. We retrieve the gross number of quarterly IPOs from Jay Ritter's database.⁵ Second, *SPAC volume* is defined as the number of quarterly SPACs. In our second analysis, we use the proportion of warrants held by sponsors (*Sponsor share*) as the dependent variable. The Sponsor share is only available for SPACs during 57 quarters.

Our two main independent variables are the VIX index retrieved from CBOE and the VRP from Hao Zhou's webpage.⁶ We motivate the choice of control variables from the IPO wave literature, see, eg., Lowry (2003). Our control variables include: average daily excess return on the CRSP index, change in the Fed Funds rate, GDP growth, 3-month T-bill rate minus fed funds rate, the natural logarithm of the number of M&As, average underpricing and the Pastor and Stambaugh's (2003) liquidity premium.⁷ All our independent variables are measured with one-quarter lag and presented in Table 1.

Figure 1 illustrates the *SPAC share* and *SPAC volume* over time, where both measures exhibit substantial time-series variation. Figure 2 maps the relationship between the VIX, VRP, and *SPAC share* graphically. The graph suggests a strong negative correlation between the measures and the *SPAC share*.

3. Results

⁵ <https://site.warrington.ufl.edu/ritter/ipo-data/>

⁶ <https://sites.google.com/site/haozhouspersonalhomepage/>

⁷ <http://finance.wharton.upenn.edu/~stambaug/>

Table 2 presents the relation between *VIX/VRP* and *SPAC share/SPAC volume*. Columns (1) and (2) report a negative relationship between both *VIX* and *VRP* on *SPAC share* in a univariate setting. In columns (3) and (4), we repeat the analysis on the *SPAC volume* and report similar findings. The results remain unaffected by the inclusion of control variables in columns (5) to (8). The reported economic magnitude is large, a one standard deviation decrease in *VIX*, increases the *SPAC share* by 2.6pp or 4.7pp (22.7% to 40.3% from the mean) depending on specification. The effect on the *VRP* are 2.4pp and 2.29pp (20.7% and 19.5%). Among the control variables, the debt market variables [*dfed funds* (+) and *t-bill-fed funds* (-)] are statistically significant in both specifications. *Liquidity premium* positively affects the *SPAC share* but not the *SPAC volume*. *M&A volume* is negatively related to the SPAC measures in three out of four specifications. The *CRSP index* is negatively related to both the *SPAC share* and *SPAC volume* in the *VIX* specifications. To summarize, our results suggest that investors refrain from investing in SPACs during times of high uncertainty and overall risk aversion.

Table 3 reports the effect of *VIX/VRP* on the *Sponsor share*. Our results suggest that sponsors hold a more significant proportion of the SPAC warrants during times of high uncertainty and risk aversion. We further report that the *Sponsor share* is negatively related to the number of quarterly listed SPACs. We attribute this finding to that SPAC sponsors purchase warrants as a signaling mechanism to attract investors.

4. Conclusion

We study the wave pattern of SPAC issuance over time and report that aggregated SPACs issuance is negatively related to *VIX* and *VRP*. We attribute our findings to risk-averse investors' unwillingness to participate in SPAC issues during times of high *VIX* and *VRP*. The investors hesitation depends on the opacity stemming from the non-existent operational history of the SPACs. Consequently, SPACs exhibit a higher sensitivity to *VIX*

and VRP, relative to regular IPOs. Finally, we report that sponsors signal quality by increasing their warrant share in successful SPAC issues during times of high uncertainty and risk aversion.

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Figure 1: SPAC volume and SPAC share over time

SPAC volume (SPAC share) is plotted on the primary (secondary) axis.

