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# The influence of initial sponsor backing on post-IPO acquisition activity

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## Abstract

We investigate the impact of financial sponsor backing [venture capital (VC) or private equity (PE)] on post-initial public offerings (IPO) acquisition strategies of newly public companies. We find that PE-backed newly public firms undertake nearly three times more acquisitions than VC-backed ones and almost twice as many as non-backed firms, indicating that acquisitions are a primary growth strategy for PEs. This result remains robust after addressing potential endogeneity concerns. Additionally, PE syndicate-backed firms engage in transformative acquisitions, proxied by size, while VC-backed firms prioritise organic growth through R&D spending. Moreover, PE-backed acquirers experience significant positive long-run post-IPO stock returns, unlike VC-backed acquirers.

## KEYWORDS

initial public offerings (IPOs), mergers and acquisitions (M&As), private equity (PE), venture capital (VC)

## JEL CLASSIFICATION

G14, G24, G32, G34

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## 1 | INTRODUCTION

Going public by listing shares on a stock exchange is a crucial event in a company's life cycle. The reasons firms choose to go public are manifold, ranging from obtaining a new (external) source of equity with a view to minimise the firm's cost of capital (Scott, 1976), broaden ownership (Chemmanur & Fulghieri, 1999), to increasing analyst coverage (Bradley et al., 2003) or enabling insiders to cash out (e.g., Zingales, 1995). However, the most prominent reason appears to be the facilitation of takeover activity: In a survey of chief financial officers, Brau and Fawcett (2006) report that the desire to engage in future acquisition activity is often the main motivation for firms to go public as newly issued shares can be used as a currency with which to either purchase other firms or exchange when being the target in a share deal (Brau et al., 2003). Financial sponsors may have a particular preference to take their portfolio companies public to further grow them through acquisitions. Even though sponsors' primary concern following the initial public offering (IPO) may be the timely realization of a lucrative exit, they typically retain a significant amount of their shares for 1–3 years following the IPO, partly due to lock-up periods and signalling concerns (Amini et al., 2022; Barry et al., 1990; Dong et al., 2020; Leland & Pyle, 1977). We seek to address whether sponsors' guidance of their portfolio firms during this post-IPO period of transitional ownership influences their portfolio firms' acquisition activity as well as share price performance.

We aim to answer these questions by analyzing the impact of venture capital (VC) and private equity (PE) backing at the time of the IPO on the firm's subsequent acquisition activity and stock price development. Prior studies frequently forgo a detailed investigation of the effects of sponsor backing by treating it as an ancillary topic or control. In case sponsor backing is addressed, the focus is almost exclusively on the impact of VC backing on post-IPO acquisition activity (e.g., Anderson et al., 2017; Celikyurt et al., 2010; Hovakimian & Hutton, 2010), with PE-backed firms only marginally considered, if at all, and with little to no regard for the differences between VC and PE backing (Anderson et al., 2017; Arikan & Capron, 2010; Celikyurt et al., 2010; Ragozzino et al., 2018). This is surprising, as VC and PE investors have different investment strategies at the core of their value proposition. While VC firms mainly invest in smaller, research-intensive firms with strong organic growth potential, PE investors focus on mature companies with stable cash flow generating abilities. Levis (2011) documents this difference, as PE firms generally back larger firms with higher sales compared to the ones VCs typically back. Additionally, he shows that PE-backed firms' stock returns outperform their VC-backed and non-backed peers following an IPO. Given these differences, it stands to reason that the type of financial sponsor backing, either through VC or PE investors, will lead to different post-IPO merger and acquisition (M&A) strategies pursued by their respective portfolio companies.

Despite acquisitions seemingly being a powerful driver in the decision to go public (Brau & Fawcett, 2006), the empirical evidence on this topic is still comparatively limited. Celikyurt et al. (2010) find that newly public firms conduct more acquisitions than more mature firms in the same industry, mainly by making use of their IPO proceeds and through better access to debt and equity markets. When it comes to financial sponsor backing, VC-backed firms are more likely to become acquisition targets while at the same time, the prospect of potentially being acquired also influences the propensity of VC-backed firms to become active acquirers themselves during the post-IPO period (Anderson et al., 2017). Yet, there is little empirical evidence on sponsor backing and post-IPO acquisition activity, particularly with regard to PE sponsors. We aim to fill this gap.

Analyzing a sample of 1341 US IPOs between 2001 and 2017 and 1845 subsequent acquisitions by these newly public firms, we find that financial sponsor backing itself as well as the type of financial sponsor backing at the time of the IPO has a meaningful impact on a firm's post-IPO M&A activity and share price development. Accounting for differences in firm characteristics, we find that PE-backed newly public firms surpass their VC-backed and non-backed peers in the number of post-IPO acquisitions they conduct and in the speed with which they proceed. This difference in acquisition activity is significantly stronger when the leading PE firm is the majority owner, suggesting that PE-ownership plays an influential role. For VC-backed firms, we find significantly higher post-IPO R&D spending. This suggests that sponsors promote growth in their newly public portfolio firms using different strategies: PE sponsors focus on inorganic growth through acquisitions, while VC sponsors focus on realizing organic growth options through R&D expenditures. Relatedly, our results further indicate that newly public firms backed by a PE syndicate tend to conduct larger transactions than their peers. The results are robust to different regression model specifications, sample matching procedures, and also hold in a switching regression model with endogenous switching. Our analysis of the post-IPO stock returns reveals that PE-backed newly public acquirers achieve positive long-run stock returns during the first 2 years following the IPO, significantly outperforming VC-backed newly public acquirers. M&A announcement returns, however, do not differ significantly between PE-backed and VC-backed newly public acquirers.

Our study contributes to the existing literature in several ways. First, we document that PE-backed newly public firms play a significant role in driving the observed increase in newly public firms' post-IPO acquisition activity. Previous studies largely neglect to control for PE backing or solely focus on the acquisition activity of newly public VC-backed firms without separating the control group into PE-backed and non-backed newly public firms (e.g., Anderson et al., 2017; Celikyurt et al., 2010). Differentiating by sponsor type may help to reconcile the conflicting findings regarding the impact of VC backing on post-IPO acquisition activity, which ranges from positive (Anderson et al., 2017) to neutral (Celikyurt et al., 2010) to negative (Ragozzino et al., 2018). Second, we reveal distinct investment preferences in terms of organic and inorganic growth during the post-IPO period depending on the sponsor being a VC or PE firm at the time of the IPO. PE-backed firms acquire more frequently following their IPO, whereas VC-backed firms invest more in R&D. Additionally, we observe some differences in the types of acquisitions conducted following the IPO based on initial sponsor backing. Firms backed by a syndicate of PE funds steer their newly public portfolio firms to conduct more transformative acquisitions in terms of relative target size, while more reputable financial sponsors are more likely to engage in diversifying transactions. Third, we extend prior research on the long-run post-IPO stock performance of newly public firms. Contrary to the prevailing notion that newly public firms underperform the market, we find positive long-term returns for PE-backed newly public acquirers. Our findings also contribute to the literature by substantiating the finding of positive shareholder wealth effects of M&A announcements (e.g., Alexandridis et al., 2017; Draper & Paudyal, 2006), especially for PE-backed newly public acquirers. Understanding the benefits and potential drawbacks of the growth strategies pursued by different financial sponsors has important implications for investors when deciding on portfolio allocation, particularly when looking at the difference in the long-run stock price development of newly public firms based on their pre-IPO ownership background.

The remainder of the paper is structured as follows. Section 2 provides a brief overview of the two main types of financial sponsors and introduces the relevant literature and our main hypotheses. Section 3 presents the sample construction as well as descriptive sample statistics.

Section 4 discusses the results of our empirical analysis on the impact of initial sponsor backing on post-IPO acquisition activity, growth alternatives, and acquisition characteristics, including several robustness tests. Section 5 focuses on the post-IPO stock performance conditioned on initial sponsor backing and acquisition activity. Section 6 concludes.

## 2 | BACKGROUND AND RESEARCH HYPOTHESES

### 2.1 | Financial sponsors

As temporary owners of corporations, financial sponsors buy equity stakes in firms with the intention of selling them for a profit after having successfully increased their value. More formally, Metrick and Yasuda (2011) define financial sponsors as meeting the following criteria<sup>1</sup>: (i) being a financial intermediary, meaning that it uses investors' capital to directly invest in portfolio companies; (ii) investing only in private companies, meaning that once the investments are made, the companies cannot be immediately traded on a public exchange<sup>2</sup>; (iii) taking an active role in monitoring and supporting the companies in its portfolio; and (iv) having the primary goal of maximising its financial return by exiting investments through a sale or an IPO.

Within the group of financial sponsors, the extant literature commonly differentiates two types of sponsors: VC and PE investors (Buchner et al., 2019; Michala, 2019; Paglia & Harjoto, 2014). While both conform to the above criteria, they differ in the kinds of firms they invest in. VC sponsors typically invest in young, often research-intensive firms with strong growth potential but considerable uncertainty regarding their future cash flows. PE sponsors, in contrast, mostly focus on mature and comparatively large companies with proven business models and stable cash flows. Accordingly, they also differ in the structuring of their investments: While VC sponsors acquire minority equity stakes in early financing rounds, PE investors typically acquire controlling majority stakes which they finance with debt borrowed against their portfolio firms' future cash flows. The economics of PE and VC funds also differ.<sup>3</sup> VC funds rely on a small number of 'star investments' with high failure rates in the remaining portfolio (Manigart et al., 2002) while PE funds' investments have significantly lower failure rates and show more uniform returns across investments with leverage being an important driver of returns.

Most VC and PE sponsors (claim to) make changes in the ways their portfolio firms operate. Their tools, however, often differ. First, PE sponsors have more sway in affecting change

<sup>1</sup>Metrick and Yasuda (2011) and others refer to 'private equity' as the overarching category comprising venture capital (VC) and buyout (BO) investors. While meaning the same, we refer to the overarching category as 'financial sponsors' and the subgroup of BO investors as private equity (PE) investors. We therefore use the term 'financial sponsors' as descriptive of the overall category in the definition provided above.

<sup>2</sup>This does not rule out that portfolio companies are traded on public exchanges during some part of the holding period, typically after the IPO but before a complete sponsor exit.

<sup>3</sup>Both PE and VC investors raise closed-end funds with finite lifetimes of typically 10 years. While the sponsors serve as general partners of their funds, the vast majority of capital contained in these funds is raised from so-called limited partners. For the first 5 years of their lifetimes, these funds are in their 'investment period', focusing on deploying capital before switching to 'harvesting mode' during which the focus gradually shifts towards exiting investments. During all stages, a considerable share of attention is devoted towards monitoring and steering of portfolio firms (Metrick & Yasuda, 2011).

because they typically hold controlling stakes in their portfolio firms. This may lead to a more directive and in-depth involvement in portfolio firms' operations compared to the advisory-type guidance provided by VC sponsors (DeAngelo & DeAngelo, 1987).<sup>4</sup> Second, the unique challenges of the type of firms they back mean that PE and VC sponsors' main levers of value creation differ. For instance, for the mature and often low-growth companies that PE firms back, acquisition-induced growth is a key lever for value creation (see e.g., Greve, 2008). As a result, a large number of PE sponsors are burnishing their credentials in executing add-on acquisitions or managing strategies such as 'buy-and-build'. This is not the case for VC sponsors, whose portfolio firms are mainly growing organically, implying that additional capital is often deployed to refine the product and scale operations to continue on an accelerated growth path.

In terms of channels for exiting investments, IPOs are important for PE and VC investors alike. However, within the VC world, IPOs are commonly considered the exit channel of choice for the best performing ventures (Black & Gilson, 1998; Gompers, 1995; Lerner, 1994; Masulis & Nahata, 2011). This dynamic cannot be observed for PE sponsors. In terms of exiting their investments following an IPO, both PE and VC sponsors hold on to their shares for a considerable time after the IPO: the majority of PE and VC sponsors do not sell any shares in the IPO and hold a substantial number of shares for up to 3 years after the IPO (Amini et al., 2022; Barry et al., 1990; Dong et al., 2020). The other main exit channels for financial sponsors are either trade or secondary sales—these, however, are not part of this study's explicit focus.<sup>5</sup>

## 2.2 | Related literature and hypotheses development

The desire to acquire is a major motivation for firms to go public (Brau & Fawcett, 2006). Yet, research on the acquisition activity of newly public firms is comparatively limited with the dominating theme being the post-IPO uptake in acquisition activity (e.g., Anderson et al., 2017; Celikyurt et al., 2010; Hovakimian & Hutton, 2010). This rise in M&A activity is not only driven by IPO proceeds, but also by better access to credit markets and the ability to use newly issued shares as a currency in acquisitions (Celikyurt et al., 2010). There is some evidence that newly public firms time the market when making the decision to acquire as they are more likely to pay with stock when their valuations are high (Celikyurt et al., 2010; Hovakimian & Hutton, 2010), with stock liquidity being one potential driver of the acquisition decision

<sup>4</sup>While individual VC investors typically do not hold controlling stakes, their stakes are nevertheless material. In our sample, VC sponsors cumulatively hold on average a 53.4% stake, with the average leading VC sponsor holding a 26.4% share of the IPO firm, allowing them to steer their portfolio companies' operational decisions.

<sup>5</sup>When it comes to exiting their investments, PE firms tend to do so through follow-on secondary equity offerings or third party takeovers (Dong et al., 2020). There is no evidence that PE firms are better able to time the market than non-backed firms when it comes to IPOs or that they use IPOs to offload underperforming portfolio companies (Michala, 2019). When it comes to VC-backed firms, Gill and Walz (2016) find that VC-backed firms are more likely to delist following a takeover than non-VC-backed firms, giving the VC firm an exit opportunity. IPOs are therefore not necessarily the primary exit strategy of VC firms either, but rather an intermediary step before VC firms' ultimate exit. This exit mode seems to be particularly relevant for corporate venture capital firms (Useche & Pomet, 2021). However, it should be noted that during times of high expected exit illiquidity, in which VCs may not easily exit their investment through an IPO, they postpone exit requirements by focusing their investments on early stage companies (Cumming et al., 2005).

(Signori & Vismara, 2017). Additionally, newly public firms alter the scope of their acquisitions, shifting from targeting subsidiaries towards the acquisition of entire firms (Hovakimian & Hutton, 2010).

Even though the rise in acquisition activity of newly public firms is empirically documented, the drivers have not yet been fully identified. Given that financial sponsors are more prevalent today, having backed more than 50% of US IPOs over the past two decades (Ritter, 2022), while simultaneously moving towards greater operational orientation and growth-focused strategies (Lerner et al., 2011), they may also be one driver behind post-IPO M&A activity more generally. PE and VC firms may induce corporate myopia but could also be directing a company's growth strategy.<sup>6</sup> It is therefore crucial for entrepreneurs and investors to obtain a better understanding of the role financial sponsor backing plays in determining the acquisition activity of newly public firms. Yet, the literature so far is relatively silent on the importance of financial sponsors as a driver in either promoting or diminishing the acquisition activity of newly public firms. Moreover, sponsor backing is always interpreted as VC backing with PE-backed firms only marginally considered, if at all (Anderson et al., 2017; Arikan & Capron, 2010; Brau & Fawcett, 2006; Celikyurt et al., 2010; Ragozzino et al., 2018; Wiggenhorn et al., 2007).

The results of the prior literature diverge when it comes to the influence of financial sponsor backing on the M&A activity of newly public firms, mainly focusing on the effects of VC backing. VC backing could increase post-IPO acquisition activity (Anderson et al., 2017), play no significant role (Celikyurt et al., 2010; Hovakimian & Hutton, 2010) or even diminish it (Ragozzino et al., 2018). Although these differences in the empirical results for VC-backed newly public firms are potentially driven by varying sample and control specifications, their exact sources remain unclear as there is considerable ambiguity surrounding the definition of VC backing.<sup>7</sup> While an exact definition may not be particularly relevant for studies whose focus does not demand going beyond controlling for VC backing, it is important for understanding the implications of VC backing, and sponsor backing more generally, on firms' post-IPO acquisition activity.

