

# On Quality of Earnings in SPAC Transactions

Danial Hemmings\*

Institute of European Finance, Bangor Business School, Bangor University, UK, LL57 2DG

Aziz Jaafar

College of Business Administration, University of Sharjah, UAE; Bangor Business School, Bangor University, UK

A proliferation of firms going public using a special purpose acquisition company (SPAC targets) has sparked proposals to align financial disclosure requirements for SPAC transactions with the established IPO route. Our paper seeks to inform the debate by contrasting earnings quality of SPAC targets with IPOs. Examining a hand-collected dataset on SPAC mergers proposed between 2004 and 2019, we draw mixed findings on how propensity for earnings management (EM) compares with IPOs. Controlling for self-selection, accrual-based EM is insignificantly greater in SPACs, on average, while incidence of EM through classification shifting and sales-based EM is significantly lower than the typical IPO. On the other hand, SPAC targets have sizably lower discretionary expenses (e.g., R&D, advertising expenses) which may indicate systematic real activities EM, and significantly worse de-SPAC returns are earned by SPACs that do display EM. Overall, the evidence suggests EM risk in SPAC targets may be less severe than previously thought.

*Key words:* Special purpose acquisition companies, SPAC, earnings quality, earnings management, IPO

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## 1. Introduction

Although merging with a special purpose acquisition company (SPAC) has long stood as an alternative route to the traditional IPO for firms going public, the recent boom in SPAC activity has brought onto them a new level of scrutiny.<sup>1</sup> A SPAC merger can be attractive to target firms as it is quicker and less regulated than the IPO route, yet because of lucrative rewards and tight deadlines for sponsors,<sup>2</sup> there is cause for concern that poor due-diligence or self-dealing may expose SPAC investors to sub-par deals. In response, the U.S. Securities and Exchange Commission (SEC, 2022) proposes new disclosure rules for SPAC transactions, among other provisions aligning financial statement requirements with traditional IPOs. The purpose of our study is to inform the debate by analysing the quality of earnings reported during the typical SPAC transaction.

\* Corresponding author

<sup>1</sup> SPACs are investment vehicles that are listed with the sole purpose of merging with a private company. By 2020, the number of SPACs had risen exponentially to account for more than half of IPOs conducted in the U.S. (Blankespoor et al. 2022).

<sup>2</sup> The sponsors that establish and manage SPACs are typically remunerated through a 20% equity stake in the de-SPAC company, but only if a deal is successfully completed within a two-year time frame. Moreover, the underwriters establishing SPACs tend to also act as advisors in the merger process, and a portion of their underwriting fee is frequently deferred and paid only upon successful completion of a deal (Dimitrova 2017).

Prior studies show that, following a SPAC merger (known as de-SPACing), de-SPAC firms tend strongly to underperform the market (Kolb and Tykvova 2016, Gahng et al. 2023), and there have been high profile de-SPAC failures.<sup>3</sup> Evidence suggests that issues at least partly stem from significant incentives for SPAC sponsors and managers to complete deals ahead of the (typically 18 to 24 month) deadline (Dimitrova 2017), which may mean compromised due-diligence and lack of preparedness on the part of these private companies for public markets. Kim et al. (2022), for example, document that, compared to similar IPO firms, de-SPAC firms (post-merger) display less developed internal controls, are more likely to file untimely financial statements, and are more likely to restate their financial statements.

A further concern relates to the incentives which attract a target private company to the SPAC route; they include owners' cash-out incentives, and the opportunity for regulatory arbitrage. In contrast to IPOs, forward looking information relating to targets is routinely provided during SPAC transactions since they are classified as mergers, which are subject to safe harbour provisions that IPOs are not. Additionally, a SPAC merger prospectus can contain unaudited financial statements, and in relation to which the target enjoys reduced liability given they are not presently required to be a signatory to the registration statement.<sup>4</sup> Consequently, SPAC targets may have greater incentive and discretion to disclose optimistic financial information and forecasts. Indeed, evidence in Blankespoor et al. (2022) indicates that SPAC transactions appear to involve highly optimistic projections outside the financial statements.

Our study extends the existing base of evidence on SPACs by examining financial information disclosed in a broad sample of SPAC transactions for signs of opportunistic earnings management (EM). To our knowledge, despite materiality of this investigation to the SEC's proposals, there is no existing study which contrasts indicators of EM at the time of a SPAC transaction to those of the comparable IPO.<sup>5</sup> Hence, whether there is greater risk of EM in firms following the SPAC route remains an open question. Despite concerns mentioned above, there is currently no systematic evidence of EM in SPAC transactions to support tightening rules on financial statement disclosures, that could significantly increase costs of compliance.

We examine a sample that includes hand-collected data on 118 companies that went public via a SPAC merger (SPAC targets), and 830 traditional IPOs, over the period 2004 to 2019,

<sup>3</sup> For example, commercial electric vehicle manufacturer Electric Last Mile Solutions Inc (ELMS) filed for bankruptcy in June 2022, less than a year after merging with a SPAC.

<sup>4</sup> Specifically, as non-signatories, target firms may avoid liability under Section 11 of the Securities Act, as would be the case had they conducted an IPO, although they may still be subject to some forms of SEC enforcement actions.