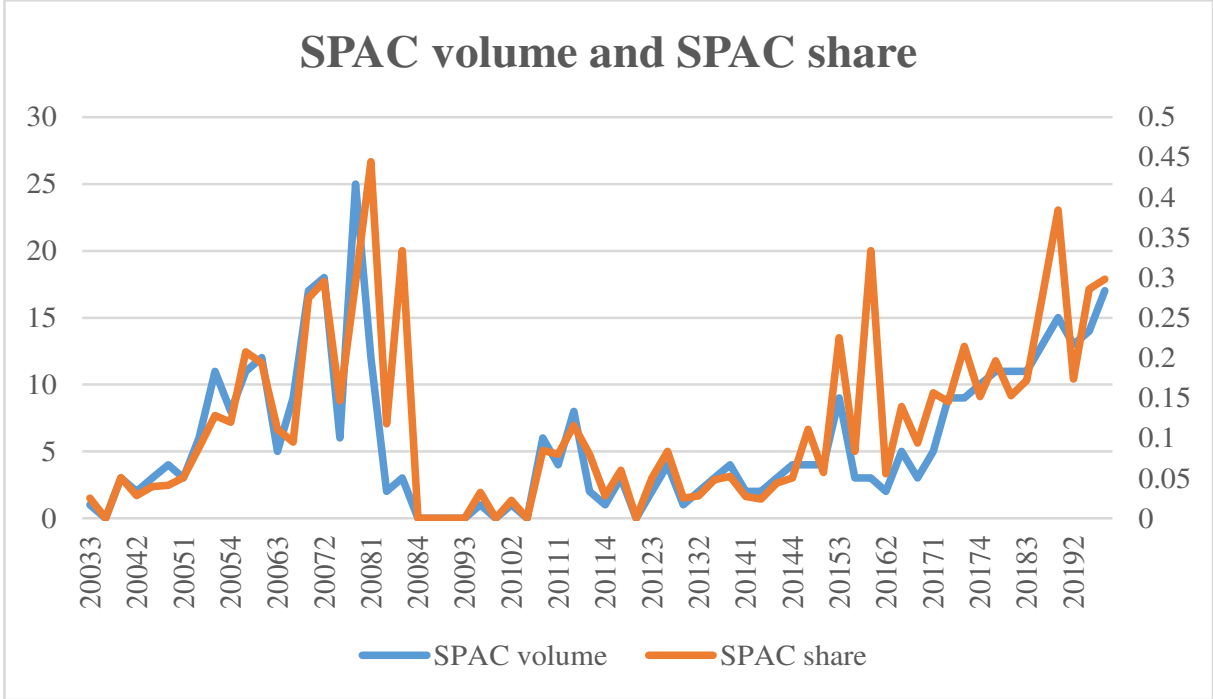


Figure 2: SPAC share, VIX and VRP

VIX and VRP are plotted on the primary axis. SPAC share is plotted on the secondary axis.

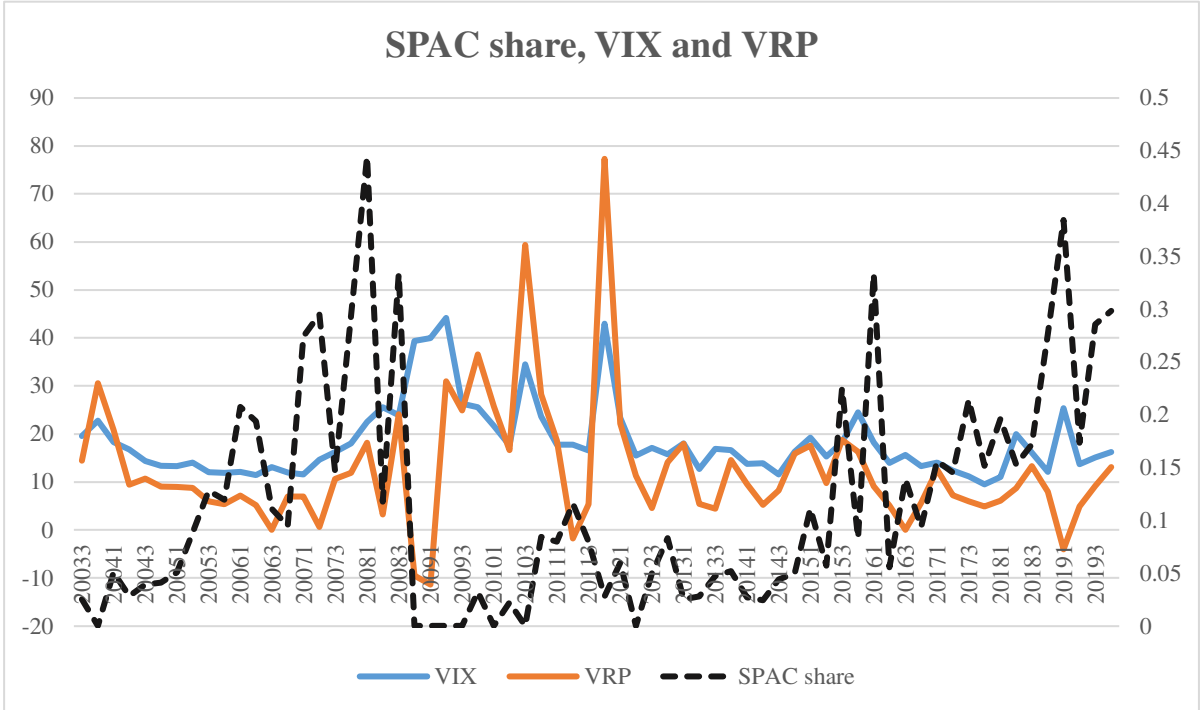


Table 1: Descriptive statistics

SPAC volume is the number of quarterly SPACs. SPAC share is SPAC volume scaled by total gross IPOs. Sponsor share is the proportion of Warrants held by the sponsor. VIX is the CBOE volatility index. VRP is the variance risk premium. CRSP return is average daily excess return during the previous quarter. GDP growth is real GDP growth. dFed Funds is the change in the Fed Funds rate. T-bill – Fed funds is the spread between the 3-month t-bill rate and the fed funds rate. Ln(M&A) is the natural logarithm of the quarterly number of M&A transactions. Underpricing is the average underpricing of IPOs. Liquidity premium is the Pastor and Stambaugh (2003) traded liquidity premium.