Given the distinct business models and strategies of PE and VC firms, it stands to reason that their impact on a newly public company's acquisition activity will also differ. Prior studies documented the importance of acquisitions for firms with limited organic growth opportunities, while firms with ample organic growth opportunities are less likely to pursue inorganic growth (see e.g., Greve, 2008). Given PE firms' business model and their backing of more mature companies, they are likely to rely on inorganic growth through (strategic) acquisitions. This, combined with markets' tendency to reward growth stories, may lead PE sponsors to steer their newly public portfolio firms to engage in acquisitions at a higher frequency. In contrast,

<sup>6</sup>The issue of myopia may be especially relevant where the dominating shareholders represent 'impatient' capital with limited investment horizons, which is an inherent part of PE and VC firms' investment philosophy and particularly true in the period of post-IPO transitional ownership where the primary objective is a (profitable) exit. This may lead to companies underinvesting relative to a value maximising strategy (Brossard et al., 2013; Bushee, 1998; Wahal & McConnell, 2000). However, PE and VC firms may specifically pursue growth opportunities as markets tend to reward growth stories. This later point seems to be prevalent, as previous studies were not able to show that financial sponsors are a source of corporate myopia; the contrary actually appears to be the case (Lerner et al., 2011; Lichtenberg & Siegel, 1990).

<sup>7</sup>The studies by Anderson et al. (2017), Celikyurt et al. (2010), Hovakimian and Hutton (2010) as well as Ragozzino et al. (2018) remain silent on whether they employ a threshold for VC ownership that has to be met before a company is considered VC-backed and may also implicitly include PE-backed IPOs in the control group of non-backed offerings.

VC-backed firms may have more internal growth opportunities and therefore no critical need for acquisitions to achieve growth. We therefore hypothesise:

**H1.** PE backing of newly public firms will lead to higher acquisition activity by these firms compared to VC-backed or non-backed newly public firms.

Given our assumption that VC-backed newly public firms are likely to have more organic growth options than PE-backed or non-backed newly public firms,<sup>8</sup> they may be more likely to use their IPO proceeds to realize these options. VC-backed companies also appear to have a competition- and creation-oriented culture (Cumming et al., 2023) that may lend itself to more innovation. A negative interest rate environment leads to VCs increasing their funding activity (Bellavitis et al., 2023). This, in turn, may allow them to either provide more financing to a single portfolio firm or allow them to back a larger number of companies. This may be beneficial as VC investors, particularly independent VC investors, remove financial constraints for firms so that their investment activity is not as dependent on their cash flows (Bertoni et al., 2010). Moreover, capital markets reward organic growth investments, for example signalled through increases in R&D spending, provided the respective firm is believed to have viable organic growth options (Chan et al., 1990; Zantout & Tsetsekos, 1994). Additionally, Celikyurt et al. (2010) show that VC backing is positively associated with R&D and CAPEX spending in the years following an IPO, suggesting a higher reliance on organic growth options for VC-backed firms. We therefore hypothesise:

**H2.** VC backing of newly public firms will lead to an emphasis on organic growth options by these firms compared to PE-backed or non-backed newly public firms.

When it comes to acquisitions, newly public firms also appear to pivot towards acquiring larger targets (Hovakimian & Hutton, 2010). Particularly PE-backed firms may engage in different types of acquisitions than their VC-backed or non-backed peers. On the one hand, this may be due to the different investment strategies of PE and VC sponsors, but, on the other hand, may also be driven by a PE firm's past experience. The primary advantages are access to the PE firm's M&A process expertise and support regarding target selection, valuation, due diligence, purchase price negotiations, and post-merger integration. In addition, our data suggests that PE-backed IPO firms engage in more acquisitions before going public (average of 0.8 acquisitions during the 3 years before the IPO) than their VC-backed (0.5 acquisitions) or non-backed peers (0.4 acquisitions) and may therefore leverage the expertise from these prior deals. This broader set of experience in M&A may not only manifest itself in the quantity of transactions but may also lead to more transformative transactions. Therefore, PE-backed firms may be more willing to pursue growth through transformative deals, such as larger M&As or cross-industry and cross-border deals, where the newly public company may serve as platform for (strategic) add-on acquisitions.<sup>9</sup> In contrast, VC-backed and non-backed newly public firms are likely to avoid such transformative deals. We therefore hypothesise:

<sup>8</sup>See also Caselli et al. (2009) who find that VCs in Italy tend to back more innovative firms.

<sup>9</sup>There is anecdotal evidence that firms may actively be looking for PE-investments if they wish to engage in a buy-and-build strategy. For example, the German construction company WWB Tiefbau stated in a press release: "Our "buy-and-build" strategy requires a lot of capital and manpower/expertise. We, therefore, want to embark on this journey with a



**H3.** PE backing of newly public firms will lead to these firms engaging in more transformative acquisitions compared to VC-backed or non-backed newly public firms.

Besides affecting the post-IPO acquisition activity of newly public firms, the different strategic approaches to realize a portfolio firm's growth options by PE and VC sponsors are also likely to shape their portfolio firm's share price performance. In this context, one needs to differentiate between the long-run post-IPO stock performance and the short-term wealth effects surrounding post-IPO M&A announcements of the newly public firm based on initial sponsor backing. With respect to the long-run stock market performance following IPOs, Brau et al. (2012) find significant underperformance in subsequent years for firms that engage in an acquisition within the first year after their IPO, while companies that refrain from acquiring show slightly positive returns. Looking at the influence of financial sponsor backing on the post-IPO stock market performance, Levis (2011) reports that PE-backed firms perform better than non-backed firms. For VC-backed firms, the picture is less clear and any long-run outperformance appears to be contingent on the methodology employed. Brau et al. (2012) find evidence that VC backing at the time of a firm's IPO has a positive impact on the long-run stock performance, but only when benchmarking the returns against the market adjusted model. This confirms the results of Brav and Gompers (1997), who show that VC-backed IPO firms outperform non-VC-backed ones when using equal weighted returns as a benchmark, but not when using value weighted returns.

Given our previous assumption that PE or VC backing will guide their newly public portfolio companies towards different growth strategies, combining the two strands of the literature on post-IPO acquisition activity and initial sponsor backing on firms' share price performance may result in a more nuanced picture with respect to long-run post IPO stock performance. Given that PEs may steer their newly public portfolio firms to pursue growth through M&As, particularly those firms that successfully engage in acquisitions should benefit. VC-backed newly public firms, on the other hand, are more likely to rely on internal growth and hence engaging in post-IPO acquisitions may not be perceived as a value-enhancing activity by investors. This should lead to stark post-IPO stock return differentials between acquiring PE-backed and VC-backed newly public firms and we hypothesise:

**H4a.** PE-backed newly public acquirers show higher long-run stock returns than VC-backed newly public acquirers.

With respect to the short-term value creation of acquisitions by newly public firms, several studies find at least some evidence of positive short-term wealth effects (e.g., Anderson et al., 2017; Arian & Capron, 2010; Wiggenhorn et al., 2007), a finding that stands in contrast to the traditionally negative announcement returns observed for public acquirers (e.g., Moeller et al., 2004; Mulherin & Boone, 2000). We anticipate that PE-backed newly public firms will obtain higher M&A announcement returns than VC-backed ones. This is based on the assumption that PE-backed firms can benefit from their financial sponsor's expertise in running an efficient M&A process and successful post-merger integration, resulting in more beneficial capital market valuations. There is also limited evidence that VC backing has a negative impact

on the acquisition performance of newly public firms (Wiggenhorn et al., 2007), which may be due to shareholders expecting VC-backed newly public firms to focus on organic rather than inorganic growth. We therefore hypothesise:

**H4b.** PE-backed acquirers experience higher short-term stock returns surrounding post-IPO M&A announcements than VC-backed acquirers.

## 3 | DATA

### 3.1 | Sample construction

We create our sample by combining IPO firms that went public on US stock exchanges between 2001 and 2017 and their associated M&A transactions within a 3-year period after the date of going public. For IPO-related data, we use Refinitiv's Securities Data Company Platinum (SDC) as a basis. We filter for IPO firms that went public on the NASDAQ, NYSE and NYSE American between January 2001 and December 2017 and exclude both depositary issues and closed-end funds. This approach yields 2,207 observations. In line with standard research practice (e.g., Liu & Ritter, 2011; Loughran & Ritter, 2004), we limit the sample to IPO companies using a firm commitment regime and to offerings of common shares, which reduces the sample size to 1953. Next, we exclude simultaneous offerings (i.e., parallel offerings on multiple exchanges) for which the US is not the target market as well as IPO firms from the financial sector (e.g., banks, insurance companies, asset managers, REITS, SPACs, etc.) which leaves us with 1763 remaining observations.<sup>10</sup> We further exclude 85 companies that were insufficiently covered, for example, newly public firms for which no prospectus could be found in the US Securities and Exchange Commission's (SEC) Electronic Data Gathering, Analysis, and Retrieval (EDGAR) database and 205 firms that did not survive the first 3 years after their IPO. Lastly, we set an ownership threshold of 25% that the financial sponsors need to meet in aggregate to classify an IPO as financial sponsor backed. IPOs with no sponsor stake are classified as non-backed while IPOs with cumulative sponsor stakes above 0% and below our threshold of 25% are dropped from the sample (132 observations), leaving us with a final sample of 1341 IPOs. As SDC only provides limited data on the identity and the size of stakes held by financial sponsors at the time of the IPO, we hand-collect the corresponding ownership data for all financial sponsor-backed IPOs using the prospectuses available in the SEC's EDGAR database. Specifically, we collect the identity and pre- and post-IPO shareholdings of all reported institutional shareholders. For those financial sponsor-backed IPOs that exceed our threshold, we use the flag provided by SDC to differentiate between PE- and VC-backed IPOs. Following this procedure, 917 IPO firms are categorised as sponsor-backed (386 PE-backed and 531 VC-backed) while the remaining 424 IPO firms are categorised as non-backed.

For M&A transaction-related data, we again use SDC as a starting point to collect the acquisitions associated with the IPO companies in our sample. This time, we filter for M&A transactions completed between 2001 and 2020 so that we cover the 3-year post-IPO period for all firms in our sample that went public between 2001 and 2017 and their associated

<sup>10</sup>Some studies also exclude IPOs with an offer price lower than USD 5. In our sample, 30 IPOs fall below that threshold. When excluding these, our results remain unchanged.

transactions.<sup>11</sup> We include all transactions above a materiality threshold of USD 10 million.<sup>12</sup> Employing these filters results in an initial M&A sample size of 8917 transactions. We exclude M&A transactions that could not be mapped unambiguously to one IPO firm in our sample, which leaves us with 7348 remaining observations. We then map these acquisitions to the IPO firms in our sample and compare the date of the acquisition to the date of going public. Out of the 7348 transactions, 1845 deals took place within the first 3 years after the associated IPO, while another 3793 deals were conducted more than 3 years following the IPO and are hence not relevant for our analysis. An additional 1710 transactions were undertaken before the IPO, 723 of which fall within 3 years before the IPO. The 1845 deals conducted within the first 3 years following the IPO will serve as our main research sample, while the transactions conducted pre-IPO will be of interest as a control variable for prior M&A experience in our regression models. Further, we use Center for Research in Security Prices (CRSP) for retrieving daily stock price data for all sample firms. Finally, we supplement the variables provided by SDC with financial data for the acquirer (e.g., revenue, EBIT, total assets, etc.) from the Compustat database (see the Appendix for more details on all relevant variables).

### 3.2 | Descriptive statistics

Our sample comprises a total of 1341 IPO firms and 1845 associated M&A transactions within 3 years after the IPO. Table 1 provides a breakdown of these IPO companies and the respective M&A transactions according to their IPO year and their backing classification (either PE-backed, VC-backed or nonbacked) using the 25% threshold. Across all years, 386 IPO firms (29%) are PE-backed, 531 (40%) are VC-backed and 424 (31%) are non-backed. For the corresponding M&A transactions within the first 3 years following the IPO, 881 deals (48%) are PE-backed, 441 (24%) are VC-backed and 523 (28%) are non-backed. PE-backed firms conduct the most M&As within the first 3 years after going public with an average of 2.3 transactions, while VC-backed companies are the least active in the M&A market with an average of only 0.8 deals, making PE-backed IPO firms almost three times as acquisitive as their VC-backed counterparts. Non-backed firms range between the two sponsor groups with an average of 1.2 deals per company. The data also reveals that PE-backed IPO firms are generally the most likely to acquire during the first 3 years of being public, with 61% of PE-backed firms engaging in at least one acquisition, compared to 39% for VC-backed firms and 44% for nonbacked firms.

Table 2 provides additional details on the differences in ownership structure between PE-backed and VC-backed newly public firms and thereby highlights the differences in investment styles between the two types of financial sponsors. While VC investors usually invest smaller stakes in multiple funding rounds, PE investors tend to buy entire companies and have a lower propensity to co-invest with other PE investors. Consequently, PE sponsors tend to hold significantly larger stakes in their IPO firms than VC sponsors, both cumulatively (77.9%

<sup>11</sup>We additionally collect data on M&A transactions conducted by our sample IPO firms in the years 1998–2000 to construct a variable measuring the 3-year pre-IPO M&A experience for all firms in our sample.

<sup>12</sup>We complement the SDC data by manually researching all acquisitions with unreported deal values in the database and hand-collect 293 additional deal values, 154 of which are below USD 10 m and thus dropped from our sample. Otherwise, in line with prior literature (e.g., Celikyurt et al., 2010) we also keep all transactions with no reported deal value. Results reported in Sections 4 and 5 are qualitatively unchanged when restricting the sample to acquisitions with reported deal values only.

TABLE 1 Sample initial public offerings (IPOs) and associated M&amp;A transactions by year and sponsor backing.

This table reports an overview of the 1341 sample IPOs that listed on a US stock exchanges between 1 January 2001 and 31 December 2017 by year. The IPOs are classified as either private equity (PE)-backed, venture capital (VC)-backed, or not backed. In order for an IPO firm to be considered either PE-backed or VC-backed, the pre-IPO cumulative ownership held by the respective sponsor group must exceed 25% of total share capital. The number of acquisitions an IPO firm of a given year undertook during its first three post-IPO years (#acq. in 3 y post-IPO) is also shown along with the average number of acquisitions per IPO firm (av. #acq. per IPO firm) and the percentage of IPO firms of a given year cohort that undertook at least one M&A deal (% IPO firms with >0 acq.).