<sup>5</sup> Kim et al. (2022) provide evidence on financial reporting quality of de-SPAC entities *following* a successful merger, while Blankespoor et al. (2022) evidence optimism in forward-looking information at the time of the transaction, but outside the financial statements. Our emphasis is instead on earnings quality at the time the transaction is proposed to the SPAC shareholders.

inclusive. Several commonly employed EM metrics are estimated by reference to a broad baseline of established public firms from the same industry, during the same year. Our principle finding is that, while both SPAC targets and traditional IPO firms display some signs of income-increasing EM, after controlling for potential self-selection bias we find little evidence that levels of EM by SPAC targets are significantly greater than the comparable IPO. Specifically, abnormal accruals are modestly, but insignificantly, higher in SPAC targets, while classification shifting and sales-based EM are significantly lower than is typical in IPOs. While these forms of EM are not systematically more prevalent in SPAC targets, we find that each is a significant predictor of less positive de-SPAC returns. We do find some evidence that SPAC targets report lower discretionary expenses (e.g., R&D, advertising expense), which might indicate real activities EM, however this EM metric appears uncorrelated with de-SPAC returns.

While our research provides novel and meaningful insight on financial reporting by SPAC targets, which we argue has both academic value and real-world relevance (e.g., informing SEC's policy making), we are mindful to note that setting our findings in wider context reveals some caveats. First, we examine financial reporting choices in isolation, whereas safe-harbour provisions permit SPACs more discretion than IPOs for optimistic disclosure outside the financial statements. It is plausible that policies which constrain wider disclosure choices (e.g., ability to make projections) may exacerbate pressure on SPAC targets to engage in EM, in substitution. Second, while our sample covers an extensive period, for methodological reasons we exclude transactions taking place during the Covid-19 pandemic. As such, it remains unclear if our findings generalise to the latest wave of SPAC mergers, which are subject to evolving market conditions.<sup>6</sup> Last, while we evidence that earnings quality of SPAC targets may not be materially worse than the comparable IPO, we cannot speak to whether, taken together, the information set in SPAC transactions is adequate for sound investment decisions. It is entirely possible that, despite our results in regard to EM, more transparency within and outside the financial statements would be net beneficial to investors.

Despite recent increases in prevalence and scrutiny around SPACs, academic research on SPACs remains at a nascent state in several important regards. One area presently lacking in research is the financial reporting quality of targets within SPAC transactions. Literature to date includes analyses of de-SPAC (post-merger) financial reporting quality (Kim et al. 2022), and disclosures within the SPAC merger documents but outside the financial statements (Blankespoor et al. 2022). Financial reporting quality in SPAC transactions has direct relevance for investors' decisions on SPAC mergers and, though previously overlooked, evidence in this regard can have material implication for the SEC's (2022) proposed new disclosure rules for SPACs, which include aligning financial

<sup>6</sup> In particular, a stark rise in the volume of SPACs seeking acquisition has arguably increased the competition among SPACs for potential targets.

statement requirements of SPAC targets with traditional IPOs. In providing first systematic evidence on earnings quality in SPAC transactions vis-à-vis IPOs under prevailing regulation, our study makes important contributions in this regard.

## 2. Background and Hypothesis

A long-established literature scrutinises the earnings quality of private firms prior to conducting a traditional IPO. In a seminal study, Teoh et al. (1998) report evidence of high abnormal accruals during IPO years, and that IPO firms with the highest abnormal accrual values tend to underperform more severely subsequent to listing. DuCharme et al. (2001) report similar evidence of pre-IPO EM, which appears to present insiders opportunities for misleading investors to inflate offering proceeds, through opportunistic accruals management. More recently, Sletten et al. (2018) evidence that EM coincides more with lockup expiration than the IPO event, suggesting a strong motive for practising EM is the selling incentives of pre-IPO shareholders. Beyond accrual-based EM, studies also show that IPOs coincide with income-increasing EM through real activities management (Alhadab et al. 2015) and classification shifting (Liu and Wu 2021).<sup>7</sup>

Compared to the IPO route, merging with a SPAC promises a relatively quicker, cheaper, and less regulated means for private companies to float on a public market. The process is initiated by a SPAC sponsor, who forms and lists the SPAC via IPO on a public market. Funds are raised through issuance of equity and warrants, with the cash proceeds held in trust until a merger is consummated, or the deadline for identifying a suitable target (normally 18 to 24 months) elapses. At formation, the SPAC exists as a cash-shell with no pre-identified target or underlying business, so the initial listing is low cost and sparsely scrutinised. Later, an identified private company target assumes the SPAC's listing status via a reverse-merger (the SPAC transaction). As SPAC transactions are classed as mergers, not IPOs, they are subject to lower regulation and liability.<sup>8</sup> Moreover, as a public corporate structure pre-exists (through the SPAC), listing of the target does not have to go through lengthy IPO review by the SEC.

Several characteristics of SPAC transactions may exacerbate risks of EM by private firms going public via this route. First, perverse incentives of SPAC insiders to complete a deal, even if poor quality, are well documented (Dimitrova 2017). For example, sponsors are rewarded handsomely in the event of merger completion through retaining (typically) 20% of shares, plus the value of warrants purchased. On the other hand, the sponsors have no access to the trust account which, if liquidated without consummation, is returned to paid-in shareholders gross of fees (Gahng et al.