	Quarters	Mean	Std. Dev.
SPAC share	66	0.12	0.11
SPAC volume	66	5.83	5.42
Sponsor share	57	0.39	0.25
VIX	66	18.36	7.60
VRP	66	12.51	13.47
CRSP return	66	0.04	0.11
dFed fund	66	0.01	0.37
GDP growth	66	0.01	0.01
T-bill - fedfunds	66	-0.14	0.28
ln(M&A)	66	5.36	0.30
Underpricing	66	13.60	7.14
Liquidity premium	66	0.00	0.03

Table 2: Main results

This table reports OLS regressions. All variables are defined in Table 1. Independent variables are measured with a one-quarter lag. Robust t-stats are reported in parentheses. ***, **, * denotes 1%, 5%, 10% significance, respectively.

	(1) SPAC share	(2) SPAC share	(3) SPAC volume	(4) SPAC volume	(5) SPAC share	(6) SPAC share	(7) SPAC volume	(8) SPAC volume
VIX	-0.0035*** (-3.107)		-0.2756*** (-5.797)		-0.0062*** (-3.624)		-0.3298*** (-3.931)	
VRP		-0.0018** (-2.363)		-0.1163*** (-3.136)		-0.0017* (-1.905)		-0.1094*** (-3.158)
CRSP return					-0.3064** (-2.329)	-0.1742 (-1.487)	-14.0881** (-2.497)	-7.2326 (-1.539)
dFed funds					0.0827* (1.832)	0.1154*** (2.705)	5.0151** (2.136)	6.6966*** (3.152)
GDP growth					-2.9545 (-1.177)	-1.2892 (-0.411)	-43.6025 (-0.448)	61.2855 (0.499)
T-bill - fedfunds					-0.1866*** (-3.016)	-0.1866*** (-2.782)	-9.6792** (-2.557)	-9.5984** (-2.482)
ln(M&A)					-0.1411*** (-2.818)	-0.1282** (-2.557)	-4.5362* (-1.846)	-3.8965 (-1.571)
Underpricing					-0.0025 (-1.122)	-0.0019 (-0.795)	0.0638 (0.882)	0.0915 (1.170)
Liquidity premium					0.8237* (1.909)	1.1596** (2.388)	12.2493 (0.706)	30.1051 (1.611)
Constant	0.1818*** (8.030)	0.1395*** (8.002)	10.8926*** (9.046)	7.2884*** (7.822)	1.0225*** (3.410)	0.8381*** (2.906)	34.7643** (2.488)	25.4393* (1.882)
Quarters	66	66	66	66	66	66	66	66
R-squared	0.063	0.051	0.150	0.084	0.378	0.321	0.378	0.337

Table 3: Sponsor share

This table reports OLS regressions. All variables are defined in Table 1. Independent variables are measured with a one-quarter lag. Robust t-stats are reported in parentheses. ***, **, * denotes 1%, 5%, 10% significance, respectively.

	(1)	(2)	(1)	(2)
	Sponsor share	Sponsor share	Sponsor share	Sponsor share
VIX	0.0156*** (2.748)		0.0150* (1.867)	
VRP		0.0085*** (4.775)		0.0071*** (2.850)
CRSP return			0.5759* (1.914)	0.3199 (1.170)
dFed funds			-0.0107 (-0.076)	-0.0566 (-0.457)
GDP growth			-7.8262 (-1.011)	-7.7452 (-1.103)
T-bill - fedfunds			0.0031 (0.020)	0.0036 (0.024)
ln(M&A)			-0.4019*** (-3.411)	-0.4249*** (-3.647)
Underpricing			-0.0013 (-0.304)	-0.0008 (-0.158)
Liquidity premium			-0.0704 (-0.084)	0.2816 (0.359)
SPAC volume			-0.0107** (-2.291)	-0.0107** (-2.219)
Constant	0.1344 (1.374)	0.2984*** (7.946)	2.4122*** (3.593)	2.7106*** (4.105)
Quarters	57	57	57	57
R-squared	0.117	0.156	0.532	0.557