IPO year	PE-backed IPO firms				VC-backed IPO firms				Non-backed IPO firms				All			
	#IPOs	av. #acq. in 3 y post-IPO	% IPO firms with >0 acq.	av. #acq. per IPO firm	#IPOs	av. #acq. in 3 y post-IPO	% IPO firms with >0 acq.	av. #acq. per IPO firm	#IPOs	av. #acq. in 3 y post-IPO	% IPO firms with >0 acq.	av. #acq. per IPO firm	#IPOs	av. #acq. in 3 y post-IPO	% IPO firms with >0 acq.	
2001	13	30	2.3	62%	14	21	1.5	50%	27	63	2.3	52%	54	114	2.1	54%
2002	12	18	1.5	58%	11	10	0.9	36%	21	16	0.8	33%	44	44	1.0	41%
2003	11	20	1.8	64%	14	20	1.4	50%	14	49	3.5	64%	39	89	2.3	59%
2004	30	84	2.8	77%	49	32	0.7	43%	37	55	1.5	59%	116	171	1.5	57%
2005	42	119	2.8	76%	21	16	0.8	43%	45	56	1.2	47%	108	191	1.8	57%
2006	37	63	1.7	49%	32	19	0.6	38%	35	40	1.1	49%	104	122	1.2	45%
2007	28	33	1.2	57%	47	29	0.6	36%	35	67	1.9	37%	110	129	1.2	42%
2008	3	1	0.3	33%	2	4	2.0	50%	11	10	0.9	45%	16	15	0.9	44%
2009	13	12	0.9	15%	8	8	1.0	38%	11	6	0.5	36%	32	26	0.8	28%
2010	20	42	2.1	60%	34	41	1.2	41%	20	10	0.5	25%	74	93	1.3	42%
2011	17	36	2.1	59%	32	39	1.2	53%	14	14	1.0	36%	63	89	1.4	51%
2012	27	78	2.9	67%	29	34	1.2	59%	13	11	0.8	54%	69	123	1.8	61%
2013	37	72	1.9	68%	52	53	1.0	40%	25	43	1.7	60%	114	168	1.5	54%
2014	46	112	2.4	59%	76	27	0.4	24%	27	25	0.9	44%	149	164	1.1	38%
2015	22	56	2.5	64%	50	33	0.7	34%	22	8	0.4	32%	94	97	1.0	40%

(Continues)

TABLE 1 (Continued)

IPO year	PE-backed IPO firms				VC-backed IPO firms				Non-backed IPO firms				All			
	#IPOs	#acquis. in 3 y post-IPO	avg. #acquis. per IPO firm	% IPO firms with >0 acquis.	#IPOs	#acquis. in 3 y post-IPO	avg. #acquis. per IPO firm	% IPO firms with >0 acquis.	#IPOs	#acquis. in 3 y post-IPO	avg. #acquis. per IPO firm	% IPO firms with >0 acquis.	#IPOs	#acquis. in 3 y post-IPO	avg. #acquis. per IPO firm	% IPO firms with >0 acquis.
2016	11	58	5.3	64%	29	37	1.3	31%	28	13	0.5	25%	68	108	1.6	34%
2017	17	47	2.8	59%	31	18	0.6	35%	39	37	0.9	38%	87	102	1.2	41%
<b>Total</b>	<b>386</b>	<b>881</b>	<b>2.3</b>	<b>61%</b>	<b>531</b>	<b>441</b>	<b>0.8</b>	<b>39%</b>	<b>424</b>	<b>523</b>	<b>1.2</b>	<b>44%</b>	<b>1341</b>	<b>1845</b>	<b>1.4</b>	<b>47%</b>

**TABLE 2** Ownership characteristics by sponsor backing.

This table reports the descriptive statistics relating to pre-IPO sponsor ownership, divided by private equity (PE)-backed and venture capital (VC)-backed IPO firm. The average and median cumulative share held by all sponsors and the average and median cumulative share held by the leading sponsor are shown, along with the average and median number of different sponsors. Sponsor HHI represents the Herfindahl-Hirschman Index of stakes held by all sponsors. Differences between PE-backed and VC-backed firms are tested for significance using the parametric two-sample *t*-test and the nonparametric Wilcoxon rank-sum test. \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% level of significance, respectively.

	PE-backed IPO firms (1)	VC-backed IPO firms (2)	(1)–(2)
Average cumulative share held by sponsors (in %)	77.9	53.4	24.5***
Median cumulative share held by sponsors (in %)	83.7	52.2	31.5***
Average share held by leading sponsor (in %)	65.7	26.4	39.2***
Median share held by leading sponsor (in %)	67.9	22.7	45.2***
Average number of different sponsors	1.7	3.4	–1.7***
Median number of different sponsors	1.0	3.0	–2.0***
Average sponsor HHI	0.8	0.4	0.4***
Median sponsor HHI	1.0	0.4	0.6***

average cumulative share for PE firms compared to 53.4% for VC firms) as well as related to the leading sponsor's share (65.7% average leading sponsor share for PE-backed firms compared to 26.4% for VC-backed ones). Correspondingly, VC-owned IPO firms are backed by more sponsors than PE-owned IPO firms with the average VC-owned IPO company being backed by 3.4 sponsors compared to 1.7 sponsors for PE-owned IPO companies. These differences between PE-backed and VC-backed firms are significant at the 1% level of significance for both average and median. The higher level of shareholder dispersion in VC-backed IPO firms is also evident in the Herfindahl-Hirschman-Index (HHI) of stakes held pre-IPO, with PE-backed firms having an average sponsor HHI of 0.8, while VC-backed firms only have a sponsor HHI of 0.4. The difference between PE and VC backing is again significant at the 1% level of significance.

Table 3 compares the different backing groups of newly public firms in our sample with respect to firm characteristics (Panel A) and IPO characteristics (Panel B). Differences between the ownership groups are significant across most characteristics, highlighting that the average IPO firm's characteristics differ depending on whether it is backed by PE investors, VC investors or not backed. With respect to firm characteristics, newly public firms backed by PE investors tend to be the oldest and have the highest revenues, return on assets, and book leverage, while they have the lowest market-to-book ratios, financial slack and growth investment level. VC-backed firms are on the opposite end of the distribution. They tend to be the youngest and have the lowest revenues, return on assets, and book leverage while they rank highest with respect to market-to-book ratios, financial slack, and growth investment level. All differences in firm characteristics between PE-backed and VC-backed companies are again highly significant for both average and median, highlighting the importance of differentiating

TABLE 3 Sample initial public offerings (IPO) firm characteristics.

This table reports the sample IPO firms' characteristics at the time of the IPO, divided by backing group and firm characteristics (Panel A) and IPO characteristics (Panel B). The variables are defined in the Appendix. The sample average is presented with the median below in parentheses. Differences between backing groups are tested for significance using the parametric two-sample *t*-test (averages) and the nonparametric Wilcoxon rank-sum test (medians). \*, \*\*, and \*\*\* indicate significance at the 10%, 5% and 1% level of significance, respectively.

	PE-backed IPO firms (1)	VC-backed IPO firms (2)	Non-backed IPO firms (3)	(1)–(3)	(2)–(3)	(1)–(2)
<i>Panel A: Firm characteristics</i>						
Firm revenue	1475.21 (537.06)	108.64 (45.56)	1132.36 (91.78)	342.85 (445.28)***	−1023.72*** (−46.22)***	1366.57*** (491.50)***
Return on Assets	0.00 (0.02)	−0.20 (−0.18)	−0.12 (0.02)	0.12*** (0.00)	−0.08*** (−0.20)***	0.20*** (−0.16)***
Book leverage	0.39 (0.39)	0.07 (0.01)	0.20 (0.11)	0.19*** (0.28)***	−0.13*** (−0.10)***	0.32*** (0.38)***
Market-to-book ratio	2.34 (1.78)	3.90 (3.20)	3.19 (2.07)	−0.85** (−0.29)***	0.71** (1.13)***	−1.56*** (−1.42)***
Financial slack	0.12 (0.06)	0.70 (0.74)	0.34 (0.23)	−0.22*** (−0.17)***	0.36*** (0.51)***	−0.58*** (−0.68)***
Growth investment level	0.12 (0.08)	0.22 (0.19)	0.18 (0.11)	−0.06*** (−0.03)***	0.04*** (0.08)***	−0.10*** (−0.11)***
Firm age at IPO	35.21 (25.50)	9.47 (8.00)	20.97 (12.00)	14.24*** (13.50)***	−11.50*** (−4.00)***	25.74*** (17.50)***

TABLE 3 (Continued)

	PE-backed IPO firms (1)	VC-backed IPO firms (2)	Non-backed IPO firms (3)	(1)–(3)	(2)–(3)	(1)–(2)
<i>Panel B: IPO characteristics</i>						
Primary proceeds	231.77 (142.80)	90.88 (71.41)	329.15 (65.17)	-97.38 (77.63)***	-238.27** (6.24)	140.89*** (71.39)***
M&A is IPO motive (%)	0.20	0.47	0.34	-0.14***	0.13***	-0.27***
Underwriter reputation	11.59 (12.02)	8.61 (9.72)	6.53 (4.20)	5.06*** (7.82)***	2.08*** (5.52)***	2.98*** (2.30)***
Top 10 IPO law firm	0.28 (0.00)	0.18 (0.00)	0.16 (0.00)	0.12*** (0.00)***	0.01 (0.00)	0.11*** (0.00)***
Underpricing	12.11 (5.87)	18.60 (11.23)	11.47 (4.36)	0.64 (1.51)	7.13*** (6.87)***	-6.49*** (-5.36)***
Offer price revision	-5.52 (-4.55)	-6.58 (0.00)	-4.51 (0.00)	-1.01 (-4.55)	-2.07 (0.00)	1.06 (-4.55)
First 30-days post-IPO return	2.72 (2.94)	3.24 (0.60)	5.50 (-0.06)	-2.78 (3.00)***	-2.26 (0.66)	-0.52 (-2.34)**
Dual class share structure (%)	0.11	0.05	0.20	-0.09***	-0.15***	0.06***
Interest rate environment	1.58 (0.38)	1.33 (0.13)	1.91 (1.00)	-0.33** (-0.62)***	-0.59*** (-0.87)***	0.26** (0.25)**

(Continues)



TABLE 3 (Continued)

	PE-backed IPO firms (1)	VC-backed IPO firms (2)	Non-backed IPO firms (3)	(1)–(3)	(2)–(3)	(1)–(2)
IPO market liquidity	134.05 (157.00)	134.31 (157.00)	123.75 (118.00)	10.30*** (39.00)***	10.55*** (39.00)***	–0.26 (0.00)
Industry acquisition intensity	1.03 (1.00)	1.07 (1.06)	1.04 (1.00)	–0.01 (0.00)**	0.03*** (0.06)***	–0.04*** (–0.06)***

between PE- and VC-backed IPO firms when discussing the role of financial sponsors in newly public firms. Across all firm characteristics, non-backed firms tend to rank between PE- and VC-backed firms. With respect to IPO characteristics, PE-backed firms are the least likely to mention M&As as an IPO motive in their prospectus, which is surprising given that PE-backed firms conduct the most post-IPO M&As in our sample.<sup>13</sup> They also employ more prestigious underwriters and law firms than both VC-backed and non-backed firms. VC-backed firms raise the lowest primary proceeds across all ownership groups and are most likely to mention M&A in their IPO prospectus, despite their low post-IPO M&A frequency. VC-backed firms experience significantly higher underpricing than their PE-backed and non-backed peers and tend to go public during times of relatively low interest rates when valuations are presumably higher. Finally, both PE- and VC-backed firms tend to go public during times of relatively high IPO market liquidity compared to nonbacked firms.

## 4 | EMPIRICAL RESULTS

### 4.1 | Sponsor backing and acquisition frequency

To investigate how financial sponsor backing impacts newly public firms' post-IPO acquisition frequency, we first conduct univariate tests on the differences in acquisition behaviour between PE-backed, VC-backed, and non-backed IPO firms. Table 4 shows the results of the difference tests. Panel A summarises the acquisition frequency before and after the IPO across ownership groups. Our data reveals that PE-backed firms undertake most acquisitions, both before and after the IPO, with on average 0.80 and 2.28 acquisitions, respectively, while VC-backed firms conduct, on average, 0.47 acquisitions in the 3 years before the IPO and 0.83 acquisitions in the 3 years following the IPO. The differences between PE-backed firms vis-à-vis VC-backed and non-backed firms are statistically significant at the 1% level for both the pre- and the post-IPO period, supporting hypothesis **H1**. While VC-backed and non-backed firms *pre-IPO* acquisition activity appears similar, we find some evidence that VC-backed firms conduct fewer acquisitions than even their non-backed peers *post-IPO*. We also compare the degree to which the IPO accelerates acquisition frequency across ownership groups. Consistent with Celikyurt et al. (2010), we find that the acquisition frequency increases materially after going public. However, the acceleration deviates among ownership groups: it is most pronounced for PE-backed firms, who, on average, conduct 1.48 more acquisitions in the 3 years following their IPO than in the 3 years before the IPO, while these differences stand at 0.36 and 0.85 for VC- and non-backed newly public firms, respectively. The differences in M&A acceleration are significant between all groups. It is worth highlighting that the acceleration in acquisition behaviour is markedly lower in case of VC-backed IPO firms than for their PE- or non-backed peers, indicating that acquisitions may, after all, not be the primary motivation for VCs to take a portfolio company public.

Table 4, Panel B additionally provides tests for selected deal characteristics. It becomes evident that the three ownership groups not only differ in their acquisition frequency but also

<sup>13</sup>We concede that that this is a self-reported variable by the IPO firm. However, in our view it is nonetheless an appropriate control variable to better understand the firm's (original) drivers for going public. Moreover, investors may also rely on the IPO prospectus when making investment decisions.

TABLE 4 Acquisition frequency and characteristics by sponsor backing.

This table reports the sample IPO firms' acquisition frequency (Panel A) and acquisition characteristics (Panel B) divided by backing group. # *post-IPO acquisitions* (3 years) and # *pre-IPO acquisitions* (3 years) are the number of acquisitions conducted during the 3 years before and after the IPO, respectively. *Deal value (\$mm)* is the deal value of acquisitions in million US dollars, % of *shares acquired* is the stake acquired through the transaction (i.e., irrespective of stakes held before the acquisition), % *paid in stock* is the share of the deal value that was paid in stock. *Deal value over acquirer sales* is the deal value in million US dollar divided by the acquirer's sales in million US dollar at the time of the IPO, % *cross-border* is the share of acquisitions that involve an acquirer and a target from different countries and % *cross-industry* is the share of acquisitions where acquirer and target come from different Fama-French 49 industry portfolios. The sample average is presented with the median below in parentheses. Differences between backing groups are tested for significance using the parametric two-sample *t*-test (averages) and the nonparametric Wilcoxon rank-sum test (medians). \*, \*\* and \*\*\* indicate significance at the 10%, 5% and 1% level of significance, respectively.

	PE-backed IPO firms (1)	VC-backed IPO firms (2)	Non-backed IPO firms (3)	(1)–(3)	(2)–(3)	(1)–(2)
<i>Panel A: Acquisition frequency</i>						
# post-IPO acquisitions (3 years)	2.28 (1.00)	0.83 (0.00)	1.23 (0.00)	1.05*** (1.00)***	−0.40*** (0.00)	1.45*** (1.00)***
# pre-IPO acquisitions (3 years)	0.80 (0.00)	0.47 (0.00)	0.38 (0.00)	0.42*** (0.00)***	0.09 (0.00)	0.33*** (0.00)***
# post-IPO/# pre-IPO acquisitions	1.48 (1.00)	0.36 (0.00)	0.85 (0.00)	0.63*** (1.00)***	−0.49*** (0.00)**	1.12*** (1.00)**
<i>Panel B: Acquisition characteristics</i>						
<i>Deal value (\$mm)</i>	436.07 (77.78)	105.58 (36.42)	257.16 (49.04)	178.91 (28.74)**	−151.58** (−12.62)**	330.49* (41.36)***
% of shares acquired	99.36 (100.00)	99.33 (100.00)	97.94 (100.00)	1.42** (0.00)	1.39** (0.00)	0.03 (0.00)
% paid in stock	8.5 (0.0)	30.9 (10.7)	20.8 (0.0)	−12.30*** (0.00)***	10.10** (10.70)**	−22.40*** (−10.70)***

TABLE 4 (Continued)

	PE-backed IPO firms (1)	VC-backed IPO firms (2)	Non-backed IPO firms (3)	(1)–(3)	(2)–(3)	(1)–(2)
Deal value over acquirer sales	0.55 (0.14)	7.95 (0.37)	9.69 (0.22)	–9.14 (–0.08)	–1.74 (0.15)**	–7.40* (–0.23)***
% cross-border	26.1 (0.0)	23.1 (0.0)	26.6 (0.0)	–0.50 (0.00)	–3.50 (0.00)	3.00 (0.00)
% cross-industry	40.2 (33.3)	41.3 (33.3)	45.1 (33.3)	–4.90 (0.00)	–3.80 (0.00)	–1.10 (0.00)

in the nature of the acquisitions they engage in. PE-backed firms are significantly less likely to pay with stock than their VC-backed and non-backed peers while VC-backed firms conduct significantly smaller acquisitions than PE-backed and non-backed firms. Both PE-backed and VC-backed newly public firms have a tendency to acquire higher stakes in their target than their non-backed peers, albeit the difference is economically small. Finally, we find no significant difference in the likelihood to conduct cross-border or cross-industry acquisitions between PE-backed, VC-backed, and non-backed IPO firms.