<sup>7</sup> Findings in Alhadab et al. (2015) indicate that upwards earnings manipulations associate with higher IPO failure risk and poorer post-IPO survival rates, consistent with EM being net costly to IPO investors.

<sup>8</sup> For example, as discussed before, safe harbour provisions permit for forward-looking disclosures, and the merger documents can contain unaudited financial statements.

2023). In many cases, a portion of the underwriting fees are deferred and also conditional on a successful merger taking place. Second, the motives of private companies choosing the SPAC route, including existing owners' cash-out incentives and regulatory arbitrage,<sup>9</sup> may also plausibly associate with a higher risk of EM. To the extent that SPAC managers may be subject to significant time-constraint and potential self-dealing incentives, it is unclear if sufficient due-diligence is typically exercised to guard against this risk. Based on the foregoing arguments, we construct the following research hypothesis:

*HYPOTHESIS 1. The risk of income-increasing earnings management is more prevalent in SPAC transactions than in traditional IPOs.*

While there are arguments suggesting risk of EM could plausibly be higher in SPAC transactions than IPOs, it is prima-facie unclear if it is the case, or hence whether reducing opportunity for regulatory arbitrage could lead to improved earnings quality. One counter-argument is that there may be significant reputational costs to sponsors, underwriters, and other advisors resulting from poor oversight. SPAC sponsors play a prominent expert role in advising on and certifying the transaction. Gahng et al. (2023) liken the sponsor's role, in this respect, to that of venture capital (VC) financing, which has been shown to associate with lower EM in IPO firms (Wongsunwai 2013). Moreover, sponsors' performance may affect subsequent (SPAC or other) ventures, and SPAC insiders often remain in the de-SPAC firm as board members, which could incentivise adopting a longer-term perspective. To the extent that safe harbour provisions permit greater forward looking disclosure outside the financial statements, incentives for SPAC targets to engage in EM to signal private information may also be lower.

### **3. Data and Methods**

We identify a sample of SPACs announcing a proposed business combination with a target company between 2004 and 2019.<sup>10</sup> We use a number of data sources to construct our sample of SPAC firms, including the Refinitiv Eikon New Deals database, EarlyBirdCapital, Ellenoff Grossman & Schole LLP, Morgan Joseph, as well as the list of SPACs published in Dimitrova (2017). Our sample is limited to SPACs announcing an acquisition since our primary focus is on earnings quality of SPAC targets (i.e. the company they intend to acquire), rather than of SPACs themselves. We hand-collect financial data of SPAC targets from M&A prospectuses (e.g. DEFM14A) by searching through

<sup>9</sup> To an extent, these motives may inter-play, as firms could exploit lower regulation to increase valuations and net proceeds. One potential channel for doing so is through exercising discretion over optimistic disclosure in the merger documents (Blankespoor et al. 2022). Gahng et al. (2023) argue that average negative de-SPAC returns suggest too high valuations are often negotiated in SPAC transactions, which would benefit selling investors.

<sup>10</sup> We purposefully exclude the period coinciding with the Covid-19 pandemic (2020 onwards), given the added difficulties in estimating reliable earnings quality metrics.

the SEC's EDGAR system. We end up with a sample of 118 SPACs that announce acquisitions between 2004 and 2019, and where necessary data are available to calculate at least one of the EM measures discussed below.

For benchmarking purposes, we supplement our SPAC sample with data for (1) traditional IPO firms obtained from Refinitiv Eikon, and (2) non-IPO firms, taken as the population of firms on Compustat, excluding firms in their IPO year or each of the two years prior. We limit the IPO sample to issues of common shares on AMEX, NASDAQ, or NYSE. Similar to prior studies on IPOs, we exclude American Depository Receipts (ADRs), Real Estate Investment Trusts (REITs), blank check offerings (e.g. SPACs), limited partnership interests, closed-end funds, rights issues, and IPOs utilising a best-efforts offering method. This results in a final sample of 830 IPO and 57,235 non-IPO firm-year observations across the sample period.

To test our hypothesis, we proxy four forms of earnings management, including accrual-based earnings management using abnormal accruals ( $abACC$ ), real earnings management using abnormal cash-flow from operations ( $abCFO$ ) and abnormal discretionary expenditure ( $abDISX$ ), and classification shifting.<sup>11</sup> The method used for estimating each EM proxy is explained in detail in the online appendix.

In brief,  $abACC$  estimates the extent to which discretion over accounting accruals is used to report higher earnings, and hence it is a positive measure of EM (conversely, values closer to zero represent relatively higher accrual quality).  $abCFO$  ( $abDISX$ ) reflects abnormality in the extent to which sales map into cash flows (discretionary expenses), which will be more negative if lenient credit terms or price discounts (reduction in e.g., advertising or R&D expenses) are used to inflate reported earnings. Consequently,  $abCFO$  and  $abDISX$  are inverse measures of income-increasing EM through real activities manipulation. In regard to these three EM measures, we estimate the following baseline regression model:

$$(\mathit{abACC}, \mathit{abCFO}, \mathit{abDISX})_{i,t} = \beta_0 + \beta_1 \mathit{SPAC}_{i,t} + \beta_2 \mathit{IPO}_{i,t} + \theta \mathit{Controls}_{i,t} + \gamma_j + \delta_t + \varepsilon_{i,t}. \quad (1)$$

The fourth form of EM examined, classification shifting, relates to the extent to which core expenses (e.g., COGS or SG&A expense) are reclassified as non-recurring special items (SI) on the income statement. Following this practice, bottom-line net income is unaffected, but core earnings (which many investors and analysts focus on to form predictions on financial prospects) are overstated. As such, an indicator of classification shifting is an estimated positive relationship

<sup>11</sup>  $abACC$  is estimated using the cross-sectional adaptation of the modified-Jones model, adjusted for performance, as suggested by Kothari et al. (2005).  $abCFO$  and  $abDISX$  are estimated following the method described in Roychowdhury (2006), while classification shifting is measured following the method in McVay (2006). All four measures are widely adopted in studies on EM.

between SI and abnormal core earnings (*abCORE*). Our baseline model for testing classification shifting therefore takes the following interacted form:

$$abCORE_{i,t} = \beta_0 + \beta_1 SPAC_{i,t} + \beta_2 IPO_{i,t} + \beta_3 SI_{i,t} + \beta_4 SPAC \times SI_{i,t} + \beta_5 IPO \times SI_{i,t} \quad (2) \\ + \theta Controls_{i,t} + \gamma_j + \delta_t + \varepsilon_{i,t},$$

where in equations (1) and (2), *SPAC* is an indicator variable equal to one if firm *i* is a proposed SPAC target, and zero otherwise, whereas *IPO* is an indicator variable for IPO firms. The reference case (where *SPAC* = 0 and *IPO* = 0) is non-IPO firms, which we include only in the baseline regressions. In subsequent tests, we directly compare SPACs to IPO firms, excluding the reference non-IPO firms from the model, and in doing so suppressing the variable *IPO*; consequently, the reference case becomes IPO firms. We also include in each model a set of control variables (defined in the appendix) and industry ( $\gamma$ ) and year ( $\delta$ ) fixed effects to control for a range of time-invariant and time-variant sources of heterogeneity in the earnings quality proxies.<sup>12</sup> All financial variables are winsorised at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

Full sample descriptive statistics are presented in Table 1. As expected, the mean and median values of the EM variables, *abACC*, *abCFO*, *abDISX*, and *abCORE* are close to 0, however a reasonable degree of variation is observed in each. Values for other variables are in line with that observed in prior literature.

[Table 1 about here]

In Table 2, we present means and mean differences for the variables studied across groups that comprise SPAC targets, IPO firms, and non-IPO firms. To summarise these univariate tests, we observe significantly higher values of *abACC* for both SPAC targets and IPO firms, compared with non-IPO firms. While mean values of *abCFO* and *abDISX* are lower for SPAC targets, compared with non-IPO firms, the differences are insignificant. Thus, there is at least some indication in the descriptive statistics of income-increasing earnings management by SPAC targets, though seemingly not significantly out of line with firms conducting traditional IPOs.

[Table 2 about here]

Necessity for multivariate tests is highlighted by the fact that SPAC targets differ along a number of important dimensions which have also been shown to affect earnings quality. In particular, SPAC targets are on average significantly smaller and are more highly levered, as also reported in Kolb and Tykvova (2016). We also observe that SPACs exhibit higher growth (higher *SGrowth*), are

<sup>12</sup> As described in the online appendix, each EM proxy is also based on estimations that are nested at the two-digit SIC industry-year level.

less liquid (lower average *QRatio* and *Cash*), and have a longer operating cycle, compared with non-IPO firms, and in most cases also IPO firms.

## 4. Results

Table 3 presents estimates of equations (1) and (2), contrasting earnings quality of SPAC targets and IPO firms with the broader sample of non-IPO firms. The results in column (1), where the dependent variable is accrual-based EM, show a coefficient on *SPAC* that is positive and significant at the 5% level, and a coefficient on *IPO* that is positive but insignificant. This is suggestive of a significantly higher likelihood of accrual EM exhibited by SPAC targets compared to the typical non-IPO firm, and to an extent also IPOs. In column (2), negative coefficients are observed on both *SPAC* and *IPO*, directionally consistent with income-increasing sales-based EM, however both coefficients are insignificant. The coefficient on *SPAC* in column (3), which examines EM through discretionary expenses (e.g. R&D), is found to be negative and significant, while that on *IPO* is significantly positive. While the typical IPO firm exhibits abnormally high discretionary expenses, SPAC targets are more likely to report discretionary expenses that are abnormally low, potentially indicating greater propensity for this form of EM.<sup>13</sup>

[Table 3 about here]

In the final column of Table 3 (column 4) we examine classification shifting, which is indicated by a positive relationship between *SI* and the dependent variable, *abCORE*. Consistent with prior literature (McVay 2006), we observe a significant degree of classification shifting in the general population of firms, as the coefficient on *SI* is positive and highly significant ( $t = 17.85$ ). In addition, we find coefficients that are significant and positive on each of the interaction terms *SPAC* × *SI*, and *IPO* × *SI*, indicating significantly greater incidence of classification shifting in firms going public via either a SPAC or an IPO. However, since the coefficient on *IPO* × *SI* is sizably greater in magnitude and significance than that on *SPAC* × *SI*, it would appear that classification shifting is less prominent in SPAC targets than in IPO firms.