To test whether these findings also hold in a multivariate regression setting, we conduct several regressions on the number of acquisitions conducted post-IPO. The regression takes the form:

$$\begin{aligned} \text{Acquisition frequency}_i = & \alpha + \beta_1 \text{PEBacked}_i + \beta_2 \text{VCBacked}_i + \sum_j \gamma_j W_{i,j} + \sum_k \delta_k X_{i,k} \\ & + \sum_l \tau_l Y_{i,l} + \sum_m \varphi_m Z_{i,m} + \varepsilon_i, \end{aligned} \quad (1)$$

where *Acquisition frequency* is the dependent variable and defined as IPO firm *i*'s total number of post-IPO acquisitions during the first [model (1)], the first two [model (2)], and the first three [model (3)] years following the IPO.<sup>14</sup> The independent variables are divided into four groups: (i) sponsor backing, including additional sponsor controls, (ii) company characteristics, (iii) IPO characteristics (iv) and M&A characteristics. The sponsor backing binary variables are our variables of interest and consist of *PEBacked* and *VCBacked*, both defined as one if the IPO firm, is at the time of the IPO, either 25% or more PE or VC owned, respectively, and zero otherwise. Additionally, the sponsor controls  $W_{i,j}$  contain three variables to control for the reputation of the financial sponsor using (i) a reputational measure developed by Nahata (2008), (ii) whether the PE or VC fund experienced any style drift (Cumming et al., 2009) or (iii) whether or not the firm was backed by a PE-syndicate rather than one PE fund,<sup>15,16</sup>  $X_{i,k}$ ,  $Y_{i,l}$  and  $Z_{i,m}$  are vectors of variables related to company, IPO, and M&A characteristics, and  $\varepsilon_i$  is the error term. The vector of company characteristics includes variables such as firm *i*'s revenue, return on assets, or book leverage, the vector of IPO characteristics contains, amongst others, variables relating to the interest rate environment at the time of the IPO, primary proceeds raised in the IPO, the law firm used in the IPO, and the underwriter's reputation, while the vector of M&A characteristics consists of variables relating to firm *i*'s pre-IPO acquisition activity and a firm's industry M&A intensity. The Appendix provides detailed variable definitions.

<sup>14</sup>Due to the nature of our dependent variable (being a count of events), we also conduct a Poisson regression as a robustness check. The results are presented in Supporting Information S1: Table OA-1 and confirm the ones presented in this section. Additionally, to analyse potential nonlinear relationships between sponsor backing and the number of post-IPO acquisitions, we re-estimate our models using ordered logit regressions. The results are reported in Supporting Information S1: Online Appendix Table OA-2 and remain robust.

<sup>15</sup>We also considered to control for VC syndication. However, as the vast majority of VC-backed firms in our sample are backed by a syndicate, the constructed variable has a very high correlation with *VCbacked* (correlation coefficient of 0.94), which resulted in subsequent multicollinearity concerns in our regression. We therefore only included a binary variable indicating PE syndication, where similar correlation concerns did not arise.

<sup>16</sup>We also test whether the results differ depending on the actual percentage ownership of the leading PE or VC investor in regression models (4) through (6). Moreover, we also vary the ownership threshold for financial sponsors. While we find that the statistical strength of the relations slightly decreases when lowering the threshold, they remain significant.

The regression results in Table 5 show that PE-backed IPO firms conduct significantly more acquisitions post-IPO than their nonbacked peers for all time horizons, providing further support for hypothesis **H1**. The further we extend the time horizon from model (1) to (3), the more significant and economically large the effect of PE backing becomes. In results reported in Supporting Information S1: Online Appendix Table OA-3, we also find that PE backing significantly reduces the time a newly public firm takes to conduct its first acquisition following the IPO. With respect to the role of VC backing, the coefficient of *VCBacked* is negative but statistically insignificant, indicating that the significant difference found in Table 4 may at least be partially explained through other variables.

The significant and positive effect observed for PE-backed firms may be a consequence of the PE firms' active involvement in their portfolio firms, supporting the portfolio firm's acquisitions with their resources and network even after it went public. VC backing, in contrast, has no significant impact. The influence of VC backing on post-IPO acquisitions has only been marginally addressed in the literature, mostly as a control variable in analyses primarily focusing on other research questions. Our findings with respect to VC backing are consistent with Hovakimian and Hutton (2010), but stand in contrast to Anderson et al. (2017), who find weak evidence for VC backing being associated with a higher likelihood of becoming an acquirer during the first 3 years after going public, albeit they also find VC backing to be insignificant for the 1- and 2-year time horizons. The difference may be a consequence of different types of analyses.<sup>17</sup> Celikyurt et al. (2010) also include a VC dummy in their analysis on post-IPO acquisition volume and find evidence for a positive relationship between VC backing and stock-financed acquisitions as well as a negative relationship between VC backing and cash-financed acquisitions. In unreported results, and in line with Celikyurt et al. (2010), we find that the coefficient for *VCBacked* is positive and statistically significant when restricting the sample to stock-financed acquisitions. However, we do not find a statistically significant negative coefficient associated with *VCBacked* when restricting the sample to cash-financed acquisitions.

To gain additional insights into sponsors' role in driving post-IPO acquisition behaviour, we rerun the same regression using the percentage stake of the lead investor (either PE or VC) as the variables of interest instead of dummy variables. If there is indeed a causal relationship between financial sponsor backing and post-IPO acquisition behaviour, we would expect that this relationship becomes more accentuated with the size of the leading sponsor's stake, as sponsors with a higher stake in the firm have more power to enforce their interests. The results are shown in regression models (4) through (6) in Table 5 and are similar to models (1) to (3) in that higher ownership share of PE investors positively affects post-IPO acquisition frequency, providing additional support for **H1**. Higher lead VC investor ownership, in contrast, leads to a weakly significant reduction in acquisition activity for the first two post-IPO years, suggesting that higher VC sponsorship may even lower firms' acquisition activity. However, this result does not hold when using the Poisson regression or ordered logit regression set-up reported in Supporting Information S1: Online Appendix Table OA-1 and Table OA-2, respectively. We therefore conclude that higher leading VC equity stakes is not a robust indicator for lower post-IPO acquisition activity.

<sup>17</sup>While Anderson et al. (2017) use a logit regression approach to predict the likelihood of becoming an acquirer, we use an OLS regression explaining acquisition frequency. It may be the case that VC backing increases the likelihood of becoming an acquirer but at the same time has no statistically significant effect on acquisition frequency, especially if VC-backed IPO firms are more likely to conduct only a few acquisitions after going public.

TABLE 5 Regressions on post-initial public offerings (IPO) acquisition frequency.

This table reports the cross-sectional regression coefficients using the IPO firm  $i$ 's number of post-IPO acquisitions as dependent variable. The variables of interest in models (1) to (3) are *PEBacked* and *VCBacked*, both defined as one if the IPO firm is either private equity (PE)-backed or venture capital (VC)-backed, respectively, at the time of the IPO, whereby the sponsor's backing must exceed an ownership threshold of 25% in the IPO firm, and zero otherwise. The variables of interest in models (4) to (6) are *Leading PE equity stake* and *Leading VC equity stake*, both defined as the equity stake of the respective leading sponsor in percent at the time of the IPO. The other variables are divided into additional sponsor controls, company characteristics, IPO characteristics, and M&A characteristics and are defined in the Appendix. The standard errors are corrected for heteroskedasticity and clustered by leading financial sponsor with associated  $t$ -values given in parentheses. \*, \*\* and \*\*\* indicate statistical significance at the 10%, 5% and 1% level, respectively.

	# post-IPO acq.—full sample					
	(1) IPO + 1 y	(2) IPO + 2 y	(3) IPO + 3 y	(4) IPO + 1 y	(5) IPO + 2 y	(6) IPO + 3 y
<b>Sponsor backing</b>						
<i>PEBacked</i>	0.319*** (2.692)	0.545*** (3.149)	0.595*** (2.732)			
<i>VCBacked</i>	-0.055 (-0.732)	-0.078 (-0.672)	-0.152 (-0.886)			
<i>Leading PE equity stake</i>				0.004*** (3.164)	0.007*** (3.438)	0.008*** (3.040)
<i>Leading VC equity stake</i>				-0.003* (-1.770)	-0.006* (-1.960)	-0.008 (-1.581)
<b>Sponsor controls</b>						
<i>Top quartile sponsor</i>	-0.061 (-0.743)	-0.029 (-0.228)	0.031 (0.186)	-0.068 (-0.863)	-0.028 (-0.228)	0.020 (0.123)
<i>Style Drift</i>	-0.089 (-1.125)	-0.225* (-1.820)	-0.138 (-0.759)	-0.061 (-0.810)	-0.168 (-1.457)	-0.079 (-0.451)
<i>PE syndicated</i>	-0.195 (-1.447)	-0.263 (-1.206)	-0.058 (-0.188)	-0.076 (-0.692)	-0.064 (-0.342)	0.162 (0.586)
<b>Company characteristics</b>						
<i>Firm revenue</i>	0.047* (1.776)	0.117*** (3.214)	0.183*** (4.272)	0.048* (1.775)	0.119*** (3.225)	0.185*** (4.258)
<i>Return on Assets</i>	-0.041 (-1.070)	-0.147 (-1.264)	-0.169 (-1.120)	-0.036 (-0.943)	-0.138 (-1.239)	-0.157 (-1.086)
<i>Book leverage</i>	-0.037 (-0.341)	-0.151 (-0.783)	-0.292 (-1.017)	-0.041 (-0.361)	-0.152 (-0.753)	-0.294 (-0.980)
<i>Market-to-book ratio</i>	-0.005 (-0.435)	0.016 (0.801)	0.037 (1.516)	-0.005 (-0.441)	0.015 (0.802)	0.037 (1.510)
<i>Financial slack</i>	-0.243	-0.399* (-1.770)	-0.617** (-2.510)	-0.194	-0.326* (-1.770)	-0.537* (-2.510)

TABLE 5 (Continued)

	# post-IPO acq.—full sample					
	(1) IPO + 1 y	(2) IPO + 2 y	(3) IPO + 3 y	(4) IPO + 1 y	(5) IPO + 2 y	(6) IPO + 3 y
<i>Growth investment level</i>	(-1.501) -0.347**	(-1.932) -0.871***	(-2.090) -1.048***	(-1.239) -0.337*	(-1.658) -0.865***	(-1.893) -1.042***
<i>Firm age at IPO</i>	(-1.976) -0.039	(-4.314) -0.015	(-3.480) 0.004	(-1.954) -0.041	(-4.183) -0.019	(-3.386) -0.001
	(-1.087)	(-0.226)	(0.042)	(-1.145)	(-0.279)	(-0.005)
<b>IPO characteristics</b>						
<i>Primary proceeds</i>	0.183*** (2.740)	0.317** (2.558)	0.391** (2.502)	0.179*** (2.744)	0.312** (2.531)	0.385** (2.480)
<i>M&amp;A is IPO motive</i>	0.315*** (4.451)	0.373*** (3.994)	0.520*** (3.940)	0.319*** (4.445)	0.376*** (3.998)	0.524*** (3.953)
<i>Underwriter reputation</i>	-0.015*** (-2.650)	-0.029*** (-2.764)	-0.039*** (-2.667)	-0.015*** (-2.938)	-0.029*** (-2.885)	-0.040*** (-2.796)
<i>Top 10 IPO law firm</i>	-0.007 (-0.059)	-0.003 (-0.016)	0.076 (0.355)	-0.012 (-0.099)	-0.009 (-0.052)	0.066 (0.309)
<i>Underpricing</i>	0.001 (1.069)	0.003 (1.324)	0.004* (1.718)	0.002 (1.177)	0.003 (1.436)	0.004* (1.841)
<i>Offer price revision</i>	0.001 (0.807)	0.003 (0.937)	0.001 (0.346)	0.001 (0.789)	0.003 (0.907)	0.001 (0.325)
<i>First 30-days post-IPO return</i>	0.002** (2.169)	0.003* (1.872)	0.004* (1.804)	0.002** (2.125)	0.003* (1.784)	0.004* (1.746)
<i>Dual class share structure</i>	-0.102 (-0.755)	-0.083 (-0.395)	-0.010 (-0.037)	-0.084 (-0.660)	-0.065 (-0.321)	0.019 (0.072)
<i>Interest rate environment</i>	0.039 (0.277)	0.176 (1.086)	0.092 (0.434)	0.044 (0.306)	0.179 (1.115)	0.096 (0.458)
<i>IPO market liquidity</i>	0.003 (0.597)	0.008 (1.456)	-0.001 (-0.079)	0.003 (0.630)	0.008 (1.510)	-0.000 (-0.041)
<b>M&amp;A characteristics</b>						
<i>Pre-IPO acquirer</i>	0.483*** (5.833)	0.828*** (6.612)	1.222*** (6.917)	0.491*** (5.836)	0.842*** (6.728)	1.235*** (7.004)
<i>Industry acquisition intensity</i>	0.075 (0.519)	0.374 (1.422)	0.507 (1.617)	0.076 (0.534)	0.380 (1.415)	0.510 (1.592)
<i>Constant</i>	-1.037 (-1.354)	-2.453** (-2.028)	-1.899 (-1.224)	-1.054 (-1.393)	-2.479** (-2.075)	-1.924 (-1.244)



TABLE 5 (Continued)

	# post-IPO acq.—full sample					
	(1) IPO + 1 y	(2) IPO + 2 y	(3) IPO + 3 y	(4) IPO + 1 y	(5) IPO + 2 y	(6) IPO + 3 y
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1071	1071	1071	1071	1071	1071
R-squared	0.181	0.213	0.225	0.186	0.216	0.228

The control variables provide some additional insights into the drivers of post-IPO acquisition activity. Newly public firms benefit from the proceeds they raise through the IPO to conduct acquisitions, with higher proceeds being associated with increased acquisition activity. Revenues likewise affect post-IPO acquisition activity positively. Unsurprisingly, firms acquire significantly more when they disclose M&A as one of their motives for going public in their IPO prospectus. Prior M&A experience also matters, as newly public firms that have acquired before going public also engage in more acquisitions following the IPO. Growth options outside of M&A negatively affect acquisitions post-IPO as indicated by the negative and significant coefficient for the variable related to the growth investment level. The coefficients of the other control variables remain largely insignificant.

## 4.2 | The impact of initial sponsor backing on organic growth alternatives

To test hypothesis **H2** that VCs guide their portfolio firms towards organic growth, we investigate whether VC-backed firms rely more heavily on organic growth options to substitute for their lower acquisition volume vis-à-vis PE-backed and non-backed IPO firms. We use both Capex and R&D spending as proxies for organic growth investments and conduct several regressions on these two dependent variables using the same set of variables as in Equation 1.

The results are presented in Table 6. In models (1) to (3) where Capex is the dependent variable, the coefficient for *VCBacked* is statistically significant and negative for the first year following the IPO but insignificant for the 2- and 3-year time periods, respectively, failing to support hypothesis **H2**. In models (4) to (6) with R&D expenditures as the dependent variable, however, we find evidence in support of hypothesis **H2** as VC backing is positively associated with higher R&D expenditures as the coefficient is significant at the 1% level for all time horizons. In a similar analysis, Celikyurt et al. (2010) document a significantly positive relationship between VC backing and the sum of R&D and Capex spending for all time horizons between 0 and 4 years after the IPO. To make this finding comparable, we rerun our regression with the sum of R&D and capex expenditures as the dependent variable. In unreported results, we find that the coefficient for *VCBacked* remains significant and positive, showing that our results are in line with Celikyurt et al. (2010), albeit being more nuanced as

**TABLE 6** Impact of initial sponsor backing on Capex and R&D expenditures.

This table reports the cross-sectional regression coefficients using the natural logarithm of initial public offerings (IPO) firm  $i$ 's total Capex [models (1) through (3)] or R&D expenditures [models (4) through (6)], respectively. For each dependent variable, the first specification refers to the first year after the IPO, the second specification to the first 2 years after the IPO, and the third specification to the first 3 years after the IPO, respectively. The variables of interest are *PEBacked* and *VCBacked*, both defined as one if the IPO firm is either private equity-backed or venture capital-backed, respectively, at the time of the IPO, whereby the sponsor's backing must exceed an ownership threshold of 25% in the IPO firm, and zero otherwise. The other variables are divided into additional sponsor controls, company characteristics, IPO characteristics, and M&A characteristics and are defined in the Appendix. The standard errors are corrected for heteroskedasticity and clustered by leading financial sponsor with associated  $t$ -values given in parentheses. \*, \*\* and \*\*\* indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Total CAPEX			Total R&D		
	(1) IPO + 1 y	(2) IPO + 2 y	(3) IPO + 3 y	(4) IPO + 1 y	(5) IPO + 2 y	(6) IPO + 3 y
<b>Sponsor backing</b>						
<i>PEBacked</i>	-0.127 (-1.263)	-0.096 (-0.897)	-0.106 (-0.995)	-0.174** (-1.974)	-0.193* (-1.800)	-0.234** (-1.971)
<i>VCBacked</i>	-0.180** (-2.170)	-0.066 (-0.794)	0.005 (0.053)	0.279*** (3.131)	0.383*** (3.552)	0.464*** (3.952)
<b>Sponsor controls</b>						
<i>Top quartile sponsor</i>	0.060 (0.858)	0.055 (0.750)	0.027 (0.358)	0.220*** (2.644)	0.278*** (2.826)	0.319*** (2.986)
<i>Style Drift</i>	-0.017 (-0.154)	0.035 (0.285)	-0.012 (-0.093)	-0.169 (-1.364)	-0.217 (-1.438)	-0.240 (-1.455)
<i>PE syndicated</i>	0.200 (1.587)	0.200 (1.536)	0.230* (1.731)	0.120 (0.922)	0.162 (1.048)	0.183 (1.082)
<b>Company characteristics</b>						
<i>Firm revenue</i>	0.184*** (6.667)	0.210*** (7.413)	0.225*** (7.885)	-0.005 (-0.119)	-0.020 (-0.391)	-0.021 (-0.379)
<i>Return on Assets</i>	0.179*** (2.856)	0.280*** (3.503)	0.354*** (3.770)	-0.241*** (-3.044)	-0.219** (-2.437)	-0.212** (-2.237)
<i>Book leverage</i>	0.245* (1.708)	0.202 (1.364)	0.213 (1.339)	-0.444** (-2.224)	-0.583** (-2.490)	-0.644** (-2.556)
<i>Market-to-book ratio</i>	-0.018 (-1.247)	0.002 (0.116)	0.011 (0.690)	0.070*** (3.219)	0.094*** (3.895)	0.111*** (4.375)
<i>Financial slack</i>	-0.636*** (-4.261)	-0.830*** (-5.064)	-0.947*** (-5.899)	1.889*** (10.312)	2.249*** (10.348)	2.387*** (10.339)

(Continues)

TABLE 6 (Continued)

	Total CAPEX			Total R&D		
	(1) IPO + 1 y	(2) IPO + 2 y	(3) IPO + 3 y	(4) IPO + 1 y	(5) IPO + 2 y	(6) IPO + 3 y
<i>Growth investment level</i>	2.015*** (4.978)	2.077*** (5.766)	2.249*** (8.417)	0.559 (1.558)	0.203 (0.658)	0.015 (0.050)
<i>Firm age at IPO</i>	-0.124*** (-4.337)	-0.127*** (-3.585)	-0.125*** (-3.422)	0.126** (2.344)	0.135** (2.151)	0.153** (2.314)
<b>IPO characteristics</b>						
<i>Primary proceeds</i>	0.672*** (16.109)	0.710*** (12.843)	0.736*** (12.203)	0.290*** (6.316)	0.317*** (5.927)	0.320*** (5.434)
<i>M&amp;A is IPO motive</i>	-0.072 (-1.026)	-0.035 (-0.490)	-0.027 (-0.440)	0.075 (0.934)	0.096 (1.071)	0.112 (1.212)
<i>Underwriter reputation</i>	0.011* (1.828)	0.015*** (2.648)	0.015*** (2.676)	0.028*** (5.278)	0.033*** (5.029)	0.035*** (4.640)
<i>Top 10 IPO law firm</i>	0.085 (1.212)	0.059 (0.768)	0.047 (0.575)	0.144 (1.649)	0.156 (1.503)	0.169 (1.483)
<i>Underpricing</i>	0.005*** (3.605)	0.005*** (3.034)	0.006*** (3.449)	0.000 (0.162)	-0.000 (-0.020)	-0.000 (-0.019)
<i>Offer price revision</i>	-0.002* (-1.780)	-0.001 (-1.095)	-0.001 (-1.086)	-0.006* (-1.822)	-0.007* (-1.940)	-0.007** (-1.972)
<i>First 30-days post-IPO return</i>	0.002** (2.209)	0.002** (2.211)	0.002** (2.033)	0.002 (1.176)	0.001 (0.967)	0.002 (1.158)
<i>Dual class share structure</i>	0.016 (0.172)	0.016 (0.150)	-0.020 (-0.168)	0.214** (2.312)	0.263** (2.493)	0.296** (2.529)
<i>Interest rate environment</i>	0.106 (1.403)	0.141* (1.937)	0.164** (2.198)	-0.037 (-0.447)	-0.040 (-0.394)	-0.041 (-0.376)
<i>IPO market liquidity</i>	0.005 (0.644)	0.004 (0.446)	-0.002 (-0.188)	0.005 (1.068)	0.005 (0.840)	0.002 (0.290)
<b>M&amp;A characteristics</b>						
<i>Pre-IPO acquirer</i>	0.066 (0.911)	0.061 (0.650)	0.080 (0.679)	0.297*** (2.723)	0.386*** (2.863)	0.422*** (2.832)
<i>Industry acquisition intensity</i>	0.162 (0.787)	0.149 (0.671)	0.171 (0.799)	0.235 (0.979)	0.211 (0.765)	0.168 (0.540)
<i>Constant</i>	-1.304 (-1.084)	-1.003 (-0.739)	-0.611 (-0.390)	-2.479*** (-4.448)	-2.443*** (-3.771)	-2.319*** (-3.240)

TABLE 6 (Continued)

	Total CAPEX			Total R&D		
	(1) IPO + 1 y	(2) IPO + 2 y	(3) IPO + 3 y	(4) IPO + 1 y	(5) IPO + 2 y	(6) IPO + 3 y
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1071	1071	1071	1071	1071	1071
R-squared	0.696	0.702	0.705	0.581	0.594	0.594

the main effect is due to R&D spending and not capital expenditures. As expected, we find no comparable effect of higher organic growth investments in PE-backed IPO firms. In contrast, the coefficient for *PEBacked* is negative and significant, suggesting that PE-backed newly public firms spend significantly fewer resources on R&D compared to non-backed newly public firms. This suggests that the previous results may be a consequence of PE sponsors using M&A as a partial substitute for R&D expenditures.

Our control variables again provide further insights into the drivers of organic growth investments. More reputable sponsors, as measured by the variable *Top quartile sponsor*, appear to be willing to make significantly higher investments in R&D. This may be due to these sponsors making focused investments in firms with more innovative products and accordingly higher underlying R&D expenditures. Unsurprisingly, firm revenue and IPO proceeds are positively associated with capital expenditures while firms with more financial slack tend to rely less on Capex and more on R&D. Underwriter reputation exhibits a positive relationship with both Capex and R&D while underpricing only shows a positive relation to Capex, both may be explained by prior studies finding a positive link between the two variables and firm quality (Zheng & Stangeland, 2007). Interestingly, having conducted M&As before the IPO has a positive effect on post-IPO R&D expenditures. Finally, there appears to be a significantly negative relationship between offer price revision and post-IPO R&D expenditures. As offer price revision is often perceived as a proxy for valuation uncertainty in the literature (see e.g., Loughran & McDonald, 2013), this negative effect may be a consequence of R&D projects being inherently more difficult to evaluate. The coefficients of the remaining control variables largely lack significance.

### 4.3 | Acquisition characteristics based on initial sponsor backing

Hypothesis **H3** proposes that PE sponsors may steer their newly public portfolio firms towards conducting more transformative acquisitions given their M&A experience and capabilities. We identify three proxies for the degree to which an acquisition may be transformative for the acquirer. First, cross-border acquisitions, which are typically more complex and may involve a different culture, language and/or governance system. Second, cross-industry acquisitions, which are by nature transformative by diversifying the product offering, but likely more difficult to integrate into the acquirers' existing operations. Third, acquisitions that involve a large target relative to the size of the acquirer, as these target firms are frequently more complex and therefore also more difficult to integrate into the acquirer's existing operations.

We investigate the likelihood of conducting transformative acquisitions following these three proxies using the subsample of the 629 IPO firms that conduct at least one acquisition in the first 3 years of going public and employ logit regressions with three different specifications for the dependent variable. In model (1), the dependent variable is equal to one if at least one of the deals the firm conducts is a cross-border deal following its IPO, zero otherwise, in model (2) the dependent variable is equal to one if the IPO firm engaged in at least one post-IPO cross-industry acquisition, defined as a transaction where acquirer and target come from different Fama-French 49 industry portfolios, zero otherwise, and in model (3) the dependent variable is equal to one if at least one acquisition following the IPO is large in relative size, whereby this is defined as a ratio of deal value to acquirer revenue at the time of the IPO being greater than 50%, zero otherwise.

The results of this analysis are shown in Table 7. The coefficient of *PEBacked* is statistically insignificant for all three model specifications, indicating that PE-backed IPO firms are not significantly more likely to conduct cross-border, cross-industry, or relatively larger acquisitions than their peers. Similarly, we find no significant relationship between VC backing and cross-border, cross-industry, or relatively larger acquisitions, albeit here the coefficients are consistently negative. However, in model (2) we find that firms backed by highly reputable VC or PE sponsors are more likely to engage in diversifying acquisitions, as evidenced by the positive and significant coefficient for *Top quartile sponsor*. It may be the case that firms backed by reputable sponsors are better able to manage such complex transactions, either based on the sponsor's past acquisition experience or because of reputable sponsors actively selecting portfolio firms capable of executing more complex deals.

In terms of the effect of PEs on transformative acquisitions, we find some weak evidence in model (1) that newly public firms backed by a PE syndicate are slightly more likely to engage in cross-border acquisitions, whereas in model (3), we find that newly public firms backed by a PE syndicate are significantly more likely to acquire relatively large targets. This could be due to several PEs being able to combine more resources to enable such transactions. That higher IPO proceeds also increase the likelihood of engaging in relatively large deals can be seen as consistent with this interpretation. Also, if a PE or VC fund conducts a deal that represents a drift in investment style for them, they are more likely to engage in a relatively large deal, which may be particularly driven by VC funds moving towards later stage investments. We therefore obtain rather weak evidence in favour of hypothesis **H3**. However, as this support is only related to one of our three proxies for transformative acquisitions, and then only in case the newly public firm is backed by a syndicate of PE firms, we concede that hypothesis **H3** can only be partially supported.

#### 4.4 | Robustness tests

We acknowledge that our results so far may be affected by issues surrounding our sample selection. IPO firms backed by PE or VC sponsors may be inherently different from each other and from newly public firms without financial sponsor involvement due to the distinct sponsor characteristics and investment strategies outlined in Section 2. While we control for a variety of differentiating factors including firm size, age, leverage and more and use different regression specifications, we conduct two additional robustness tests

**TABLE 7** Impact of initial sponsor backing on the probability of engaging in transformative deals.

This table reports results of several logit regressions for the initial public offerings (IPO) firm sample, where the dependent variable is defined as one if the IPO firm engaged in at least one cross-border acquisition during its first 3 post-IPO years (model 1), engaged in at least one cross-industry acquisition during its first 3 post-IPO years (model 2), or engaged in at least one relatively large acquisition (defined as an acquisition for which the deal value exceeds 50% of the acquirer's revenue at the time of the IPO) during its first 3 post-IPO years (model 3), and zero otherwise. The variables of interest are *PEBacked* and *VCBacked*, both defined as one if the IPO firm is either private equity-backed or venture capital-backed, respectively, at the time of the IPO, whereby the sponsor's backing must exceed an ownership threshold of 25% in the IPO firm, and zero otherwise. The other variables are divided into additional sponsor controls, company characteristics, IPO characteristics, and M&A characteristics and are defined in the Appendix. The associated *t*-values are reported in parentheses. \*, \*\* and \*\*\* indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1) Cross-border	(2) Cross-industry	(3) Relative size
<b>Sponsor backing</b>			
<i>PEBacked</i>	-0.101 (-0.297)	0.065 (0.196)	0.105 (0.198)
<i>VCBacked</i>	-0.536 (-1.409)	-0.427 (-1.135)	-0.476 (-0.885)
<b>Sponsor controls</b>			
<i>Top quartile sponsor</i>	0.200 (0.852)	0.521** (2.185)	0.349 (1.076)
<i>Style Drift</i>	-0.382 (-1.018)	0.291 (0.804)	0.987** (2.005)
<i>PE syndicated</i>	0.542* (1.727)	-0.319 (-1.006)	1.229** (2.534)
<b>Company characteristics</b>			
<i>Firm revenue</i>	0.005 (0.050)	0.309*** (2.771)	-1.700*** (-7.332)
<i>Return on Assets</i>	0.607 (0.746)	0.136 (0.172)	-1.053 (-0.828)
<i>Book leverage</i>	-0.052 (-0.103)	-0.659 (-1.307)	1.161 (1.435)
<i>Market-to-book ratio</i>	0.129** (2.236)	0.022 (0.389)	-0.114* (-1.667)
<i>Financial slack</i>	0.691 (1.063)	-0.044 (-0.068)	-0.579 (-0.665)
<i>Growth investment level</i>	-0.658 (-0.724)	-0.725 (-0.838)	-2.775* (-1.723)

(Continues)

TABLE 7 (Continued)

	(1) Cross-border	(2) Cross-industry	(3) Relative size
<i>Age at IPO</i>	0.254* (1.896)	0.032 (0.250)	-0.296 (-1.509)
<b>IPO characteristics</b>			
<i>Primary IPO proceeds</i>	0.125 (0.777)	-0.088 (-0.549)	1.187*** (4.169)
<i>M&amp;A is IPO motive</i>	-0.089 (-0.385)	0.624*** (2.686)	0.329 (1.028)
<i>Underwriter reputation</i>	0.022 (0.886)	-0.023 (-0.949)	-0.044 (-1.236)
<i>Top 10 IPO law firm</i>	-0.065 (-0.261)	-0.268 (-1.049)	0.628* (1.674)
<i>Underpricing</i>	0.006 (1.215)	0.003 (0.547)	0.007 (1.054)
<i>Offer price revision</i>	-0.018*** (-2.758)	-0.001 (-0.176)	-0.008 (-0.845)
<i>First 30-days post-IPO return</i>	0.001 (0.209)	0.002 (0.425)	0.002 (0.205)
<i>Dual class share structure</i>	0.041 (0.141)	0.026 (0.088)	-0.121 (-0.286)
<i>Interest rate environment</i>	0.690** (2.240)	-0.018 (-0.060)	-0.419 (-0.870)
<i>IPO market liquidity</i>	-0.023 (-1.039)	-0.070* (-1.843)	-0.014 (-0.435)
<b>M&amp;A characteristics</b>			
<i>Pre-IPO acquirer</i>	0.100 (0.472)	0.143 (0.669)	-0.071 (-0.242)
<i>Industry acquisition intensity</i>	0.141 (0.246)	-0.507 (-0.823)	1.497 (1.536)
<i>Constant</i>	-1.534 (-0.615)	6.844* (1.711)	5.794 (1.583)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Observations	539	539	458
Pseudo R-squared	0.093	0.114	0.396

using propensity score matching (PSM) as well as switching regression models with endogenous switching.<sup>18</sup>

#### 4.4.1 | Propensity score matching

We estimate propensity scores via a logit regression to predict the probability of being a VC-backed firm.<sup>19</sup> We then use these scores to match treated observations (VC-backed IPO firms) to our control group (PE-backed IPO firms) using 1:1 matching with and without replacement. The first method without replacement yields 122 observations (61 matched pairs) while the second one yields 426 observations (213 pairs). We estimate Average Treatment Effects on the Treated (ATTs) for our variables of interest to validate our results from Sections 4.1 through 4.3.

The results in Table 8 related to the number of post-IPO acquisitions and the log-transformed cumulative R&D indicate that our results remain robust. The ATT for post-IPO acquisitions is negative for both methods and significant at the 10% and 5% level, respectively, confirming that VC-backed IPO firms conduct significantly fewer acquisitions than their PE-backed peers. Similarly, the ATT of the R&D variable is positive and significant, confirming that VC-backed IPO firms emphasise R&D spending more than their PE-backed counterparts. Interestingly, the ATT of the Capex variable is negative and weakly significant at the 10% level using the matching method with replacement, suggesting that PE-backed IPO firms may emphasise growth via capital expenditures more than VC-backed IPO firms.

Table 8, Panel C provides information on the covariate balancing and shows that before matching, most covariates are significantly different at the 1% level between the treatment and control group. While the matching approach without replacement eliminates the covariate imbalances, the matching procedure with replacement is less successful. Although the latter approach still significantly reduces the differences between the two groups, they nevertheless remain significant for several variables, highlighting the tradeoff between the two matching methods. While the matching method without replacement is more rigorous in eliminating covariate differences, it also eliminates a larger share of the sample. The matching method with replacement is less successful in eliminating covariate imbalances but allows us to keep a larger and thus more comparable subset of our sample.

We conduct a similar PSM robustness check on our findings related to acquisition characteristics, the results are shown in Table 9.<sup>20</sup> We estimate a new logit regression to predict the likelihood of being VC-backed based on the subsample of firms which we use for our analysis in Section 4.3 (i.e., IPO firms that have conducted at least one acquisition during their first 3 years after going public). The results show that the ATT for the relative size variable is negative and significant at the 5% level for both matching algorithms. This suggests that

<sup>18</sup>Besides PSM, we also use entropy balancing to obtain matched samples (see e.g., Hainmueller, 2012; Madsen & McMullin, 2020). While the results remain largely similar, there are some minor differences in the results regarding the proxy for relative size, based on which we continue to interpret our results on transformative acquisition cautiously.

<sup>19</sup>The analysis in Table 8 focuses on the differences between PE-backed and VC-backed IPO firms, disregarding non-backed firms. However, we conduct similar propensity score matching analyses for the pair of PE-backed versus non-backed firms as well as for the pair of VC-backed versus non-backed firms, respectively. The results are shown in the Supporting Information S1: Online Appendix Table OA-4 and Table OA-5.

<sup>20</sup>Similar to before, the analysis focuses on the differences between PE-backed and VC-backed IPO firms. The corresponding analyses for the pair of PE-backed versus non-backed firms as well as for the pair of VC-backed and non-backed firms are shown in the Supporting Information S1: Online Appendix in Table OA-6 and Table OA-7, respectively.



**TABLE 8** Propensity score matching (PSM) analysis for acquisition frequency and organic growth [venture capital (VC)- vs. private equity (PE)-backed firms].

The table reports the outcome of the PSM analysis with emphasis on the effect of sponsor backing on the initial public offerings (IPO) firm's post-IPO acquisition activity and organic growth investments. The treatment variable is assigned the value of 1 if the IPO firm is backed by a VC fund exceeding the sponsor ownership threshold of 25%, and 0 otherwise. Panel A presents the logit model used to estimate the likelihood of an IPO firm being VC-backed. Panel B presents the outcome of the two matching algorithms (i) without replacement and a caliper of 25% of the standard deviation of the propensity score of the logit estimation and (ii) with replacement and a caliper of 0.025. We report the number of treated and control observations on the matched sample, in addition to the estimated average treatment effects on the treated (ATTs) with Abadie and Imbens (2006) standard errors. In Panel C, we report the mean of each variable in the treated group and the control group, in addition to the bootstrapped *t*-value from the *t*-test of the null hypothesis that the difference is statistically equal to 0, both before and after matching. The Abadie and Imbens (2006) standard errors are reported in parentheses. All variables are defined in the Appendix \*, \*\* and \*\*\* indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Firm revenue	Return on Assets	Book leverage	Market-to-book ratio	Financial slack	Growth inv. level	Firm age at IPO	Underwriter reputation	Underpricing	First 30d post-IPO return	Pre-IPO acquirer	<i>N</i>
Panel A: Logit model												
	-0.082 (0.147)	0.170 (0.891)	-3.073*** (0.880)	-0.032 (0.062)	7.979*** (0.855)	0.169 (1.332)	-0.534*** (0.205)	-0.042 (0.032)	0.004 (0.003)	-0.000 (0.010)	0.503 (0.317)	791
Panel B: Matching results												
Caliper	0.025											
Matched observations per treated deal	1:1											
Number of treated observations	61											
Number of control observations	61											
# Acquisitions ATT	-1.850**											
Abadie and Imbens (2006) standard errors	(0.917)											
Log cumulative R&D ATT	2.211*											
Abadie and Imbens (2006) standard errors	(1.333)											
Matching without replacement												
Caliper	0.25 standard deviations											
Matched observations per treated deal	1:1											
Number of treated observations	61											
Number of control observations	61											
# Acquisitions ATT	-0.574*											
Abadie and Imbens (2006) standard errors	(0.306)											
Log cumulative R&D ATT	0.828**											
Abadie and Imbens (2006) standard errors	(0.413)											
Matching with replacement												
Caliper	0.025											
Matched observations per treated deal	1:1											
Number of treated observations	213											
Number of control observations	213											
# Acquisitions ATT	-1.850**											
Abadie and Imbens (2006) standard errors	(0.917)											
Log cumulative R&D ATT	2.211*											
Abadie and Imbens (2006) standard errors	(1.333)											

TABLE 8 (Continued)

Sample	Matching without replacement				Matching with replacement				
	Treatment	Control	t-value	t-value	Treatment	Control	Treatment	Control	t-value
Log cumulative Capex ATT				0.089					-0.800*
Abadie and Imbens (2006) standard errors				(0.305)					(0.443)
Panel C: Covariates' balancing									
Firm revenue	3.60	6.41	22.32	5.02	4.73	1.08	5.22	5.96	6.51
Return on Assets	-0.17	0.01	12.54	-0.05	-0.06	0.19	-0.00	0.01	1.02
Book leverage	0.06	0.39	21.81	0.11	0.11	0.12	0.14	0.26	7.19
Market-to-book	4.03	2.29	10.64	3.83	3.29	1.07	2.99	2.52	2.57
Financial slack	0.67	0.11	41.28	0.36	0.37	0.02	0.14	0.16	1.07
Growth inv. level	0.21	0.12	11.24	0.17	0.19	0.99	0.14	0.14	0.44
Firm age at IPO	2.12	3.15	18.44	2.27	2.18	0.62	3.20	2.72	5.28
Underwriter rep.	9.01	11.62	7.28	10.57	9.06	1.59	5.97	10.80	10.19
Underpricing	19.71	12.17	3.39	21.49	21.80	0.03	21.73	14.60	2.22
First 30d return	2.89	2.62	0.23	1.97	-0.55	0.78	0.38	1.67	1.01
Pre-IPO acquirer	0.25	0.34	2.70	0.33	0.38	0.56	0.13	0.38	6.27

**TABLE 9** Propensity score matching (PSM) analysis for undertaking transformative deals [venture capital (VC)- vs. private equity (PE)-backed firms].

The table reports the outcome of the PSM analysis with emphasis on the effect of sponsor backing on the initial public offerings (IPO) firm's post-IPO probability to engage in transformative transactions. The treatment variable is assigned the value of 1 if the IPO firm is backed by a VC fund exceeding the sponsor ownership threshold of 25%, and 0 otherwise. Panel A presents the logit model used to estimate the likelihood of an IPO firm being VC-backed. Panel B presents the outcome of the two matching algorithms (i) without replacement and a caliper of 25% of the standard deviation of the propensity score of the logit estimation and (ii) with replacement and a caliper of 0.025. We report the number of treated and control observations on the matched sample, in addition to the estimated average treatment effects on the treated (ATTs) with Abadie and Imbens (2006) standard errors. In Panel C, we report the mean of each variable in the treated group and the control group, in addition to the bootstrapped *t*-value from the *t*-test of the null hypothesis that the difference is statistically equal to 0, both before and after matching. The Abadie and Imbens (2006) standard errors are reported in parentheses. All variables are defined in the Appendix. \*, \*\* and \*\*\* indicate statistical significance at the 10%, 5% and 1% level, respectively.

Firm revenue	Return on Assets	Book leverage	Market-to-book ratio	Financial slack	Growth inv. level	Firm age at IPO	Underwriter reputation	First 30d post-IPO		
								Underpricing	Pre-IPO acquirer	
Panel A: Logit model										
-0.282 (0.230)	-1.364 (1.268)	-4.146*** (1.390)	0.043 (0.096)	6.632*** (1.112)	1.260 (1.772)	-0.454 (0.284)	0.040 (0.041)	0.008* (0.004)	0.014 (0.014)	0.833*** (0.417)
Panel B: Matching results										
Caliper										
Matched observations per treated deal										
0.25 standard deviations										
1:1										
Number of treated observations										
63										
Number of control observations										
63										
Cross-border acquisitions ATT										
0.111										
Abadie and Imbens (2006) standard errors										
(0.133)										
Cross-industry acquisitions ATT										
0.063										
Abadie and Imbens (2006) standard errors										
(0.140)										
Matching without replacement										
Matching with replacement										

TABLE 9 (Continued)

Sample Variable	Matching without replacement				Matching with replacement				
	Treatment	Control	t-value	t-value	Treatment	Control	t-value	t-value	
Relative size ATT	-0.267** (0.122)				-0.310** (0.127)				
Abadie and Imbens (2006) standard errors									
Panel C: Covariates' balancing									
Firm revenue	4.45	6.55	15.02	5.04	4.78	1.23	5.24	5.19	0.28
Return on Assets	-0.10	0.01	6.91	-0.02	-0.04	0.54	-0.02	-0.01	0.44
Book leverage	0.04	0.40	15.03	0.09	0.07	0.76	0.11	0.12	0.56
Market-to-book	4.72	2.14	10.87	3.43	3.34	0.22	3.09	2.86	0.80
Financial slack	0.61	0.12	27.49	0.38	0.37	0.05	0.29	0.29	0.05
Growth inv. level	0.18	0.11	5.92	0.18	0.18	0.24	0.14	0.16	0.70
Firm age at IPO	2.14	3.11	11.59	2.18	2.18	0.03	2.42	2.32	0.71
Underwriter rep.	10.26	11.38	2.35	10.07	9.02	0.86	9.79	10.22	0.43
Underpricing	27.69	10.89	4.71	20.57	29.53	0.58	21.64	21.04	0.06
First 30d return	3.62	3.75	0.08	6.03	0.42	1.32	6.50	4.08	0.72
Pre-IPO acquirer	0.38	0.41	0.61	0.37	0.42	0.46	0.41	0.43	0.18

VC-backed newly public firms are significantly less likely to undertake large acquisitions compared to PE-backed newly public firms. By inversion, this also implies that PE-backed newly public firms tend to conduct larger acquisitions than VC-backed firms. While this result may seem to differ from our main results in Table 7 model (3), we note that our PSM analysis directly compares PE-backed with VC-backed firms, whereas the regression in Table 7 compares the results to non-backed firms. The ATTs for cross-border and transformative acquisitions remain insignificant, in line with our previous results.

#### 4.4.2 | Switching regression

The PSM approach helps to control for observable differences between PE-backed and VC-backed newly public firms. However, potential endogeneity issues may still arise due to unobservable factors that are jointly correlated with our dependent variables and the presence of VC or PE backing. To address this concern, we use a switching regression model with endogenous switching (see e.g., Fang, 2005; Golubov et al., 2012; Heckman, 1979).

To identify an appropriate instrumental variable, we draw from existing literature that employs market share-based instruments in the context of financial sponsor backing (Berger et al., 2005; Brander et al., 2015; Hammer et al., 2022; Hellmann et al., 2008). We construct the instrumental variable *Local VC share*, which approximates the likelihood of VC investors supporting a firm within a given industry. The basic idea is that VC investors exhibit varying levels of interest in different industries, influenced by factors such as growth prospects, life cycle stage, and competitive landscape, and that these factors are exogenous to the portfolio firm and the financial sponsor. Specifically, we define *Local VC share* as the ratio of VC-backed IPOs to total financial sponsor-backed IPOs (including both VC and PE-backed) in a given combination of year and TRBC economic sector, as identified by SDC based on a total of 3,109 sponsor-backed IPOs recorded in SDC between 2001 and 2017.

We use the *Local VC share* variable as an instrument in the first stage of our model to predict whether an IPO is more likely to be VC-backed than PE-backed. We find that the coefficient for *Local VC share* is positive and highly significant, indicating that the variable has an impact on the likelihood of a given firm being VC-backed (Table 10, Panel A). Next, we compute the second-stage equation using the Inverse Mills Ratio (IMR) constructed from the first-stage selection equation to correct for selection bias. The IMR is included as an additional control variable in the second-stage models to correct for any potential endogeneity bias in the regression model specifications in Table 10, Panel A columns (2) through (5). The coefficient of the IMR is negative and significant in all second-stage specifications, indicating that self-selection is likely to have adversely affected our previous results.

The adoption of the switching regression approach enables us to estimate the counterfactual number of acquisitions and total R&D expenditures<sup>21</sup> for VC-backed newly public firms if they

<sup>21</sup>For reasons of brevity, the analysis of the Capex variable in our switching regression framework is not shown given that the PSM results in the previous section already suggest that the results regarding to Capex are weaker than for R&D and the switching regression approach largely confirms this outcome.

**TABLE 10** Endogeneity and switching regressions for post-IPO acquisitions [private equity (PE)- vs. venture capital (VC)-backed].

This table reports the results of the switching regression models with endogenous switching. Panel A presents the results of the two-stage model. The first stage in column (1) is the selection model using a probit regression with *VCBacked*, defined as one if the initial public offerings (IPO) firm is backed by a VC investor following our previously outlined definition, and zero otherwise, as the dependent variable. The second stage regression model using the number of post-IPO acquisitions in the first 3 years after the IPO as dependent variable are shown in columns (2) and (3) for VC-backed and PE-backed IPO firms, respectively. Columns (4) and (5) show similar second stage regressions with total R&D expenses as the dependent variable. *Local VC share* serves as the instrumental variable and is defined as the market share of VC-backed IPOs out of all sponsor-backed IPOs in a given combination of industry and year, where the industry is defined as the TRBC economic sector. The Inverse Mills Ratio adjusts for the non-zero mean of the error terms. The standard errors are corrected for heteroskedasticity with associated *t*-values (*z*-values for the probit regression) given in parentheses. Panel B reports the results of the switching regression model estimates for the What-if analyses of VC-backed and PE-backed IPO firms for the number of post-IPO acquisitions as well as for total R&D within the first 3 years after going public. All variables are defined in the Appendix. \*, \*\* and \*\*\* indicate statistical significance at the 10%, 5% and 1% level, respectively.

	First stage	Second stage:# acquisitions		Second stage: Total R&D	
	(1)	IPO + 3 y		IPO + 3 y	
	Selection	VC-backed	PE-backed	VC-backed	PE-backed
<b>Panel A: Model</b>					
<i>Local VC share</i>	2.318*** (6.883)				
<i>Inverse Mills Ratio</i>		-0.497* (-1.699)	-0.568** (-2.203)	-1.470*** (-3.434)	-0.829*** (-4.018)
<b>Company characteristics</b>					
<i>Firm revenue</i>	-0.128 (-1.430)	0.017 (0.434)	0.442*** (2.826)	-0.020 (-0.282)	-0.069 (-0.621)
<i>Return on Assets</i>	0.465 (0.809)	0.193 (0.599)	-0.201 (-0.194)	-0.652 (-1.482)	-1.575* (-1.710)
<i>Book leverage</i>	-1.188** (-2.506)	-0.551 (-0.982)	0.014 (0.027)	-1.310 (-1.449)	0.828 (1.616)
<i>Market-to-book ratio</i>	-0.062* (-1.773)	0.088** (2.533)	-0.004 (-0.063)	0.090*** (2.826)	0.127** (2.353)
<i>Financial slack</i>	3.443*** (7.634)	-1.013* (-1.964)	-1.247 (-0.948)	1.206* (1.867)	2.131** (2.060)
<i>Growth investment level</i>	1.344 (1.549)	-0.325 (-0.540)	-1.042 (-0.778)	1.086 (1.347)	-2.935*** (-3.700)
<i>Firm age at IPO</i>	-0.367*** (-2.961)	-0.099 (-0.964)	0.173 (0.734)	0.167 (1.092)	0.533*** (3.996)

(Continues)

TABLE 10 (Continued)

	First stage	Second stage:# acquisitions		Second stage: Total R&D	
	(1)	IPO + 3 y		IPO + 3 y	
	Selection	(2) VC-backed	(3) PE-backed	(4) VC-backed	(5) PE-backed
<b>IPO characteristics</b>					
<i>Primary proceeds</i>	-0.223 (-1.509)	0.493 (1.449)	0.613** (2.082)	0.953*** (4.696)	0.527*** (3.672)
<i>M&amp;A is IPO motive</i>	-0.078 (-0.423)	0.329** (2.157)	0.967** (2.475)	0.237* (1.693)	0.259 (0.980)
<i>Underwriter reputation</i>	-0.025 (-1.506)	-0.002 (-0.124)	-0.047 (-1.408)	0.021 (1.401)	0.040* (1.963)
<i>Top 10 IPO law firm</i>	-0.027 (-0.140)	-0.218 (-1.566)	0.378 (0.925)	0.131 (0.853)	0.296 (1.232)
<i>Underpricing</i>	0.013*** (3.012)	0.002 (0.674)	-0.007 (-0.714)	-0.002 (-0.617)	-0.018*** (-3.089)
<i>Offer price revision</i>	0.007 (1.396)	-0.001 (-0.241)	-0.001 (-0.100)	-0.008** (-2.041)	-0.017** (-2.208)
<i>First 30-days post-IPO return</i>	-0.004 (-0.667)	-0.001 (-0.364)	0.023* (1.838)	0.003 (0.735)	-0.001 (-0.161)
<i>Dual class share structure</i>	0.047 (0.159)	0.246 (0.572)	-0.380 (-0.659)	0.265 (0.854)	0.276 (0.804)
<i>Interest rate environment</i>	-0.044 (-0.952)	-0.035 (-1.185)	-0.037 (-0.490)	-0.108*** (-2.876)	0.031 (0.637)
<i>IPO market liquidity</i>	-0.004** (-2.401)	-0.003* (-1.955)	0.004 (1.097)	0.001 (0.432)	-0.001 (-0.487)
<b>M&amp;A characteristics</b>					
<i>Pre-IPO acquirer</i>	0.341* (1.893)	0.789*** (4.022)	1.519*** (3.785)	0.579*** (3.362)	0.151 (0.668)
<i>Industry acquisition intensity</i>	-0.344 (-0.733)	-0.068 (-0.078)	0.355 (0.752)	0.357 (0.461)	0.623 (1.397)
<i>Constant</i>	1.311 (1.366)	-0.424 (-0.217)	-3.825*** (-2.758)	-2.404* (-1.768)	-2.158** (-2.202)
Observations	764	424	340	424	340
(Pseudo) R-squared	0.737	0.291	0.188	0.408	0.279

	VC-backed	PE-backed
<b>Panel B: What-if Analysis</b>		
<b># post-IPO acquisitions 3 y</b>		
Actual # post-IPO acquisitions 3 y	0.90	2.04
Hypothetical # post-IPO acquisitions 3 y	0.93	0.19
<b>Deterioration/Improvement</b>	<b>-0.03</b>	<b>1.85***</b>
<b>LN Cum. R&amp;D 3 y</b>		
Actual LN Cum. R&D 3 y	3.93	1.25
Hypothetical LN Cum. R&D 3 y	3.36	-0.09
<b>Deterioration/Improvement</b>	<b>0.57***</b>	<b>1.33***</b>

were PE-backed, and vice versa for PE-backed firms if they were VC-backed. The results of these calculations are presented in Table 10, Panel B. Our prior findings are supported, particularly for PE-backed newly public firms. We find that the actual number of acquisitions is significantly higher than would be expected if these firms were VC-backed, with a difference of 1.85 acquisitions. Regarding R&D expenditures, the picture is more nuanced. The actual R&D spending during the 3 years following the IPO is significantly higher for VC-backed firms compared to the counterfactual scenario if they were PE-backed. However, the results also indicate that if newly public PE-backed firms were VC-backed, their R&D spending would be even lower. This suggests that the level of R&D spending may depend on the characteristics of the companies chosen by VC and PE sponsors. Nonetheless, our findings still hold regarding the substantially higher R&D spending by VC-backed newly public firms compared to PE-backed ones.

Overall, the switching regression analyses provide further support for our previous findings regarding the differences in post-IPO M&A activity and R&D spending. PE-backed newly public firms engage in significantly more M&A transactions during the first 3 years following the IPO, while VC-backed newly public firms allocate more resources to R&D activities. This further confirms that financial sponsors pursue different growth strategies, with PE-backed newly public firms emphasising external growth through acquisitions, while VC-backed newly public firms prioritise growth through R&D spending.<sup>22</sup>

<sup>22</sup>For the sake of completeness, we also use the switching regression framework with instrumental variables defined following a similar logic to compare PE-backed and non-backed firms (Supporting Information S1: Online Appendix Table OA-8) and VC-backed and non-backed firms (Supporting Information S1: Online Appendix Table OA-9). The regressions for PE-backed and non-backed newly public firms show that the IMR is insignificant, indicating that there was likely no bias in our previous regression analyses. The comparison between VC-backed and non-backed newly public firms in Supporting Information S1: Online Appendix Table OA-9 reveals that the previous regression coefficients may have been biased with regard to R&D spending (IMR significant at the 1% level), but not with respect to the post-IPO acquisition activity.



## 5 | INITIAL SPONSOR BACKING AND POST-IPO STOCK PRICE PERFORMANCE

In this section we turn to the post-IPO stock price performance of newly public firms. First, we test hypothesis **H4a** and examine the long-run post IPO stock returns conditioned on initial sponsor backing, to test whether VC backing or PE backing and the choice to acquire leads to different results. Second, we test hypothesis **H4b** by looking at newly public acquirers to analyze whether initial sponsor backing leads to different market reactions to M&A announcements.

### 5.1 | Long-run post-IPO returns

Long-run stock returns are calculated using traditional buy-and-hold abnormal returns (ARs) in line with standard practice (e.g., Brau et al., 2012; Lyon et al., 1999):

$$BHAR_i = \prod_{t=\tau_1}^{\tau_2} (1 + R_{it}) - \prod_{t=\tau_1}^{\tau_2} (1 + R_{pt}) \quad , \quad (2)$$

where  $BHAR_i$  is firm  $i$ 's buy-and-hold AR,  $\tau_1, \tau_2 \in [0, \dots, 36]$  are the holding periods in months, excluding the first trading day for all holding periods, and  $R_{pt}$  is an equally weighted matched portfolio of up to five style-matched competitor firms.<sup>23</sup> For the matched portfolio we use the text-based industry matching approach by Hoberg and Phillips (2010, 2016) and select up to five competitors with the highest similarity scores.,<sup>24,25</sup>

Table 11 presents the results of our examination of BHARs for holding periods of 12, 24 and 36 months by initial sponsor backing. Echoing the results of Levis (2011), we find positive BHARs for all PE-backed newly public firms for the 12-month holding period, followed by insignificant returns, with the average BHAR being positive, while the median BHAR is negative (Table 11, Panel A). In contrast, for VC-backed newly public firms, we observe mostly negative returns, particularly for the 24- and 36-month holding periods. The difference between PE-backed and VC-backed newly public firms is significant for all holding periods, with PE-backed newly public firms outperforming their VC-backed ones (Table 11, Panel A).

<sup>23</sup>Barber and Lyon (1997) as well as Kothari and Warner (1997) document the superiority of using matched-firm approaches vis-à-vis using a reference portfolio approach (e.g., based on a market index). In unreported results and as a further test, we calculate BHARs benchmarked against the Russell 3000 index. The results tend to show higher BHARs (both positive and negative) and higher levels of significance, suggesting that our benchmarking approach leads to more conservative results.

<sup>24</sup>Our initial sample of 917 financial sponsor-backed IPO firms is reduced to 732 observations due to IPO firms with no match in the Hoberg and Phillips database or insufficient data on the proposed match(es). The 732 IPO firms in this analysis have on average 3.4 matched firms.

<sup>25</sup>Bessembinder and Zhang (2013) and Bessembinder et al. (2019) highlighted potential issues when using BHARs to assess corporate events. In essence, the observed returns may be driven by a bad benchmark problem. While we acknowledge that this may also affect our analyses, we are confident that our rival matching approach should arrive at robust results from an investor perspective. The advantage of our approach is that we use the closest rivals based on text-based Network Industry Classifications developed by Hoberg and Phillips (2010, 2016). This means that the rivals likely have the same underlying risk factors and are similarly exposed to industry wide systemic shocks and should therefore show similar return patterns. This should alleviate the bad benchmarking problem to a certain extent.

**TABLE 11** Post-initial public offerings (IPO) buy-and-hold abnormal returns.

This table reports the buy-and-hold abnormal returns (BHARs) of newly public firms during the first 12 ( $BHAR_{[0;12]}$ ), 24 ( $BHAR_{[0;24]}$ ), and 36 months ( $BHAR_{[0;36]}$ ) following their IPO, divided by backing group. Panel A shows the BHARs for all newly public firms, Panel B for firms that undertake at least one acquisition within the first 3 years following their IPO, Panel C for firms that do not engage in any acquisitions throughout the first 3 years of being public, and Panel D shows the difference between acquirers (Panel B) and non-acquirers (Panel C), all subdivided by backing group. The market return is estimated using an equally weighted portfolio of up to five style-matched competitor firms. For the matched portfolio we utilize the text-based industry matching approach by Hoberg and Phillips (2010, 2016) and use up to five competitor firms with the highest similarity scores. Average BHARs are tested for statistical significance using the parametric *t*-test and median BHARs are tested using the nonparametric Wilcoxon test. Differences between samples are tested for significance using the parametric two-sample *t*-test and the nonparametric Wilcoxon rank-sum test. \*, \*\* and \*\*\* indicate statistical significance at the 10%, 5% and 1% level, respectively.

<b>Panel A: Buy-and hold abnormal returns by backing group</b>						
	<b>Average BHAR</b>	<b>Median BHAR</b>	<b>Average BHAR</b>	<b>Median BHAR</b>	<b>Δ Average BHAR</b>	<b>Δ Median BHAR</b>
	<b>PE-backed firms (n = 285)</b>		<b>VC-backed firms (n = 447)</b>		<b>Difference PE-backed and VC-backed firms</b>	
$BHAR_{[0;12]}$	9.33%***	5.74%**	-0.82%	-6.32%	10.15%**	12.06%**
$BHAR_{[0;24]}$	5.46%	-0.28%	-9.51%*	-17.00%***	14.97%**	16.72%***
$BHAR_{[0;36]}$	1.03%	-5.91%	1.43%	-23.15%**	-0.40%	17.24%***
<b>Panel B: Buy-and hold abnormal returns for acquirers by backing group</b>						
	<b>PE-backed firms (n = 184)</b>		<b>VC-backed firms (n = 173)</b>		<b>Difference PE-backed and VC-backed firms</b>	
$BHAR_{[0;12]}$	13.26%***	6.98%***	-1.89%	-10.73%	15.15%**	17.71%***
$BHAR_{[0;24]}$	14.13%***	6.54%**	1.40%	-18.72%	12.73%	25.26%***
$BHAR_{[0;36]}$	5.67%	-6.04%	7.75%	-16.79%	-2.08%	10.75%
<b>Panel C: Buy-and hold abnormal returns for non-acquirers by backing group</b>						
	<b>PE-backed firms (n = 101)</b>		<b>VC-backed firms (n = 274)</b>		<b>Difference PE-backed and VC-backed firms</b>	
$BHAR_{[0;12]}$	2.19%	-3.34%	-0.15%	-4.43%	2.34%	1.09%
$BHAR_{[0;24]}$	-10.33%	-6.49%	-16.40%**	-15.64%***	6.07%	9.15%
$BHAR_{[0;36]}$	-7.43%	-5.91%	-2.57%	-29.67%***	-4.86%	23.76%***
<b>Panel D: Buy-and hold abnormal returns: difference between acquirers and non-acquirers by backing group</b>						
	<b>Δ Average BHAR</b>	<b>Δ Median BHAR</b>	<b>Δ Average BHAR</b>	<b>Δ Median BHAR</b>		
	<b>PE-backed firms</b>		<b>VC-backed firms</b>			
$BHAR_{[0;12]}$	11.07%**	10.32%	-1.74%	-6.30%		
$BHAR_{[0;24]}$	24.46%***	13.03%**	17.80%*	-3.08%		
$BHAR_{[0;36]}$	13.10%	-0.13%	10.32%	12.88%*		

Dividing the sample into PE-backed and VC-backed newly public acquirers and non-acquirers (Table 11, Panels B and C) reveals the underlying drivers of the results. We find that particularly PE-backed newly public acquirers drive the positive results for PE-backed firms with significant positive BHARs for the 12- and 24-month holding periods. VC-backed newly public acquirers, on the other hand, earn insignificant returns, with median BHARs for all holding periods being negative. The difference tests document that PE-backed acquiring firms outperform VC-backed ones for the 12-month holding period and to a certain degree for the 24-month holding period, supporting hypothesis **H4a**. The results for non-acquiring firms are more ambiguous. PE-backed newly public non-acquirers display generally negative returns, which are insignificant, and VC-backed newly public non-acquirers also show negative returns, which are partially significant. The differences between the two backing groups generally lack significance.

Overall, our analysis of the long-term post-IPO returns supports hypothesis **H4a** as PE-backed newly public acquirers not only outperform VC-backed newly public acquirers, but also their non-acquiring peers, particularly during the first two post-IPO years. This positive post-IPO stock performance, especially by PE-backed newly public acquirers, stands in contrast to the majority of the prior literature, which generally observes a long-run underperformance (e.g., Brav et al., 2000; Ritter & Welch, 2002; Ritter, 1991).<sup>26</sup>

## 5.2 | M&A announcement returns

ARs surrounding post-IPO acquisition announcement are calculated using a market-adjusted event study model, summing ARs over the respective event window to obtain cumulative ARs (CARs):

$$CAR_{i, [\tau_1, \tau_2]} = \sum_{t=\tau_1}^{\tau_2} (R_{it} - R_{mt}) \quad , \quad (3)$$

where  $CAR_{i, [\tau_1, \tau_2]}$  is firm  $i$ 's CAR during the event window  $[\tau_1; \tau_2]$  with  $\tau_1, \tau_2 \in [-2, \dots, +2]$ ,  $R_{it}$  is firm  $i$ 's stock return and  $R_{mt}$  is the benchmark return, for which we use the Russell 3000 Index. Average CARs are calculated by adding all CARs over a specific event window and dividing them by the total number of observations. After controlling for confounding events (e.g., multiple acquisitions at the same time, earnings announcements, etc.), we are left with a sample of 1662 observations.<sup>27</sup>

<sup>26</sup>We also examine long-term stock returns in a regression setting. Our dependent variables are the newly public firm  $i$ 's 12, 24 or 36 months BHAR. The results of the regression are presented in Supporting Information S1: Online Appendix Table OA-10. The regression results resonate with our findings in Table 11 and show that particularly newly public PE-backed acquirers perform well for the 12- and 24-month holding period, as indicated by the positive and significant coefficient of the interaction term *PEBacked* × *Firm is post-IPO acquirer*.

<sup>27</sup>We calculate ARs using the market-adjusted model, as some companies engage in acquisitions shortly after their IPO, leaving us with estimation periods that are too short for a market model event study. However, in unreported results we also use a market model event study of the form  $AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$  with an estimation window from  $t = -126$  to  $t = -3$ , with  $R_{it}$  and  $R_{mt}$  again being firm  $i$ 's stock return and the market return as approximated by the Russell 3000 Index and  $\alpha_i$  and  $\beta_i$  are the slope coefficient and the sensitivity of stock  $i$  to the market index. The results are very similar to the ones presented in this section.

**TABLE 12** Post-initial public offerings (IPO) acquirer returns surrounding M&A announcements.

This table reports the stock market reaction of newly public acquirers between 2001 and 2017 to M&A announcements during the first 3 years following their IPO, divided by backing group. The cumulative abnormal returns (CARs) are estimated for bidding firms over multiple event windows. Daily abnormal returns are obtained using the market-adjusted event study model with the Russel 3000 as the market portfolio. Average CARs are tested for significance using the parametric *t*-test and median CARs are tested using the nonparametric Wilcoxon test. Differences between sample groups are tested for significance using the parametric two-sample *t*-test and the nonparametric Wilcoxon rank-sum test. \*, \*\* and \*\*\* indicate statistical significance at the 10%, 5% and 1% level, respectively.

Event window	PE-backed firms ( <i>n</i> = 776)		VC-backed firms ( <i>n</i> = 419)		Difference PE-backed and VC-backed firms	
	Average CAR	Median CAR	Average CAR	Median CAR	Δ Average CAR	Δ Median CAR
[-2; +2]	0.74%***	0.50%***	0.75%	0.11%	-0.01%	0.39%
[-1; +1]	0.60%***	0.23%**	0.75%*	0.45%	-0.15%	-0.22%
[0; 0]	0.26%**	0.05%*	0.26%	-0.03%	0.00%	0.07%
[-2; 0]	0.23%	0.03%	0.22%	0.01%	0.01%	0.02%
[0; +2]	0.78%***	0.46%***	0.79%*	0.54%	-0.01%	-0.08%

The results of the event study are presented in Table 12. Both PE-backed and VC-backed newly public acquirers achieve positive returns, but only the returns to PE-backed newly public acquirers are significant, particularly during the [-1; +1] event window. However, while the returns to PE-backed firms are significant, the difference to the returns observed for VC-backed newly public acquirers is insignificant. Given the lack of significance, we reject hypothesis **H4b**, which assumes that announcement returns for PE-backed newly public acquirers would surpass those of VC-backed ones.

The results are nonetheless interesting, as newly public acquirers do not destroy shareholder wealth when engaging in acquisitions, irrespective of their initial sponsor backing. This result stands in contrast to prior M&A research that documents negative returns to acquiring firms (e.g., Moeller et al., 2004; Mulherin & Boone, 2000) but is aligned with the related literature that observes positive wealth effects for newly public acquiring firms (Arikan & Capron, 2010; Wiggenhorn et al., 2007), and more recent studies on M&As, such as Alexandridis et al. (2017), which document positive shareholder wealth effects for acquirers more generally.<sup>28</sup>

<sup>28</sup>We also examine short-term announcement returns in a regression setting. Our dependent variables are acquirer *i*'s [-1; +1] and [-2; +2] event window CAR. The results are presented in Supporting Information S1: Online Appendix Table OA-11 and echo our findings of the univariate analysis as the coefficient for the variable *PEBacked* lacks significance. We also conducted an analysis including a variable signifying that the acquirer law firm is considered a top 10 law firm, as measured by its market share of the total deal value in the year before the M&A. However, as an acquirer law firm was only available through SDC for about 50% of our sample transaction, our sample size was significantly reduced. Therefore, for reasons of brevity we do not show the results. Nonetheless, the results remain qualitatively unchanged and are available upon request.

## 6 | CONCLUSION

In this study, we examine the differential impact of PE or VC backing at the time of the IPO on the subsequent acquisition activity of newly public firms. Our analysis is based on a sample of 1341 IPOs conducted in the United States between 2001 and 2017, with 1845 subsequent post-IPO acquisitions by these newly public firms. Our results show that PE-backed newly public firms engage in nearly three times as many post-IPO acquisitions as VC-backed newly public firms and almost twice as many compared to non-backed firms. Furthermore, PE-backed firms initiate acquisitions earlier than VC-backed or non-backed ones.

Our results also indicate that VC-backed and PE-backed firms pursue different growth strategies for their portfolio companies. PE sponsors steer their newly public portfolio firms to pursue more acquisitions. In contrast, VC sponsors guide their newly public portfolio firms towards significantly higher post-IPO R&D spending, emphasising organic growth options. These findings persist across various regression specifications, a matched sample approach to address inherent differences in the companies selected by PE and VC firms, and a switching regression model with endogenous switching.

We furthermore observe differences in post-IPO share price performance based on initial financial sponsor backing. Specifically, PE-backed newly public acquirers experience positive long-run post-IPO stock returns, particularly within the first two post-IPO years, and achieve significantly higher gains than VC-backed newly public acquirers. Moreover, our analysis shows that newly public firms, irrespective of initial sponsor backing, do not destroy shareholder wealth when engaging in post-IPO acquisitions, with significant returns observed for PE-backed newly public acquirers. However, the returns for VC-backed newly public acquirers are insignificant, as is the difference in returns between the two backing groups.

This study contributes to the literature on acquisition behaviour of newly public firms by documenting the impact of financial sponsor backing on post-IPO acquisition activity of these firms, specifically differentiating between PE and VC sponsors, a distinction that prior studies neglected. Our findings highlight the importance of recognising the distinct types of financial sponsors and their influence on growth strategies employed by portfolio companies. Additionally, we identify a significantly higher long-run post-IPO stock price performance for PE-backed newly public acquirers compared to VC-backed ones.

These findings have implications for investors seeking to understand IPO firms' growth strategies and their implications on long- and short-term share price performance based on their pre-IPO ownership background. Furthermore, our study adds to the understanding of the role of financial sponsors as owners of newly public firms. Investors could use these insights to make more informed investment decisions.

### DATA AVAILABILITY STATEMENT

Data subject to third party restrictions—The main data that support the findings of this study are available from CRSP, Compustat, and Refinitiv. Restrictions apply to the availability of these data, which were used under license for this study.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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## APPENDIX A

See Table A1.

**TABLE A1** Variable definitions and data sources.

This table reports the regression variables and describes them in more detail, including an identification of their data source. The variables are divided into sponsor backing variables and sponsor control variables, as well as company characteristics, IPO characteristics, M&A characteristic variables, main dependent variables, and the instrumental variables.

Variable	Definition	Data source
<b>Sponsor backing</b>		
<i>PEBacked</i>	Binary variable defined as one if the IPO firm is backed by (a) PE sponsor(s) with a (cumulative) pre-IPO ownership stake that exceeds 25%, zero otherwise.	Securities Data Company Platinum (SDC), SEC EDGAR, Private Equity International (PEI)
<i>VCBacked</i>	Binary variable defined as one if the IPO firm is backed by (a) VC sponsor(s)	SDC, SEC EDGAR, PEI

TABLE A1 (Continued)

Variable	Definition	Data source
	with a (cumulative) pre-IPO ownership stake that exceeds 25%, zero otherwise.	
<i>Leading PE equity stake</i>	Equity stake in percent of the leading PE sponsor (i.e., the one with the highest equity stake) at the time of the IPO.	SDC, SEC EDGAR
<i>Leading VC equity stake</i>	Equity stake in percent of the leading VC sponsor (i.e., the one with the highest equity stake) at the time of the IPO.	SDC, SEC EDGAR
<b>Sponsor controls</b>		
<i>Top quartile sponsor</i>	Binary variable defined as one if the sponsor's reputation measure for a given year was in the top quartile for its respective group, zero otherwise. Following Nahata (2008), the reputation measure is based on the cumulative dollar market value of all companies taken public by the respective VC or PE firm between 1997 and given calendar year divided by the aggregate market value of all VC-backed or, in the case of PE firms, PE-backed companies that went public in the same period.	SDC, SEC EDGAR
<i>Style drift</i>	Binary variable defined as one if the initial investment into the IPO firm is classified as a PE (VC) investment as per SDC while the leading sponsor is classified as VC (PE) as per SEC EDGAR and PEI, zero otherwise.	SDC, SEC EDGAR, PEI
<i>PE syndicated</i>	Binary variable defined as one if the leading PE sponsor (i.e., the one with the highest equity stake) has invested alongside other sponsors, zero otherwise.	SEC EDGAR, PEI
<b>Company characteristics</b>		
<i>Firm revenue</i>	Natural logarithm of the firm's revenues in million US dollars in the IPO year.	Compustat
<i>Return on Assets</i>	Firm's net income in million US dollars divided by the firm's total assets in million US dollars in the IPO year.	Compustat

(Continues)

TABLE A1 (Continued)

Variable	Definition	Data source
<i>Book leverage</i>	Firm's interest-bearing debt in million US dollars divided by the firm's total assets in million US dollars in the IPO year.	Compustat
<i>Market-to-book ratio</i>	Firm's market value of equity in million US dollars in the IPO year divided by the firm's book value of equity in million US dollars in the IPO year.	Compustat
<i>Financial slack</i>	Firm's cash and marketable securities in million US dollars divided by total assets in million US dollars in the IPO year.	Compustat
<i>Growth investment level</i>	Sum of firm's R&D and Capex expenses in million US dollars divided by total assets in million US dollars in the IPO year.	Compustat
<i>Firm age at IPO</i>	Natural logarithm of the firm's calendar year of offering minus the firm's calendar year of founding.	SDC, Website of Jay Ritter ( <a href="https://site.warrington.ufl.edu/ritter/files/founding-dates.pdf">https://site.warrington.ufl.edu/ritter/files/founding-dates.pdf</a> )
<b>IPO characteristics</b>		
<i>Primary proceeds</i>	Natural logarithm of capital raised during the IPO from sale of primary shares in million US dollars.	SDC
<i>M&amp;A is IPO motive</i>	Binary variable defined as one if the IPO firm discloses M&A as a motive for going public, zero otherwise.	SDC
<i>Underwriter reputation</i>	Sum of proceeds from US IPOs in which the leading book runner served as underwriter in IPO year divided by sum of proceeds from all US IPOs in IPO year.	SDC
<i>Top-10 IPO law firm</i>	Binary variable defined as one if the respective law firm was among the top 10 law firms by market share of total IPO proceeds in the year before the IPO announcement, zero otherwise.	SDC
<i>Underpricing</i>	Percentage change from the IPO offer price to the first day closing price.	SDC
<i>Offer price revision</i>	Percentage change from the midpoint of the original file price range to the actual offer price of the IPO.	SDC, SEC EDGAR
<i>First 30-days post-IPO return</i>	Cumulative returns of the issuer between days 1 and 30 after the IPO (i.e., excluding first day returns).	SDC

TABLE A1 (Continued)

Variable	Definition	Data source
<i>Dual Class share structure</i>	Binary variable defined as one if the IPO firm has employed a dual class share structure, zero otherwise.	SDC
<i>Interest rate environment</i>	The nominal US mid-fund rate 90 days before the IPO announcement.	Bank of International Settlements
<i>IPO market liquidity</i>	Number of IPOs in respective calendar year.	Website of Jay Ritter
<b>M&amp;A characteristics</b>		
<i>Firm is pre-IPO acquirer</i>	Binary variable defined as one if IPO firm conducted a transaction within 3 years before the IPO, zero otherwise.	SDC
<i>Industry acquisition intensity</i>	Number of acquisitions within the Fama-French 49 industry portfolio divided by total firms in the Fama-French 49 industry portfolio in the year before the IPO.	SDC, Website of Kenneth French ( <a href="https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html">https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html</a> )
<i>Pre-IPO acquisitions</i>	Number of acquisitions conducted by IPO firm within 3 years before the IPO.	SDC
<i>Time to acquisition</i>	Days between IPO and the acquisition announcement date.	SDC
<i>Stock runup return (prv 30d)</i>	Total stock return of acquirer in the last 30 days before acquisition (−32; −3) excluding the event study event window.	Center for Research in Security Prices (CRSP)
<i>% of shares acquired</i>	Percentage of shares acquired in the transaction.	SDC
<i>Acquisition is cross-border</i>	Binary variable defined as one if acquirer and target are located in different countries, zero otherwise.	SDC
<i>Acquisition is cross-industry</i>	Binary variable defined as one if acquirer and target are located in different Fama-French 49 industry portfolios, zero otherwise.	SDC, Website of Kenneth French ( <a href="https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html">https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html</a> )
<i>Target is public</i>	Binary variable defined as one if target is publicly listed at the time of the acquisition, zero otherwise.	SDC
<i>Firm is post-IPO acquirer</i>	Binary variable defined as one if IPO firm conducted one or more acquisitions after going public, zero otherwise.	SDC

(Continues)

TABLE A1 (Continued)

Variable	Definition	Data source
<b>Main dependent variables</b>		
<i>Acquisition frequency</i>	IPO firm's total number of post-IPO acquisitions for up to 3 years following the IPO.	SDC
<i>Total R&amp;D</i>	Natural logarithm of a firm's total R&D spending in million US dollars for up to 3 years following the IPO.	Compustat
<i>Total CAPEX</i>	Natural logarithm of a firm's total CAPEX expenditures in million US dollars for up to 3 years following the IPO.	Compustat
<i>Cross-border</i>	Binary variable equal to one if the IPO firm has conducted at least 1 cross-border acquisitions during the 3 years following the IPO, zero otherwise.	SDC
<i>Cross-industry</i>	Binary variable equal to one if the IPO firm has conducted at least 1 cross-industry acquisitions, where acquirer and target come from different Fama-French 49 industry portfolios, during the 3 years following the IPO, zero otherwise.	SDC, Website of Kenneth French ( <a href="https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html">https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html</a> )
<i>Relative size</i>	Binary variable equal to one if the IPO firm has conducted at least one acquisition during the 3 years following the IPO where the ratio of deal value to acquirer revenue at the time of the IPO being greater than 50%.	SDC, Compustat
<i>Days to first post-IPO acquisition</i>	Natural logarithm of the IPO firm's number of days until its first post-IPO acquisition.	SDC
<i>BHAR</i>	IPO firm buy-and-hold abnormal stock return over the respective holding period excluding the IPO date benchmarked against the expected return of an equally weighted matched portfolio of up to five style-matched competitor firms with the highest similarity scores identified using the text-based industry matching procedure introduced by Hoberg and Phillips (2010, 2016).	CRSP, Website of Hoberg and Phillips ( <a href="https://hobergphillips.tuck.dartmouth.edu/">https://hobergphillips.tuck.dartmouth.edu/</a> )
<i>CAR</i>	Market adjusted acquirer cumulative abnormal stock return over the respective event window benchmarked against the Russel 3000 Index.	CRSP

TABLE A1 (Continued)

Variable	Definition	Data source
<b>Instrumental variables</b>		
<i>Local VC share</i>	Number of VC-backed IPOs in a given combination of year and TRBC economic sector to the sum of IPOs of VC-backed firms and the respective control group (PE-backed/nonbacked) in the same combination of year and TRBC economic sector.	SDC
<i>Local PE share</i>	Number of PE-backed IPOs in a given combination of year and TRBC economic sector to the sum of IPOs of VC-backed firms and the respective control group (PE-backed/nonbacked) in the same combination of year and TRBC economic sector.	SDC