### 4.1. Controlling for Selection Bias

Although mixed, baseline results in the previous section provide some evidence of higher than benchmarked risk of EM in SPAC targets, in so far as via accrual and real forms of EM. However, it may be that factors affecting earnings properties also affect the decision of firms to go public through merging with a SPAC, rather than conducting an IPO. In other words, there is a need to address a potential endogeneity bias, relating to discretion over choice of floatation method.

<sup>13</sup> To an extent, lower discretionary expenses (e.g., R&D) may reflect lower growth prospects for SPAC targets than is typical in IPOs.

To tackle this issue, we implement the Heckman (1979) two-stage procedure where; (1) in the first stage, we estimate the propensity to merge with a SPAC over conducting an IPO; and (2) in the second stage, differences in EM between SPAC targets and IPO firms are modelled with the inclusion of Lambda (the Inverse-Mills Ratio) estimated by the first stage Probit model. We implement the procedure for each EM metric, and present the results in Table 4. As we examine here the robustness of results in regard to choice between SPAC and IPO routes, we necessarily omit non-IPO firms from the sample, and suppress the IPO indicator; the reference case becoming IPO firms.

[Table 4 about here]

Referring to Table 4, our inferences regarding *abDISX* (column 3) and classification shifting (column 4) remain unchanged. Significant negative coefficients observed on SPAC in column (3), and *SPAC* × *SI* in column (4), indicate that SPAC targets are more (less) likely than IPOs to exhibit income-increasing EM through discretionary expenditures (classification shifting). On the other hand, the coefficient on *SPAC* in column (1), though positive (indicating higher *abACC* in SPAC targets than IPOs), is insignificant. Moreover, we observe a significant and positive coefficient on *abCFO* in column (2), suggesting that incidence of sales-based EM is lower in SPAC targets than in IPOs, when controlling for factors affecting selection of the SPAC route over IPO.

In regard to accrual EM, we note that the magnitude of the coefficient on *SPAC* in column (1) of Table 4 is somewhat greater than that in Table 3. Moreover, the coefficient on Lambda in column (1) is insignificant, suggesting that self-selection between IPOs and SPACs is not a factor that materially affects results for *abACC*. Therefore, while we fail to observe here a significant difference in *abACC* between SPAC targets and IPOs, it is possible that the risk of EM in SPAC targets may be modestly higher.

#### 4.2. EM and De-SPAC Returns

To provide additional insight on materiality of EM in SPAC targets, we next test for conditionality of de-SPAC stock returns to EM levels. Our intuition here is that if income-increasing EM within the SPAC merger documents associates with higher overpricing risk, we expect EM levels to associate negatively with subsequent post-merger stock returns, as pricing reverts towards fundamentals. We identify the one-year buy-and-hold return (*BHR*), and buy-and-hold abnormal return (*BHAR*) against the market factor,<sup>14</sup> for the sample of SPACs with necessary data available, and regress against each of the EM proxies. The results are presented in Table 5.

<sup>14</sup> Sourced from Kenneth French's Data Library.

[Table 5 about here]

Gleaning the results, we find incidence of income-increasing EM in SPACs appears to have significant pricing implications. While we find little evidence in the previous sections of systematically more prevalent EM in SPAC transactions, within-sample variation in accrual EM, sales-based EM, and (to an extent) classification shifting each demonstrate predictive ability over *BHR* and *BHAR*. Estimated negative coefficients on *abACC* in columns (1) and (5) of Table 5 indicate income-increasing EM through accruals associates with incrementally lower de-SPAC return performance, while significant positive coefficients on *abCFO* in columns (2) and (6) imply de-SPAC returns also decrease as abnormal operational cash flows reduce (indicating sales-based EM). Observed in columns (4) and (8) are significant negative coefficients on *SI*, implying returns may also be diminishing in levels of classification shifting.

Curiously, we observe no significant impacts of *abDISX* on *BHR* or *BHAR* (columns 3 and 7). This finding is inconsistent with the argument that abnormally low discretionary expenses is a form of EM which leads to overpricing during SPAC mergers. While the real activities EM view on *abDISX* is that expenses such as on R&D and advertising may be discretionarily reduced to inflate current reported earnings, low investment in intangible assets may alternatively reflect a low value of internal growth options, or access to external knowledge resources (Cuervo-Cazurra and Un 2010). Another possibility is that SPAC investors see through attempts at EM by way of discretionary expense reductions.

### 4.3. EM Incentives in SPACs

Discussed in the previous sections, we find little evidence of systematically higher EM among SPAC targets than traditional IPOs. However, it is possible the null overall result masks EM incentives in SPACs that are heterogeneous and depend on the context surrounding the transaction. For example, it is well-known that there are strong incentives for SPAC insiders to complete any deal than no deal at all; those incentives strengthen e.g. as the predetermined deadline approaches, and in the presence of deferred underwriting fees (Dimitrova 2017).

We consider two plausible mechanisms by which strength of incentive for SPAC insiders to complete a (poor) deal may associate with lower quality reported earnings in targets. Firstly, SPAC insiders might collude with target firms to engage in ‘window dressing’ the financial reports, to maximise shareholder approval. Incentives for window dressing will naturally relate inversely to the attractiveness of the underlying deal. Secondly, even in the absence of collusion, presence of strong incentives to complete any deal may associate with higher risks of adverse selection and moral hazard. As a consequence of lower selection standards and due-diligence, SPAC insiders

may become relatively more likely to select targets with poorer quality reporting and internal governance.

[Table 6 about here]

In Table 6, we present results of additional tests examining sensitivity of our EM measures to several deal characteristics which likely associate with SPAC insiders' incentives, including: the length of time from SPAC listing to acquisition announcement (*TimeToAg*); whether underwriter fees are deferred (*DefFees*); if the underwriter is also advisor to the deal (*UAdv*); an unquoted target company (*PrvTg*); whether the acquisition involves cash (*CashDeal*); and deal size (*DealVal*). According to Dimitrova (2017), for example, in cases where fees for underwriters setting-up the SPAC are deferred and payable only on successful completion of an acquisition, there is an additional interest in completing a deal, even if prospects are poor. In many cases, the underwriter is also an advisor to the acquisition, which can compound effects of this potential conflict of interest. We account for this possibility by including an interaction  $DefFees \times UAdv$ .

Looking across columns (1) to (4), we find little evidence of sensitivity in EM of SPAC targets to any of the broad range of included variables, most coefficients being statistically insignificant. As such, results in Table 6 seemingly dispel the notion that SPAC structures and incentives associate with any significantly greater risk of EM compared to traditional IPOs. In column (1), we do observe a significant negative coefficient on *DealVal*, although it indicates that risks of accrual-based EM appear to *reduce* as financial stakes increase. On the other hand, it is well known that larger firms display better accrual earnings quality. Shown in column (4) is a weakly significant positive coefficient on  $DefFees \times UAdv$ , providing some indication that underwriter incentives may associate with a somewhat larger risk of EM through classification shifting.

## 5. Conclusion

With this paper, we offer a revealing analysis of earnings quality of target firms in SPAC transactions. Our study on this is timely, given the SEC's proposals to align financial statement requirements for SPAC transactions with traditional IPOs. Despite significance of the proposals, in terms of their potential to add significantly to associated costs of the SPAC route, there is a surprising dearth of evidence on financial reporting in SPACs under existing regulation. Controlling for self-selection, we find little evidence of systematically higher EM risk in SPAC transactions, compared with traditional IPOs, or that EM in SPACs is sensitive to inherent incentives of insiders. As a whole, our findings suggest that aligning financial statement requirements with IPOs may have little consequence in this regard. We consider it important that the reader sets the findings of our study into boarder context, given what is known e.g. about opportunistic disclosures outside the

financial statements (Blankespoor et al. 2022). One caveat of our study is that it remains unclear whether new disclosure restrictions outside the financial statements could give rise to higher risk of EM in SPACs, in substitution. We encourage further research on the topic, to investigate particularly for potential substitution effects.

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**Appendix.** Variable Definitions

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Variable	Definition
<i>abACC</i>	Abnormal discretionary accruals EM proxy. See online appendix for detailed definition.
<i>abCFO</i>	Abnormal cash-flow from operations real EM proxy. See online appendix for detailed definition.
<i>abDISX</i>	Abnormal discretionary expenses real EM proxy. See online appendix for detailed definition.
<i>abCORE</i>	Abnormal core earnings, used to estimate classification shifting. See online appendix for detailed discussion.
<i>SI</i>	Estimate for income-decreasing special items, approximated similarly to Zalata and Roberts (2017) as the difference between core earnings (CORE) and bottom-line net income (NI), scaled by sales. Where CORE minus NI is negative (i.e. implying income increasing items), SI is set to 0.
<i>LnAT</i>	Natural logarithm of total assets.
<i>LnSale</i>	Natural logarithm of sales.
<i>BV</i>	Book value of equity as a proportion of total assets.
<i>Lev</i>	Leverage, calculated as total debt divided by total assets.
<i>ROA</i>	Profitability, defined as net income divided by total assets.
<i>QRatio</i>	Quick ratio, calculated as cash and short-term investments plus receivables, divided by current liabilities.
<i>Cash</i>	Cash and short-term investments divided by total assets.
<i>SGrowth</i>	Sales growth, measured as the percentage change in sales compared with the previous year.
<i>OpCycle</i>	Operating cycle in days, calculated as the receivable collection period [Average Receivables/(Sales/360)] plus inventory turnover [Average Inventory/(Cost of Goods Sold/360)].
<i>BHR</i>	The buy and hold stock return over the first year following the de-SPAC transaction.
<i>BHAR</i>	<i>BHR</i> minus the contemporaneous buy and hold return on the market portfolio (source: Kenneth French's website).
<i>TimeToAq</i>	Time to acquisition, the natural logarithm of the number of days between the SPAC listing and the merger announcement.
<i>DefFees</i>	Indicator variable for deferred fees, equal to 1 if underwriter fees are deferred until consummation of a business combination, and 0 otherwise.
<i>UAdv</i>	Indicator variable for whether the underwriter is also an advisor.
<i>PrvTg</i>	Indicator variable for private target.
<i>CashDeal</i>	Indicator variable equal to 1 for deals involving cash, 0 otherwise.
<i>DealVal</i>	Natural logarithm of deal value in \$Millions.

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**Table 1.** Descriptive Statistics

Variables	<i>N</i>	Mean	SD	Q1	Median	Q4
<i>abACC</i>	58,183	-0.014	0.177	-0.074	-0.020	0.034
<i>abCFO</i>	58,183	-0.015	0.319	-0.045	0.035	0.106
<i>abDISX</i>	51,521	0.077	0.555	-0.113	0.003	0.157
<i>abCORE</i>	44,324	-0.004	0.210	-0.042	-0.000	0.041
<i>SI</i>	44,602	0.153	0.282	0.042	0.080	0.149
<i>LnAT</i>	58,183	5.914	2.672	4.145	6.052	7.800
<i>LnSale</i>	58,183	5.610	2.815	3.874	5.920	7.589
<i>BV</i>	58,183	0.204	2.074	0.290	0.481	0.676
<i>Lev</i>	58,183	0.325	0.794	0.017	0.191	0.362
<i>ROA</i>	58,183	-0.208	1.266	-0.073	0.027	0.072
<i>QRatio</i>	58,183	1.982	2.615	0.699	1.199	2.183
<i>Cash</i>	58,183	0.207	0.225	0.038	0.121	0.302
<i>SGrowth</i>	58,183	0.179	0.687	-0.042	0.068	0.208
<i>OpCycle</i>	58,183	2.000	38.645	-3.540	2.229	10.072

*Table Notes:* This table presents descriptive statistics for the full sample of SPAC targets, IPOs, and non-IPO firms over the period 2004 to 2019 inclusive. Variables are defined in the appendix.

**Table 2.** Univariate Tests of Differences

Variables	SPAC Target (1)		IPO (2)		Non-IPO (3)		Differences		
	<i>N</i>	Mean	<i>N</i>	Mean	<i>N</i>	Mean	(1)–(2)	(1)–(3)	(2)–(3)
<i>abACC</i>	118	0.037	830	0.013	57,235	-0.014	0.025	0.052***	0.027***
<i>abCFO</i>	118	-0.035	830	-0.077	57,235	-0.014	0.042	-0.021	-0.063***
<i>abDISX</i>	115	0.000	819	0.496	50,587	0.070	-0.496***	-0.070	0.426***
<i>abCORE</i>	100	-0.370	560	-0.407	43,664	0.002	0.037	-0.372***	-0.409***
<i>SI</i>	117	0.220	821	0.220	43,664	0.152	0.000	0.068***	0.068***
<i>LnAT</i>	118	4.541	830	5.348	57,235	5.925	-0.807***	-1.384***	-0.578***
<i>LnSale</i>	118	4.664	830	4.971	57,235	5.621	-0.308*	-0.957***	-0.650***
<i>BV</i>	118	0.169	830	0.289	57,235	0.203	-0.120*	-0.033	0.087
<i>Lev</i>	118	0.458	830	0.337	57,235	0.325	0.121***	0.133*	0.012
<i>ROA</i>	118	0.003	830	-0.125	57,235	-0.210	0.127***	0.212*	0.085*
<i>QRatio</i>	118	1.066	830	1.798	57,235	1.986	-0.732***	-0.920***	-0.189**
<i>Cash</i>	118	0.119	830	0.287	57,235	0.206	-0.169***	-0.088***	0.081***
<i>SGrowth</i>	118	0.592	830	0.685	57,235	0.171	-0.093	0.421***	0.514***
<i>OpCycle</i>	118	7.946	830	16.44	57,235	1.778	-8.497**	6.168*	14.665***

*Table Notes:* This table presents comparative mean statistics and results from *t*-tests of mean differences across SPAC targets, IPOs, and non-IPO firms over the period 2004 to 2019 inclusive. Variables are defined in the appendix.

\*, \*\*, and \*\*\* denote statistical significance from two-tailed *t*-tests at the 10%, 5%, and 1% levels, respectively.

**Table 3.** Full Sample Regressions

Variables	<i>abACC</i> (1)	<i>abCFO</i> (2)	<i>abDISX</i> (3)	<i>abCORE</i> (4)
<i>SPAC</i>	0.036** (2.31)	-0.022 (-0.92)	-0.084** (-1.98)	-0.429*** (-18.85)
<i>IPO</i>	0.007 (1.12)	-0.014 (-1.47)	0.219*** (13.53)	-0.503*** (-48.84)
<i>SI</i>				0.082*** (17.85)
<i>SPAC</i> × <i>SI</i>				0.209*** (4.35)
<i>IPO</i> × <i>SI</i>				0.502*** (18.88)
<i>LnAT</i>	0.019*** (22.53)	-0.047*** (-35.54)	0.089*** (32.30)	-0.032*** (-20.56)
<i>LnSale</i>	-0.030*** (-35.96)	0.069*** (53.16)	-0.110*** (-39.70)	0.036*** (23.23)
<i>BV</i>	0.015*** (16.56)	-0.055*** (-40.39)	0.064*** (22.99)	-0.002 (-0.46)
<i>Lev</i>	0.032*** (15.66)	-0.082*** (-25.92)	0.067*** (10.71)	0.014** (2.50)
<i>ROA</i>	0.018*** (20.61)	0.123*** (90.42)	-0.211*** (-77.10)	0.055*** (21.04)
<i>QRatio</i>	-0.003*** (-9.35)	0.015*** (26.45)	-0.038*** (-33.53)	0.002*** (2.82)
<i>Cash</i>	0.025*** (-5.50)	-0.161*** (-22.77)	0.687*** (-50.30)	-0.027*** (-3.55)
<i>SGrowth</i>	0.008*** (7.11)	-0.030*** (-17.79)	0.180*** (51.00)	-0.008*** (-3.86)
<i>OpCycle</i>	0.000*** (14.01)	-0.001*** (-17.73)	0.001*** (14.56)	-0.000*** (-14.24)
<i>Constant</i>	0.029*** (6.59)	-0.058*** (-8.57)	0.053*** (4.29)	-0.038*** (-5.71)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
<i>N</i>	58,183	58,183	51,521	44,324
<i>R</i> <sup>2</sup>	0.08	0.32	0.33	0.09

*Table Notes:* This table presents results of OLS regressions where the dependent variable is each of four earnings quality measures, using the full sample of SPAC targets, IPOs, and non-IPO firms over the period 2004 to 2019 inclusive. Variables are defined in the appendix.

\*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively.

**Table 4.** Comparison of SPACs vs. IPOs – Heckman Two-stage Regressions

Variables	<i>abACC</i> (1)	<i>abCFO</i> (2)	<i>abDISX</i> (3)	<i>abCORE</i> (4)
<i>SPAC</i>	0.059 (0.88)	0.512*** (4.77)	-1.446*** (-6.93)	0.047 (0.41)
<i>SI</i>				0.498*** (8.99)
<i>SPAC</i> × <i>SI</i>				-0.302*** (-2.66)
<i>Lambda</i>	-0.026 (-0.66)	-0.319*** (-5.23)	0.736*** (6.27)	0.002 (0.03)
<i>Constant</i>	-0.102* (-1.83)	-0.004 (-0.05)	0.175 (1.12)	-0.587*** (-6.06)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
<i>N</i>	948	948	934	660
Wald <i>Chi</i> <sup>2</sup>	60.9	167.5	284.2	163.0

*Table Notes:* The table presents second-stage results following the Heckman (1979) two-stage procedure to control for potential sample selection bias between IPO firms and SPAC targets. The first stage regressions employ all control variables from Table 3 in order to estimate Lambda (the inverse-Mills ratio) that is included in the second stage. The results are derived from a sub-sample of SPAC targets and IPO firms, over the period 2004 to 2019 inclusive. Variables are defined in the appendix.

\*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively.

**Table 5.** De-SPAC (post-merger) Returns and Earnings Quality

Variables	1 Year Buy-and-hold Return (BHR)				1 Year Buy-and-hold Abnormal Return (BHAR)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>abACC</i>	-29.057** (-2.00)				-27.660* (-1.68)			
<i>abCFO</i>		21.966** (2.08)				25.963** (2.22)		
<i>abDISX</i>			2.117 (0.24)				-6.230 (-0.72)	
<i>abCORE</i>				11.118 (0.61)				12.186 (0.75)
<i>SI</i>				-20.746* (-1.90)				-28.597** (-2.54)
<i>abCORE</i> × <i>SI</i>				-5.908 (-0.55)				-9.928 (-0.96)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	93	93	90	77	93	93	90	77
<i>R</i> <sup>2</sup>	0.43	0.43	0.40	0.41	0.34	0.35	0.31	0.37

*Table Notes:* The table presents results from regressing post-merger returns on each of the four earnings quality measures, measured at the time of a SPAC merger, using the sample of SPACs with necessary data available, over the period 2004 to 2019 inclusive. Variables are defined in the appendix.

\*, \*\*, and \*\*\* denote statistical significance from two-tailed *t*-tests at the 10%, 5%, and 1% levels, respectively.

**Table 6.** Earnings Management Incentives

Variables	<i>abACC</i> (1)	<i>abCFO</i> (2)	<i>abDISX</i> (3)	<i>SI</i> (4)
<i>TimeToAq</i>	-0.027 (-0.36)	-0.002 (-0.02)	-0.033 (-0.23)	-0.087 (-0.73)
<i>DefFees = 1</i>	0.064 (0.52)	0.056 (0.34)	-0.046 (-0.20)	-0.105 (-0.53)
<i>UAdv = 1</i>	-0.047 (-0.37)	0.014 (0.08)	-0.133 (-0.54)	-0.268 (-1.29)
<i>DefFees × UAdv</i>	0.036 (0.24)	-0.135 (-0.64)	0.263 (0.90)	0.421* (1.70)
<i>PrvTg</i>	-0.064 (-0.74)	-0.020 (-0.17)	0.111 (0.67)	0.074 (0.53)
<i>CashDeal</i>	-0.069 (-0.90)	0.069 (0.65)	-0.141 (-0.95)	-0.199 (-1.59)
<i>DealVal</i>	-0.097** (-2.27)	0.065 (1.11)	0.066 (0.81)	-0.005 (-0.08)
<i>Constant</i>	1.610*** (2.79)	-2.801*** (-3.53)	4.673*** (4.24)	0.621 (0.67)
Year FE	Yes	Yes	Yes	Yes
<i>N</i>	75	75	74	75
<i>R</i> <sup>2</sup>	0.46	0.53	0.68	0.23

*Table Notes:* The table presents regression results of the earnings quality measures on variables relating to proposed incentives for earnings management in SPACs. The results are derived from the sample of SPACs with necessary data available, over the period 2004 to 2019 inclusive. Variables are defined in the appendix.

\*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively.