

A success dressed as a failure? Evidence from post-IPO withdrawal outcomes in Europe

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Abstract

What happens to companies that file for an initial public offering (IPO), but withdraw and do not list? How long does the post-IPO outcome take? These questions are investigated by analysing market, firm and offer characteristics of 334 withdrawn IPOs in Europe between 2001 and 2015. The majority of withdrawn IPOs is engaged in M&A, only few file for a second time IPO. These post-IPO withdrawal outcomes happen shortly after the IPO filing. Private equity and venture capital-backed firms are more frequently engaging in M&A or trading. The evidence suggests that the IPO may be used as a marketing mechanism, being one of several alternatives of exit.

KEYWORDS

Europe, IPO, M&A, probit, survival, withdrawal

JEL CLASSIFICATION

G14, G24, G32

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1 | INTRODUCTION

The transition from private to public is a crucial element in a company's life cycle. However, not all companies that file for an initial public offering (IPO) do list as the issuer reserves the option to withdraw the IPO before its completion (Busaba, 2006). In Europe, on average 12% of filed IPOs are withdrawn, compared to 35% in the United States (Boeh & Dunbar, 2021) and 3% in Japan (Fan & Yamada, 2019). While different aspects of an IPO are heavily researched, the phenomenon of an IPO withdrawal, despite its frequency and scale, has only attracted limited attention (Helbing, 2019). Surprisingly, we do not know much about the afterlife of a company that withdraws their initial public offering. We suspect this is due to the scarcity of information related to withdrawn filings and private companies, especially pronounced in Europe. After the IPO withdrawal, there are several outcomes to be observed. The company may try a second time IPO or engage in merger and acquisition (M&A); may become inactive or simply remain private. As Boeh and Dunbar (2013) note, an IPO withdrawal is not necessarily a negative event, if the issuer has a superior option. Research on postoffering outcomes suggests that IPOs provide valuable information to potential acquirers (Chemmanur et al., 2023; Reuer & Shen, 2004; Signori & Vismara, 2017). Brau et al. (2010) find evidence for the US market that venture capital (VC) pursue multiple exit routes alongside the IPO. Withdrawn IPOs though might be perceived as riskier, facing the 'lemon' problem (Akerlof, 1970). Research on the US market shows that an IPO withdrawal reduces the probability and issue price of a second time IPO (Dunbar, 1998; Dunbar & Foerster, 2008; Lian & Wang, 2012). In a similar vein, research on equity crowdfunding offerings in the United Kingdom evidence a high failure rate and low success rate for other outcomes such as VC-backing or M&A (Cumming et al., 2019; Signori & Vismara, 2018). This paper focuses on the rich and heterogeneous landscape of IPO companies in Europe (Ritter, 2003) to examine the afterlife of firms that filed to go public but withdraw from this process. We examine withdrawn IPO filings in an attempt to expand our understanding of companies that supposedly failed the IPO. Completed IPOs tell us only part of the story (Busaba et al., 2015). What happens to companies that withdraw from the IPO? And how long does it take to the outcome? Can we infer the post-IPO withdrawal outcome already at the time of the IPO filing?

To date, published research on this topic has been conducted on US data with a specific post-IPO withdrawal outcome at hand (Boeh & Dunbar, 2021; Dunbar & Foerster, 2008; Lian & Wang, 2009, 2012). General conclusions of such a complex phenomenon as an IPO withdrawal must be based on empirical evidence derived from multiple institutional frameworks and exchanges. This pan-European study fills the void by carefully following all 334 withdrawn IPOs identified in Helbing et al. (2019) that intended to go public in Europe between 2001 and 2015. While previous research has primarily focused on completed IPOs (see for instance Chemmanur et al., 2023; Ragozzino & Reuer, 2007; Reuer & Shen, 2004; Signori & Vismara, 2017), we extend the link between IPOs and M&A to supposedly failed IPOs and show that IPO withdrawals are an important piece in the strategic exit decision of insiders and produce valuable information to the markets.

This paper advances research in three ways by mapping the extent, exploring the determinants and timings as well as the role of private equity (PE) and VC of post-IPO withdrawal outcomes. First, we provide empirical evidence on European IPO withdrawals considering different stock exchange settings within a harmonised institutional environment under EU directives, such as main and alternative stock markets. Examining a broader range of post-IPO withdrawal outcomes, we make use of detailed hand-collected

prospectus data from 334 withdrawn European IPOs as well as a wide range of market characteristics at the time of the IPO filing. We find that an IPO withdrawal does not necessarily end in termination or, as often claimed by withdrawn IPO companies, will not return to the market. We find that most withdrawn IPO companies are engaged in M&A (39%), followed by a high proportion of companies that simply remain private (28%). A significant fraction of withdrawn IPOs becomes inactive (24%), predominantly at the Alternative Investment Market (AIM) with 46%; whereas second time IPOs are infrequent (8%). Second, we identify determinants and, for the first time, focus on the timing of post-IPO withdrawal outcomes. Better corporate governance not only decreases the probability of ending up inactive but also increases the probability of a second time IPO after the withdrawal. When insiders want to exit the company at the IPO which is approximated by a higher proportion of secondary shares, it reduces the likelihood of a second time IPO. Disclosing intellectual capital at the IPO increases the probability of an M&A outcome. Whereas withdrawn companies that die, are younger and have smaller offerings, dominated by occurrences at the exchange-regulated AIM, taking advantage of looser disclosure and listing requirements. Especially this finding, might inform rule makers and investors alike focusing on disclosure and corporate governance standards. We identify that companies engaging in a second time IPO or M&A do so *shortly* after a withdrawn IPO filing while the rate of death is constant. Third, we contribute to the debate on PE and VC backing by exploring their role in withdrawn IPOs. We find that withdrawn PE and VC-backed IPO companies in Europe are more likely and frequently engaging in M&A or a second time IPO. Further, PE target IPO withdrawals and move in *shortly* after the IPO filing. Finally, IPO withdrawals might be impacted by changes in regulation as suggested by previous research on security regulations and the role on IPO activity and survival (Cattaneo et al., 2015; Gao et al., 2013). Therefore, we address possible endogeneity concerns by exploiting the regulatory shock of the introduction of the Markets in Financial Instruments Directive (MiFID) across the main stock exchanges and the AIM (Akyol et al., 2014; Cumming et al., 2011).

In brief, the evidence is consistent with the view that an IPO is one of several alternatives in which especially PE and VC pursue a dual-track strategy. Companies in Europe may use the IPO as a marketing mechanism pursuing multiple routes and remain private, if results are not satisfying. Our study implies that an IPO withdrawal is not per se a negative event. The IPO does not seem to be the conclusive step in the company's life cycle but rather a strategic choice within the continuum of governance, regulation and exits of insiders. We provide further evidence on the link between the IPO and M&A markets. Search and evaluation costs are a main factor for mergers and acquisitions. We assume that the information production during an IPO filing significantly reduces the information acquisition costs making it a suitable target. We can infer about the potential post-IPO withdrawal outcome already at the IPO filing. Our results do not support the hypotheses that IPOs are withdrawn when timing is unfavourable or because they are 'bad' companies. Every IPO filing produces valuable information, even the withdrawn ones.

The remainder of the paper is structured as follows: Section 2 introduces the testable hypotheses. Section 3 outlines the method and data set and the variables influencing the post-IPO withdrawal outcomes and timing. The empirical evidence is presented in Section 4 and tested for robustness in Section 5. Section 6 concludes this paper with a brief summary and a discussion on the implications and limitations of this research.

2 | RELATED LITERATURE ON IPO WITHDRAWAL

This paper focuses on the afterlife of firms that decide to go public in Europe, but withdraw from this process. After the IPO withdrawal, there are several outcomes to be observed. The company may try a second time IPO or engage in M&A; may become inactive or simply remain private. In Europe, in contrast to the United States, the ‘event’ of an IPO withdrawal is not formally defined such that no paperwork needs to be submitted to the regulator. Thus, an IPO withdrawal cannot be identified to the exact date, hence any event window is blurry (Helbing et al., 2019). An IPO is withdrawn either when the IPO filing is actively cancelled or simply when the IPO company eventually does not list; thereby not complying with listing standards. For this study we exploit the rich institutional environment in Europe, which is different to that in the United States. The IPO market in Europe is characterised by a series of domestic markets with low competition and foreign listings, yet a high degree of financial harmonisation and alignment between the exchanges (Vismara et al., 2012). Bancel and Mittoo (2009) find that in Europe nonfinancial motivations are as important as financial flexibility when deciding to go public; much in contrast to the United States. Ritter (2003) and Ritter et al. (2013) find that there are differences in the characteristics of IPO companies as these are more diverse and older in Europe. Previous research on security regulations has examined the role on stock markets (La Porta et al., 2006), IPO activity and survival (Cattaneo et al., 2015; Gao et al., 2013) as well as growth (Takahashi & Yamada, 2015). Evidence on the impact of stricter versus relaxing regulation is mixed. Deregulation such as listing requirements seems to have a positive effect on IPO activity especially for small companies in Japan (Takahashi & Yamada, 2015) and in the United States (Dambra et al., 2015), but not in Europe (Engelen et al., 2020). While previous evidence on the Italian and European IPO markets concludes that deregulation has a negative effect on both, the IPO activity and survival (Cattaneo et al., 2015). Undoubtedly, IPO withdrawal might be impacted by regulation. Regulation on disclosure requirements, listing standards at stock exchanges and corporate governance codes can be effective to reduce information asymmetries and thereby improving the market mechanism (Akyol et al., 2014; Cattaneo et al., 2015; Cumming et al., 2011). At an initial public offering, the company's value and price need to be publicly assessed for the first time. During the IPO price discovery process, information asymmetries can be identified between the private company and potential public market investors (Hoque & Lasfer, 2015; Vandemaele, 2003). Hence, potential investors value the IPO company based on a subjective probability of expectation of future success determined by firm and nonfirm specific characteristics (Allen & Faulhaber, 1989).

Dunbar (2011) and Boeh and Dunbar (2013) evaluate the afterlife of withdrawn firms in the United States, surfacing different postwithdrawal outcomes, in particular second time IPOs. They argue that companies withdraw from IPO either because they are ‘bad’ candidates and get rejected by the market or they are ‘good’ companies and intentionally withdraw. In a subsequent analysis, Boeh and Dunbar (2021) focus on the dual-track of private placements for IPO companies as they assume that most IPOs are motivated by capital requirements only. Brau et al. (2010) focus on exit strategies of VC identifying the pursuits of an IPO alongside trade sales. Lian and Wang (2009) and later in Lian and Wang (2012) apply the Akerlof ‘lemon’ problem to withdrawn IPOs that return to the IPO market. Assuming unchanged capital raising requirements, they argue that withdrawn IPO companies, being perceived riskier, face a valuation penalty. In that sense, companies can withdraw from the IPO in favour of a (superior) *financial* alternative. In contrast, a company might remain private, whereby the prospective IPO company is not dependent on going public, if the costs of being public exceed the benefits

thereof (Loughran & Ritter, 1995). This implies that IPOs are withdrawn when the equilibrium offer price is below a certain issuer's value threshold (Busaba, 2006; Chemmanur & Fulghieri, 1999). Nonfinancial motivations for an IPO, likewise many firm and prospectus specific information, regulatory changes or the timing of these events have not been considered in previous research on IPO withdrawals.

2.1 | Hypotheses on post-IPO withdrawal outcomes

Previous research on market timing suggests that companies attempt to exploit favourable market conditions when filing for an IPO (see for instance Busaba et al., 2015; Lowry, 2003; Ritter & Welch, 2002). Companies frequently blame unfavourable market conditions for the IPO withdrawal in news articles.¹ In line with market timing ideas, we should consequently observe a large proportion of withdrawn companies to return to the market and file for a second time IPO (trading). Especially, when market conditions were unfavourable at the time of the original IPO filing. We therefore propose the following:

Hypothesis 1. The likelihood of a 'trading' outcome post-IPO withdrawal is higher for IPOs filed during unfavourable market conditions.

At the IPO the ownership structure is fundamentally dispersed, giving rise to potential agency problems (Abdulla et al., 2016; Latham & Braun, 2010). In agency theory, we assume inherent conflicts for IPO companies between agents (management) and owners/shareholders (principals) (Jensen & Meckling, 1976). The implied adverse selection and moral hazard issues can have drastic negative consequences and must be mitigated (La Porta et al., 2006). While better corporate governance can serve as a signal of the underlying quality of the IPO firm (Certo, 2003; Djerbi & Anis, 2015), lower quality of corporate governance can lead to investors reducing IPO valuations (Brav & Gompers, 2003; Reiff & Tykvová, 2021). Bertoni et al. (2014) postulate a positive impact of firm's corporate governance characteristics on IPO valuations which differs across the company's life cycle. For young IPO companies, such as those at the AIM, value-creation is identified to be the main benefit of corporate governance. Once the company matures across the life cycle, this role changes to value-protection. Helbing et al. (2019) show that corporate governance measures are highly aligned in the European Economic Area, yet important determinants of IPO withdrawal. Enriques and Volpin (2007) discuss major changes and implementation of corporate governance codes in Europe. These are categorised into four themes aiming at improving internal governance mechanisms, investor protection, disclosure requirements and public enforcement, thereby increasing transparency between the public firm and investors. Akyol et al. (2014) study the staggered adoption of these during the period 1998–2012 in Europe and evidence that higher corporate governance standards decrease information asymmetries in IPO firms. However, Chemmanur et al. (2023) speculate that lower listing requirements for second-tier markets such as the AIM, increases moral hazard concerns of potential investors. Higher disclosure requirements are evidenced to improve information transparency and the effectiveness of stock markets (La Porta et al., 2006). Boeh and Southam

¹See for instance news articles on Deezer, a company that filed for an IPO in France in 2015 but withdrew because of 'unfavourable market conditions' (Cookson, 2015).

(2011) and Reiff and Tykvová (2021) also highlight the impact of governance on the probability of IPO withdrawal in the United States. Helbing et al. (2019) suggest that lower levels of corporate governance characteristics increase the probability of IPO withdrawal. In a similar vein, we assume that lower levels of corporate governance characteristics at the original IPO filing accentuate possible principal-agency issues and in turn increase the probability of a 'inactive' outcome post-IPO withdrawal.

Hypothesis 2. The likelihood of an 'inactive' outcome post-IPO withdrawal is higher for firms with *lower* levels of corporate governance.

Another prevailing claim calls into question the quality of the prospective IPO company (Dunbar, 2011). If we assume that only 'bad' candidates withdraw from the IPO, we should consequently observe a major proportion of withdrawn IPOs becoming 'inactive' postwithdrawal. Johan (2010) evidence that higher listing standards at the stock exchange certify quality of IPO companies and are an effective screening tool to prevent inadequate firms from going public. Similarly, regulation aimed at investor protection and lowering information asymmetries increases survival post-IPO (Cattaneo et al., 2015) and decreases valuation uncertainty (Akyol et al., 2014). However, Engelen et al. (2020) postulate that increased disclosure and transparency requirements might affect especially high-knowledge intense IPO firms negatively. IPO activity does not seem to have been negatively affected by the introduction of corporate governance codes nor EU directives. The particular institutional environment in Europe offers a series of domestic main stock markets, but also the AIM in the United Kingdom. This market provides a platform for small and young ventures to raise funds (Vismara et al., 2012). The AIM is an exchange-regulated stock market with looser regulation and listing standards (Gerakos et al., 2013), formally, these second markets are not regulated by the European Financial Services Directives (Esenlaub et al., 2012). Since the AIM is organised as an exchange-regulated market, the majority of regulatory oversight is delegated to the Nominated Advisor who must ensure compliance (Vismara et al., 2012). Esenlaub et al. (2012) and Gerakos et al. (2013) find that survival rates are lower for AIM listed companies. Given the particular exchange-regulated nature with lower listing standards and fewer requirements (Johan, 2010), we expect companies that become inactive post-IPO withdrawal predominantly intended to list at the AIM. Formally:

Hypothesis 3. The likelihood of an 'inactive' outcome post-IPO withdrawal is higher for AIM filings.

An initial public offering is a logical step in a company's life cycle. A more dispersed ownership structure may facilitate a firm's growth (Chemmanur & Fulghieri, 1999). Likewise, insiders have the opportunity to exit while the IPO facilitates the acquisition (Zingales, 1995). Companies filing for an IPO may operate a dual-track approach in pursuit of trade sale opportunities (Field & Karpoff, 2002). Previous studies have evidenced a connection between the IPO and M&A markets since a large proportion of IPO companies are merged or acquired shortly after going public (Aktas et al., 2018; Gao et al., 2013; Signori & Vismara, 2017). When a company files for an IPO it needs to produce an IPO prospectus which disseminates a significant amount of information to the public (Chemmanur et al., 2023; Reuer & Shen, 2004). Ragozzino and Reuer (2007) hypothesise the IPO to serve as an information diffusion mechanism through mandatory disclosures and the certification of quality as the IPO firm

shows its ability to go public. In short, IPOs reduce the acquirers' transaction costs, certifies the target firm and attracts acquirers (Reuer & Shen, 2004). Extending this idea to our setting, we assume that despite the 'failed' signal due to the IPO withdrawal, the information asymmetries as well as search and evaluation costs are being effectively reduced for potential acquirers, especially when the withdrawn IPO company published their intellectual capital in the prospectus. Therefore, such a dual-track strategy should be evidenced with a large proportion of merger and acquisitions postwithdrawal. Under the dual-track framework in particular we would observe a higher number of M&A activity for PE and VC-backed withdrawn IPO companies (Brau et al., 2010). Gill and Walz (2016) argue that an IPO with VC-backing can be interpreted as a delayed trade sale. The particular investment framework of PE companies pressures a *timely* and lucrative exit (Harris et al., 2014). Insiders such as VC and PE have an information advantage over new potential investors (Tykvová & Walz, 2007); and as a consequence, they are more likely to withdraw from the IPO for the benefit of a more favourable option (Cumming, 2008). In sum, we suggest:

Hypothesis 4a. The likelihood of a 'M&A' outcome post-IPO withdrawal is higher for firms backed by private equity or venture capital.

Hypothesis 4b. The time to outcome post-IPO withdrawal is shorter for firms backed by private equity or venture capital.

In summary, we expect market conditions, corporate governance characteristics as well as PE or VC backing to have impacts on the post-IPO withdrawal outcomes. Most notably, we expect to observe an accentuated proportion of companies to become inactive after the IPO withdrawal when these file at the AIM.

3 | METHODS

3.1 | Data and sample

This paper examines all 334 IPO filings in the United Kingdom, France, Germany, Italy, Spain, Denmark, Norway and Sweden from January 2001 to December 2015 identified in Helbing et al. (2019). We allow for 5 years after the listing to observe post-IPO withdrawal outcomes and exclude later IPO filings from our sample to avoid possible distortion by COVID. Our data set covers 82% of the Western European IPO market. Following usual practice in IPO literature (Ritter, 1987), we examine all common stock IPOs and therefore exclude Real Estate Investment Trusts, Depository Receipts, closed-end or mutual funds, special purpose entities and rights issuance. We retrieve the list of IPO filings from Bloomberg and validate the accuracy with the information provided by the respective stock exchange. The IPO prospectuses are downloaded from Bloomberg, Thomson Reuters, stock exchanges, company's websites or other public sources. We use publicly available sources for economic and market specific characteristics but manually collect the majority of variables for the offer, firm and corporate governance characteristics from the individual IPO prospectus.

3.2 | Variables

3.2.1 | Dependent variables

We identify four post-IPO outcomes: inactive, M&A, trading or private. First, a company can become inactive. This implies that the company post-IPO withdrawal has no active operations. The company might have also declared bankruptcy or is labelled as dormant in the country-specific registrars. Second, the company can engage in merger and acquisition. Here, it is assumed that the IPO company is merged or acquired and classified as such when a majority stake is purchased. Third, the company can file for a second time IPO, eventually list and trade. All companies that successfully list subsequent to the IPO withdrawal are categorised as 'trading'. Fourth, the withdrawn IPO company can remain private. A withdrawn IPO company is classified as private if none of the above occurred.²

Corporate events are identified with information terminals such as Bloomberg, Thomson Reuters and CapitalIQ. The status of the company is revised in the country-specific company register. Firm and investor press releases as well as public news articles in the LexisNexis database are an additional source of information about post-IPO withdrawal outcome. Often multiple sources are used to verify the specific outcome. This makes our data set unique in its extent, detail and depth.

3.2.2 | Independent variables

We can break the characteristics hypothesised to impact IPO withdrawal and post-IPO withdrawal outcomes into a number of sets representing market, offer, and firm characteristics, measured at the time of the IPO filing.

To test hypothesis 1, we examine equity market conditions. The change in the main stock market index (ΔIndex), a hotness as well as a trading volume dummy (Chemmanur & He, 2011), a negative news dummy (Shi et al., 2016) and the VIX (Busaba et al., 2015) are examined.

To approximate corporate governance characteristics and thereby test hypothesis 2, the level of retained ownership by shareholders before the IPO (Hoque & Lasfer, 2015), the lock-up period, the board size and independence, the proportion of female board members and a CEO duality dummy are included (Arthurs et al., 2009; Bhagat & Bolton, 2008; Brav & Gompers, 2003; Djerbi & Anis, 2015; Howton et al., 2001). We suspect that agency costs are reduced when appropriate mitigation measures are in place at the IPO filing.

We include an AIM dummy to categorise any IPO company filing at this exchange-regulated market in the United Kingdom to investigate hypothesis 3. To test hypotheses 4a and 4b, we include a VC and PE dummy. Busaba et al. (2001) find that VC-backed companies are less likely to succeed in the IPO. Boeh and Southam (2011), Helbing et al. (2019), Fan and Yamada (2019) and Reiff and Tykrová (2021) find that venture capitalists are more inclined to withdraw an IPO. In fact, Brau et al. (2010) find evidence for a dual-track strategy pursued by

²Boeh and Dunbar (2021) also identify a private placement option. In consideration of the data environment in Europe, this cannot accurately be identified for the data set and consequently would be listed as 'private'. We note that a handful of 'private' companies engage in a spin-off, sell-out of assets or restructuring.

VC. In contrast, Dunbar and Foerster (2008) identify venture capitalist certification as key for a successful return to the equity market.

3.2.3 | Control variables

First, we consider the level of regulatory environment approximated by the country-specific measures of the Rule of Law, Regulatory Efficiency, and the Market Openness Index provided by the Heritage Foundation. Higher levels of institutional stability are identified to approximate a favourable environment for investors La Porta et al. (1997).

Second, we use the change in the country's Gross Domestic Product (Δ GDP), the monthly yield of 10-year government bonds, and the credit spread to represent economic conditions (Bergbrant et al., 2015).

Third, the offer characteristics include the offer size, the intent to retire debt with the IPO proceeds as well as a European underwriter ranking (Migliorati & Vismara, 2014; Vandemaele, 2003).

We differentiate the offer share structure and identify the proportion of secondary shares (Hoque & Lasfer, 2015; Vandemaele, 2003) and greenshoe option for insiders to exit (Klein & Li, 2009). As Chemmanur and Fulghieri (1999) hypothesise, cost of information production is essential in the IPO process. Drawing from this framework, we examine the intellectual capital disclosure in the IPO prospectus (Singh & Mitchell Van der Zahn, 2007).

Finally, the firm characteristics include the firm size and age which reduce the uncertainty about the long-term success of the IPO issue through positive signalling (Brau & Fawcett, 2006; Engelen & van Essen, 2010). We also consider variables for leverage, the level of capital expenditure and net income (Lowry, 2003). In addition, we examine a high-tech dummy (Engelen & van Essen, 2010) and a measure of the degree of multinationality (Aggarwal et al., 2011).

3.3 | Estimation techniques

We follow academic convention and employ a probit model to identify the determinants of post-IPO withdrawal outcomes. We apply a multinomial probit model, where the dependent variable is the event of 'choice' given a specific post-IPO withdrawal outcome. The multinomial probit model does not assume any inherent ordering on the choices (Imai & Dyk, 2005). We assume a multivariate normal distribution on the latent variables:

$$W_i = X_i\beta + \epsilon_i, \epsilon_i \sim N\left(0, \Sigma\right), \text{ for } i = 1, \dots, n, \quad (1)$$

where X_i is a $(p-1) \times k$ matrix of covariates, β is $k \times 1$ vector of fixed coefficients, ϵ_i is $(p-1) \times 1$ vector of disturbances, and Σ is a $(p-1) \times (p-1)$ positive definite matrix. The response variable, Y_i , is the index of the choice of individual i among the alternatives in the choice set and is modelled in terms of this latent variable, W_i :

$$Y_i(W_i) = \begin{cases} 0 & \text{if } \max(W_i) < 0 \\ j & \text{if } \max(W_i) = W_{ij} > 0 \end{cases} \quad (2)$$

for $i = 1, \dots, n$ and $j = 1, \dots, p - 1$, where Y_i equal to 0 corresponds to a base category. If all W_i are negative then $Y = 0$ and Y equals the index of the biggest W_i if it is positive (McCulloch et al., 2000). The base outcome takes the value of 1 if the IPO postwithdrawal stays private, if the post-IPO withdrawal company becomes inactive it takes the value of 2, if the company engages in merger and acquisition it takes the value of 3, and finally if the company subsequently lists it takes the value of 4. The multinomial probit model reveals the determinants that affect the outcome of the IPO withdrawal, however it does not incorporate the length of time of that particular outcome to happen. Also, the multinomial probit does not account for censoring of the data which occurs when there are post-IPO withdrawal companies that are not yet dead (inactive). The semiparametric Cox proportional hazards model is applied (Kartsonaki, 2016):

$$h(t; x_1, \dots, x_p) = h_0(t)e^{\beta_1 x_{i1} + \dots + \beta_k x_{ik}}, \quad (3)$$

where $h_0(t)$ is the hazard function and represents the instantaneous rate of change from survival to the defined event at time t , given survival until time t . The second component is the exponential of a linear function of k fixed covariates, $x_{i1} + \dots + x_{ik}$ and their coefficients, $\beta_{i1} + \dots + \beta_k$, representing the effect of the covariates on the outcome; for each unit increase in x_k the hazard is multiplied by e^{β_k} , ceteris paribus. The event of interest is defined when the post-IPO withdrawal outcome changes from survival (private) to (i) inactive, (ii) M&A, (iii) trading.

4 | THE AFTERLIFE OF WITHDRAWN IPO COMPANIES

In Europe, between 2001 and 2015 there are 2808 IPO filings of which 334 IPOs were withdrawn. This marks a withdrawal rate of around 12%, which means that every 8th company filing for an IPO withdraws. Figure 1 shows the distribution of post-IPO withdrawal outcomes. Surprisingly, only a proportion as small as 8% (28) of second time IPOs can be documented. The majority of companies that withdraws from the IPO is merged or acquired (131, 39%). Whereas almost every third IPO withdrawal simply remains private (94, 28%). One in almost four companies that withdraws from the IPO is terminated (inactive, 81, 24%). Since we include a secondary exchange (AIM) in the sample, Figure 2 displays the post-IPO withdrawal outcome

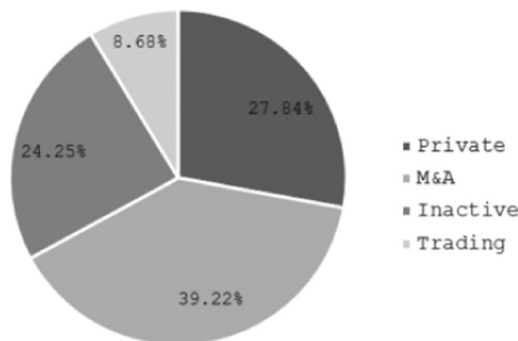


FIGURE 1 Post-IPO withdrawal outcomes.

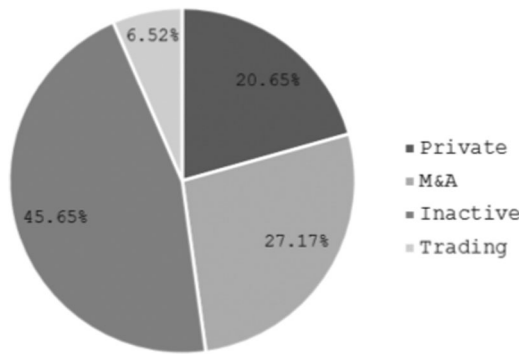


FIGURE 2 Post-IPO withdrawal outcomes at the AIM.

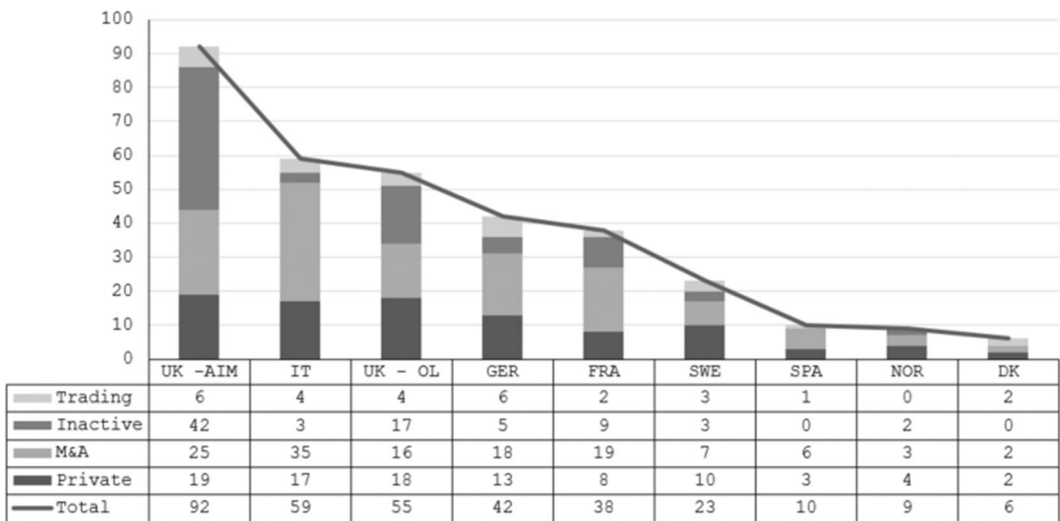


FIGURE 3 Post-IPO withdrawal by country.

for the 92 withdrawn IPOs at the AIM only. This distribution paints a different picture in which almost every second company becomes inactive (42, 46%), about one in four engaged in M&A (25, 27%) and only six companies end up trading (7%).

There is some degree of variation of post-IPO withdrawal outcomes for the different European countries as evidenced in Figure 3. The share of companies that withdraw and stay private ranges from proportionally as low as eight in France to three and two in Spain and Denmark, respectively. Curiously, not the United Kingdom, with the most sophisticated equity market, but Germany and Spain proportionally show the highest number of withdrawn IPO companies that try a second IPO and subsequently list. The largest proportion of post-IPO withdrawal companies that engage in M&A are in Italy (35) followed by France (19). Most inactive post-IPO withdrawal outcomes can be observed for the UK exchanges, with the lowest proportion in Italy (3) and Germany (5).

From a first examination the following conclusions can be drawn. Against common belief, an IPO withdrawal does not necessarily end in termination of the company or in a second time

IPO filing as proclaimed by businesses. Withdrawn IPO companies predominantly remain private or engage in M&A. The large numbers of mergers and acquisitions indicate that the IPO may constitute one alternative over several. These numbers provide preliminary evidence against hypothesis 1 on market timing and in favour of hypothesis 3 on AIM observations.

4.1 | General findings

A first descriptive analysis in Table 1 reveals some similarities and differences regarding the afterlife of withdrawn IPO companies. There is no pronounced difference in the regulatory, market or economic environment for the 'private', 'M&A', or 'trading' post-IPO withdrawal outcomes. While companies that end up inactive file during favourable conditions as evidenced by the higher values of regulatory environment, credit as well as equity market conditions. Companies that are engaged in M&A post-IPO withdrawal face more favourable credit conditions and are less frequently negatively featured in the news. In contrast, companies that become inactive post-IPO withdrawal are featured negatively in the news more frequently. It almost appears as if companies intend to exploit the wave like nature of IPO issuance; and if it does not work out, these companies will become inactive post-IPO withdrawal.

In terms of firm specific factors, the different post-IPO outcomes exhibit significant differences. IPO companies that do not sell and die are younger and exhibit a smaller offer and firm size at the time of the IPO filing and are also more frequently filing at the AIM. Therefore, we come to the conclusion that this outcome is predominantly driven by the companies filing at the AIM, as expected given hypothesis 3. Companies that remain private or end up trading have larger offers and firm sizes. Furthermore, for the former we can observe better financial fundamentals such as the level of capital expenditure, yet lower return on assets. Generally, the descriptive results indicate that lower levels of leverage are more frequent with the outcomes M&A and trading. We can identify that post-IPO withdrawal outcomes such as M&A and trading are frequently backed by PE and VC. Likewise, these withdrawn IPO companies more frequently also disclose their intellectual capital or competitive advantage and are more multinational. Finally, withdrawn IPO companies with the highest corporate governance characteristics more frequently file a second time IPO which is in line with expectation from agency-based explanations. In contrast, companies that end up inactive exhibit lower retained ownership, less independent board members while a higher proportion of CEO duality (hypothesis 2).

In Table 2 the results for the multinomial probit regression are given with the base outcome set as 'private' for post-IPO withdrawal companies. We report the probit coefficient estimates and focus on the average marginal effects (ME) for the respective post-IPO withdrawal outcome: inactive, M&A and trading. Some differences exist between the post-IPO withdrawal outcomes.

Companies that do not sell and consequently die (*inactive*) manifest some differences in the market or economic conditions. The more unfavourable the debt and equity market condition get, the more likely the company is inactive post-IPO withdrawal. Withdrawn IPO companies that die experience worse credit conditions ($p = 0.05$, $ME = 4.61\%$). It seems as if they try to exploit the wave like IPO issuance nature but fail to capture the opportunity (Δ Index: $p = 0.01$, $ME = 122.51\%$, market hotness: $p = 0.03$, 9.88%). These findings are in contrast to hypothesis 1. Better corporate governance approximated by retained ownership ($p = 0.01$, $ME = -23.47\%$) and board independence ($p = 0.01$, $ME = 25.88\%$) at the time of the IPO filing significantly

TABLE 1 Descriptives of post-IPO withdrawal outcomes.

This table reports means and standard deviations for 33 variables broken down by post-IPO withdrawal outcome. The database includes 334 withdrawn IPOs with the following post-IPO withdrawal outcomes: 93 are private, 81 are inactive, 131 engaged in M&A and 29 are trading.

	Private		Inactive		M&A		Trading	
Variable	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Regulatory environment								
Rule of law	78.029	14.22	83.834	8.07	74.281	15.34	80.100	13.38
Regulatory efficiency	78.045	5.43	81.063	5.09	77.116	6.06	78.648	6.54
Market openness	78.510	8.05	80.752	7.17	76.974	7.47	79.647	6.65
Economic environment								
10 yr government bond	3.845	1.19	0.973	1.31	1.387	1.21	3.451	1.18
Credit spread	1.173	1.18	0.022	0.01	0.017	0.02	1.394	1.09
ΔGDP	0.019	0.01	17.996	5.75	19.515	7.39	0.024	0.01
Market environment								
VIX	18.546	5.24	0.005	0.02	−0.003	0.04	16.967	4.82
ΔIndex	−0.012	0.05	0.728	0.45	0.511	0.50	−0.005	0.04
Market hotness	0.527	0.50	0.469	0.50	0.504	0.50	0.621	0.49
Trading volume	0.462	0.50	0.296	0.46	0.366	0.48	0.483	0.51
Negative news	0.247	0.43	0.519	0.50	0.191	0.39	0.276	0.45
Offer characteristics								
Offer size (mn)	875	5265	164	516	369	925	884	2014
Secondary shares	0.214	0.33	0.159	0.33	0.322	0.35	0.180	0.25
Greenshoe option	0.031	0.08	0.035	0.09	0.046	0.08	0.046	0.06
Debt retirement	0.258	0.44	0.160	0.37	0.359	0.48	0.241	0.44
Private equity	0.151	0.36	0.160	0.37	0.344	0.48	0.414	0.50
Venture capital	0.075	0.27	0.074	0.26	0.130	0.34	0.172	0.38
Intellectual capital	0.183	0.39	0.111	0.32	0.237	0.43	0.241	0.44
Underwriter	0.217	0.27	0.229	0.27	0.278	0.26	0.260	0.26
AIM	0.204	0.41	4.107	1.03	3.797	1.24	0.207	0.41

TABLE 1 (Continued)

Variable	Private		Inactive		M&A		Trading	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Firm characteristics								
Firm size (mn)	12,593	100,631	6445	52,892	2223	9634	8130	24,406
Age (years)	22	34	15	30	26	35	26	38
CapEx	0.308	2.40	0.074	0.30	0.053	0.12	0.063	0.18
Return on assets	−0.406	3.24	−0.172	1.10	−0.078	0.57	−0.126	0.33
Debt	1.075	3.32	0.984	2.19	0.728	0.44	0.601	0.44
High-Tech	0.194	0.40	0.160	0.37	0.237	0.43	0.310	0.47
Multinationality	0.279	0.18	0.253	0.17	0.328	0.19	0.443	0.26
Corporate governance characteristics								
Retained ownership	0.552	0.28	0.417	0.31	0.542	0.27	0.600	0.28
Lock-up (days)	107	151	131	182	121	157	205	177
Board size	5.978	4.06	4.630	3.54	5.962	3.39	8.621	5.15
Board independence	0.178	0.24	0.075	0.17	0.150	0.22	0.243	0.26
Female board members	0.076	0.14	0.073	0.17	0.097	0.15	0.127	0.18
CEO duality	0.118	0.32	0.210	0.41	0.130	0.34	0.069	0.26

reduces the probability of this undesirable post-IPO withdrawal outcome. In line with hypothesis 2, higher levels of corporate governance reduce the likelihood of the ‘inactive’ event. Supporting hypothesis 3, if an IPO company files at the Alternative Investment Market, it significantly increases the probability to become inactive ($p = 0.00$, $ME = 13.52\%$). While higher capital expenditures significantly decrease the probability of this event ($p = 0.08$, $ME = -6.04\%$), indicating that growth opportunities are important for the afterlife of IPO withdrawals.

Companies that are engaged in *merger and acquisition* after the IPO withdrawal file for an IPO during favourable market conditions (ΔIndex : $p = 0.05$, $ME = 100.98\%$) and higher volatility ($p = 0.01$, $ME = 1.46\%$). We find evidence that PE involvement increases the probability for this post-IPO withdrawal outcome by 12.64% ($p = 0.01$). This provides partial evidence in favour of hypothesis 4a. When the company files for an IPO at the AIM, this increases the probability of the M&A outcome post-IPO withdrawal ($p = 0.05$, $ME = 5.84\%$). Disclosing intellectual capital ($p = 0.04$, $ME = 12.21\%$) at the IPO significantly increases the probability of this outcome post-IPO withdrawal. Information acquisition costs pose a main hurdle for any transaction (Allen & Faulhaber, 1989; Reuer & Shen, 2004). At an IPO the company reveals a high degree of information (Daily et al., 2005; Hsieh et al., 2011; Sherman & Titman, 2002). We assume that the information production during an IPO filing significantly

TABLE 2 Determinants of post-IPO withdrawal outcomes.

This table reports the results on the determinants of post-IPO withdrawal outcomes. The dependent variable equals 1 (Inactive), 2 (M&A), or 3 (Trading) for post-IPO withdrawal outcomes and 4 otherwise (base outcome: Private). Average Marginal Effects are defined as follows: the probit employs normalisation that fixes the standard deviation of the error term to 1 where each coefficient represents the average marginal effect of a unit change on the probability that the dependent variable takes the value of either 1 (Inactive), 2 (M&A), or 3 (Trading) given that all other independent variables are constant (Aldrich & Nelson, 1984). The database includes 334 observations.

Variable	Inactive			M&A			Trading		
	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect
Regulatory environment									
Rule of law	0.05	0.001	0.0102	−0.01	0.656	−0.0060	−0.01	0.692	−0.0013
Regulatory efficiency	−0.01	0.816	−0.0017	0.01	0.784	0.0021	0.02	0.626	0.0012
Market openness	−0.07	0.003	−0.0100	−0.02	0.335	0.0025	−0.04	0.148	−0.0014
Economic environment									
10 year government bond	0.23	0.123	0.0468	−0.02	0.846	−0.0205	−0.28	0.086	−0.0292
Credit spread	0.26	0.049	0.0461	0.00	0.967	−0.0247	0.03	0.833	−0.0021
ΔGDP	−1.50	0.892	−0.2469	−5.17	0.557	−2.0980	23.13	0.079	2.2833
Market environment									
VIX	0.00	0.908	−0.0026	0.05	0.013	0.0146	−0.05	0.113	−0.0063
ΔIndex	9.05	0.013	1.2251	6.20	0.048	1.0098	−7.11	0.123	−1.0472
Market hotness	0.62	0.026	0.0988	0.06	0.809	−0.0612	0.49	0.208	0.0301
Trading volume	−0.06	0.81	−0.0236	0.05	0.823	0.0042	0.28	0.388	0.0236
Negative news	0.32	0.286	0.0311	0.35	0.184	0.0704	−0.30	0.395	−0.0463
Offer characteristics									
Offer size	−0.05	0.333	−0.0114	0.00	0.973	−0.0016	0.14	0.207	0.0135
Secondary shares	0.12	0.782	−0.0038	0.54	0.135	0.1766	−1.31	0.012	−0.1405
Greenshoe option	1.48	0.363	0.2105	0.92	0.565	0.1437	−2.08	0.371	−0.2510
Debt retirement	−0.47	0.132	−0.0823	0.10	0.713	0.0944	−0.46	0.193	−0.0356
Private equity	0.47	0.176	−0.0115	0.85	0.006	0.1264	1.13	0.002	0.0581
Venture capital	−0.13	0.772	−0.0916	0.51	0.190	0.0969	0.87	0.131	0.0591
Intellectual capital	0.10	0.818	−0.0547	0.64	0.043	0.1221	0.61	0.169	0.0266
Underwriter	0.14	0.786	−0.0093	0.33	0.459	0.0603	0.43	0.458	0.0234
AIM	1.09	0.001	0.1352	0.66	0.046	0.0584	0.23	0.644	−0.0265

TABLE 2 (Continued)

Variable	Inactive			M&A			Trading		
	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect
Firm characteristics									
Firm size	0.00	0.941	−0.0039	0.05	0.311	0.0153	−0.03	0.687	−0.0045
Age	0.07	0.550	0.0116	0.03	0.751	0.0079	−0.11	0.470	−0.0124
CapEx	−0.37	0.082	−0.0604	−0.17	0.685	−0.0258	0.51	0.229	0.0583
Return on assets	−0.16	0.172	−0.0174	−0.09	0.683	−0.0009	−0.19	0.448	−0.0105
Debt	0.05	0.236	0.0248	−0.06	0.527	0.0020	−0.61	0.050	−0.0527
High-Tech	0.03	0.921	−0.0026	0.13	0.656	0.0374	0.06	0.891	0.0006
Multinationality	0.68	0.398	−0.0018	0.87	0.196	0.0568	2.49	0.002	0.1750
Corporate governance characteristics									
Retained ownership	−1.26	0.005	−0.2347	−0.24	0.570	0.0002	0.80	0.236	0.1025
Lock-up	0.00	0.479	0.0000	0.00	0.544	0.0000	0.00	0.007	0.0002
Board size	−0.01	0.765	−0.0007	−0.05	0.215	−0.0155	0.11	0.045	0.0115
Board independence	−1.97	0.013	−0.2588	−0.94	0.144	−0.0225	−0.80	0.325	0.0035
Female board members	0.24	0.769	−0.0506	0.69	0.358	0.0856	1.58	0.124	0.1081
CEO duality	0.31	0.417	0.0902	−0.09	0.808	0.0018	−0.43	0.423	−0.0405

reduces the information acquisition costs. We consequently hypothesise that the purchaser seizes the opportunity of the filing to acquire the withdrawn IPO company.

IPO companies that withdraw from the IPO but return to the market (*trading*) are more likely to be backed by PE ($p = 0.00$, $ME = 5.81\%$), thereby providing partial evidence in favour of hypothesis 4a. Interestingly, when insiders want to exit with a higher proportion of secondary shares at the IPO, the probability of this outcome decreases by ca. 14% ($p = 0.01$) similarly to higher leverage ($p = 0.05$, $ME = -5.27\%$). More multinational companies ($p = 0.00$, $ME = 17.50\%$) are more likely to end up trading post-IPO withdrawal. Likewise, better corporate governance metrics of higher retained ownership ($p = 0.05$, $ME = 15.55\%$) and longer lock-up periods ($p = 0.01$, $ME = 0.02\%$) seem to matter for a post-IPO withdrawal company to list in a second time IPO. The importance of imminent agency conflicts between the potential investor and the IPO company becomes evident. When economic conditions are favourable (ΔGDP : $p = 0.08$, $ME = 228.33\%$) at the time of the first IPO filing, the post-IPO withdrawal company is more likely to return to the IPO market while credit conditions have a negative impact ($p = 0.09$, $ME = -2.92\%$). However, other variables approximating the market characteristics do not show the same result.

4.2 | Post-IPO withdrawal outcomes on main versus exchange-regulated markets

We can identify a major source of endogeneity stemming from observable regulatory changes to the issuance process and disclosure rules that might influence our results. We exploit the introduction of the Markets in Financial Instruments Directive (MiFID) to address this concern. As our sample spans from 2001 to 2015, we are now examining possible effects of changing regulatory environments. In November 2007, following the SOX Act in the United States, in Europe the MiFID was introduced in an effort to enhance information transparency and investor protection (Cumming et al., 2011). Following the rationale in Akyol et al. (2014),³ we exploit the existence of main stock exchanges and an alternative investment market (AIM). The AIM is not officially regulated through the European Financial Services Directives. To take advantage of this exogenous shock of the MiFID, we identify two groups for two time periods. One group receives the treatment ‘MiFID’ (main exchange) at time t while the control group (AIM) is not affected by the treatment. We now incorporate this treatment into our multinomial probit framework in Table 3. The dummy variable Main Exchange takes the value of one if the IPO company is affected by MiFID and zero otherwise. All AIM IPO companies are unaffected by MiFID and receive the value of zero. The dummy variable MiFID takes the value of one after the MiFID went into effect in November 2007 and zero otherwise. Finally, the interaction term $\text{MiFID} \times \text{Main Exchange}$ is the variable of interest and represents the combination of the previous two dummy variables. If the interaction term shows a negative effect, this would indicate that stricter regulation reduces the probability of a second time IPO outcome which would be in line with the ideas in Takahashi and Yamada (2015) and Engelen et al. (2020). While a positive effect would provide evidence in line with findings on IPO phenomena in Akyol et al. (2014) and Cattaneo et al. (2015) that stricter regulation increases IPO survival and decreases underpricing.

As the results in Table 3 show, the interaction term of $\text{MiFID} \times \text{Main Exchange}$ is insignificant. All other results stay similar in quantity and quality compared to the baseline findings even after controlling for possible observable endogeneity. While stricter regulation might have significant effects on the IPO company itself, such as increased survival post-IPO and reduced underpricing, this does not seem to impact post-IPO withdrawal outcomes. However, we do note that the coefficients of the introduction of the MiFID are negative, yet statistically insignificant across all post-IPO withdrawal outcomes. This suggests that post-IPO withdrawal survival is higher post-MiFID, yet lower M&A and second time IPO activity can be derived, too. Withdrawn IPO companies simply stay private. Similar to our baseline findings that include an AIM dummy (see Table 2), when an IPO is filed at a main exchange, this significantly reduces the probability of an inactive outcome post-IPO withdrawal. This can serve as partial evidence in line with the ideas that stricter regulation increases information transparency especially pertaining to information disclosure and financial reporting and hence increases survival (Cattaneo et al., 2015).

Moreover, we examine a possibly heterogeneous effect between our main exchange and AIM sample in Table 4. We exclude all observations at the AIM and report the results on post-IPO

³While Akyol et al. (2014) exploit the staggered adoption of corporate governance codes across Europe 1995–2012, our sample only starts in 2001 resulting in too few observations pretreatment. Hence, we use the MiFID introduction in November 2007 as an alternative shock.

TABLE 3 Determinants of post-IPO withdrawal outcomes with markets in financial instruments directive (MiFID).

This table reports the results on the determinants of post-IPO withdrawal outcomes using the MiFID shock. The dependent variable equals 1 (Inactive), 2 (M&A), or 3 (Trading) for post-IPO withdrawal outcomes and 4 otherwise (base outcome: Private). Average Marginal Effects are defined as follows: the probit employs normalisation that fixes the standard deviation of the error term to 1 where each coefficient represents the average marginal effect of a unit change on the probability that the dependent variable takes the value of either 1 (Inactive), 2 (M&A), or 3 (Trading) given that all other independent variables are constant (Aldrich & Nelson, 1984). The database includes 334 observations.

Variable	Inactive			M&A			Trading		
	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect
MiFID	−0.82	0.242	−0.0753	−0.22	0.729	−0.0337	−1.43	0.164	−0.0371
Main exchange	−1.14	0.007	−0.1582	−0.40	0.329	0.0324	−0.74	0.217	−0.0277
MiFID × Main exchange	0.12	0.854	0.0434	−0.42	0.479	−0.1458	0.80	0.343	0.0847
Regulatory environment									
Rule of law	0.05	0.001	0.0105	−0.01	0.505	−0.0065	−0.01	0.580	−0.0014
Regulatory efficiency	0.00	0.874	−0.0013	0.00	0.948	0.0001	0.02	0.568	0.0017
Market openness	−0.05	0.076	−0.0081	0.00	0.983	0.0052	−0.03	0.440	−0.0013
Economic environment									
10 year government bond	0.08	0.663	0.0341	−0.12	0.412	−0.0170	−0.49	0.031	−0.0404
Credit spread	0.38	0.015	0.0619	0.04	0.742	−0.0321	0.20	0.372	0.0085
ΔGDP	−8.08	0.495	−0.9496	−9.83	0.293	−2.4832	19.14	0.179	2.2327
Market environment									
VIX	0.01	0.537	−0.0021	0.06	0.004	0.0150	−0.04	0.276	−0.0058
ΔIndex	8.02	0.028	1.1119	5.67	0.072	1.0271	−8.48	0.076	−1.1258
Market hotness	0.64	0.023	0.0994	0.06	0.802	−0.0662	0.60	0.141	0.0389
Trading volume	−0.01	0.957	−0.0171	0.09	0.704	0.0117	0.32	0.312	0.0250
Negative news	0.33	0.276	0.0317	0.37	0.159	0.0750	−0.30	0.393	−0.0474
Offer characteristics									
Offer size	−0.04	0.383	−0.0113	0.01	0.925	−0.0016	0.17	0.141	0.0155
Secondary shares	0.12	0.771	−0.0001	0.53	0.145	0.1735	−1.32	0.011	−0.1400
Greenshoe option	1.61	0.326	0.2473	0.94	0.555	0.1682	−2.00	0.400	−0.2444
Debt retirement	−0.51	0.106	−0.0952	0.12	0.642	0.0974	−0.51	0.160	−0.0398
Private equity	0.48	0.170	−0.0114	0.85	0.005	0.1249	1.14	0.002	0.0582

(Continues)

TABLE 3 (Continued)

Variable	Inactive			M&A			Trading		
	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect
Venture capital	−0.11	0.805	−0.0823	0.49	0.208	0.0987	0.89	0.111	0.0615
Intellectual capital	0.19	0.651	−0.0431	0.72	0.027	0.1328	0.73	0.099	0.0326
Underwriter	0.14	0.784	−0.0134	0.32	0.486	0.0433	0.58	0.320	0.0360
Firm characteristics									
Firm size	−0.01	0.825	−0.0048	0.04	0.369	0.0140	−0.05	0.463	−0.0062
Age	0.07	0.546	0.0128	0.02	0.876	0.0021	−0.11	0.499	−0.0113
CapEx	−0.36	0.100	−0.0638	−0.14	0.679	−0.0283	0.62	0.160	0.0674
Return on assets	−0.15	0.420	−0.0159	−0.09	0.694	−0.0044	−0.13	0.602	−0.0053
Debt	0.05	0.626	0.0276	−0.07	0.576	0.0038	−0.64	0.044	−0.0548
High-Tech	0.04	0.908	−0.0013	0.08	0.792	0.0131	0.08	0.852	0.0032
Multinationality	0.59	0.471	−0.0066	0.75	0.269	0.0382	2.44	0.004	0.1750
Corporate governance characteristics									
Retained ownership	−1.18	0.008	−0.2166	−0.18	0.664	0.0245	0.93	0.171	0.1120
Lock-up	0.00	0.577	0.0000	0.00	0.516	0.0000	0.00	0.022	0.0002
Board size	0.00	0.921	0.0008	−0.04	0.257	−0.0144	0.12	0.031	0.0119
Board independence	−1.91	0.017	−0.2551	−0.89	0.173	−0.0240	−0.68	0.405	0.0114
Female board members	0.48	0.559	−0.0176	0.82	0.286	0.0962	1.65	0.115	0.1042
CEO duality	0.29	0.455	0.0743	−0.13	0.714	−0.0396	−0.51	0.369	−0.0450

withdrawal outcomes for IPOs filed at main exchanges only. Overall, results in Table 4 remain largely robust to our baseline findings. Some interesting nuances emerge.

The effect of better corporate governance for withdrawn IPO firms that end up inactive is much more pronounced when excluding the AIM sample. AIM companies are usually much younger and do not need to compile with corporate governance codes (Akyol et al., 2014; Espenlaub et al., 2012). Enriques and Volpin (2007) identify the main levers of corporate governance in the European stock markets as strengthening internal governance mechanisms, empowerment of shareholders, increased disclosures and finally enhanced enforcement. Consistent with those ideas, we find a significant and much larger economic effect of retained ownership and board independence for the main exchange sample. The larger coefficient of board independence in Table 4 provides evidence in favour of the value-protection hypothesis. This is in line with findings in Bertoni et al. (2014) that especially for older, more mature companies, value-protection becomes a major lever and concern when ownership and control become dispersed at the IPO. For the M&A outcome all variables remain similar in effect.

TABLE 4 Determinants of post-IPO withdrawal outcomes excluding AIM.

This table reports the results on the determinants of post-IPO withdrawal excluding the observation at the AIM. The dependent variable equals 1 (Inactive), 2 (M&A), or 3 (Trading) for post-IPO withdrawal outcomes and 4 otherwise (base outcome: Private). Average marginal effects are defined as follows: the probit employs normalisation that fixes the standard deviation of the error term to 1 where each coefficient represents the average marginal effect of a unit change on the probability that the dependent variable takes the value of either 1 (Inactive = 39), 2 (M&A = 106), or 3 (Trading = 23) given that all other independent variables are constant (Aldrich & Nelson, 1984). The database includes 242 observations and excludes the 92 AIM observations.

Variable	Inactive			M&A			Trading		
	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect
Regulatory environment									
Rule of law	0.04	0.011	0.0067	−0.01	0.410	−0.0052	−0.02	0.330	−0.0015
Regulatory efficiency	0.03	0.345	0.0032	0.01	0.776	−0.0012	0.04	0.288	0.0025
Market openness	−0.08	0.002	−0.0102	−0.01	0.497	0.0040	−0.05	0.140	−0.0023
Economic environment									
10 year government bond	0.06	0.761	0.0118	0.01	0.962	0.0128	−0.50	0.010	−0.0444
Credit spread	0.25	0.148	0.0352	−0.05	0.695	−0.0437	0.24	0.302	0.0191
ΔGDP	−5.16	0.663	−0.8390	−3.70	0.701	−1.9394	33.15	0.016	3.0607
Market environment									
VIX	0.06	0.047	0.0055	0.06	0.012	0.0158	−0.09	0.039	−0.0110
ΔIndex	10.02	0.009	0.9605	7.87	0.020	1.7540	−11.48	0.032	−1.4234
Market hotness	0.91	0.007	0.1231	−0.10	0.733	−0.1237	0.73	0.102	0.0558
Trading volume	0.20	0.560	0.0131	0.09	0.731	−0.0170	0.58	0.158	0.0433
Negative news	0.01	0.975	−0.0222	0.32	0.302	0.0747	−0.07	0.871	−0.0188
Offer characteristics									
Offer size	−0.08	0.219	−0.0187	0.05	0.519	0.0042	0.29	0.052	0.0241
Secondary shares	0.70	0.188	0.0795	0.53	0.182	0.1591	−1.82	0.003	−0.1879
Greenshoe option	1.39	0.407	0.1370	0.97	0.568	0.1970	−2.42	0.370	−0.2672
Debt retirement	−0.77	0.052	−0.0948	0.00	0.987	0.1020	−0.73	0.106	−0.0524
Private equity	0.32	0.464	−0.0279	0.82	0.016	0.1367	1.19	0.005	0.0658
Venture capital	−0.43	0.465	−0.0996	0.35	0.425	0.0647	1.02	0.153	0.0773
Intellectual capital	0.03	0.945	−0.0579	0.71	0.038	0.1387	0.57	0.256	0.0199
Underwriter	0.21	0.716	0.0098	0.15	0.755	−0.0069	0.77	0.248	0.0589

(Continues)

TABLE 4 (Continued)

Variable	Inactive			M&A			Trading		
	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect	Coef.	p-val	Marginal effect
Firm characteristics									
Firm size	0.06	0.46	0.0066	0.06	0.446	0.0204	−0.19	0.123	−0.0188
Age	−0.12	0.416	−0.0161	0.03	0.828	0.0256	−0.18	0.293	−0.0150
CapEx	−0.06	0.899	−0.0002	−0.30	0.546	−0.1164	1.19	0.297	0.1156
Return on assets	−0.38	0.320	−0.0450	−0.21	0.540	−0.0532	0.83	0.120	0.0828
Debt	−0.38	0.279	−0.0458	−0.06	0.803	0.0234	−0.28	0.441	−0.0194
High-Tech	−0.05	0.912	−0.0254	0.25	0.462	0.0632	0.35	0.469	0.0220
Multinationality	0.83	0.387	0.0327	0.73	0.328	0.0202	2.58	0.006	0.1829
Corporate governance characteristics									
Retained ownership	−2.22	0.001	−0.2775	−0.58	0.270	−0.0295	0.28	0.723	0.0721
Lock-up	0.00	0.339	0.0001	0.00	0.773	−0.0001	0.00	0.152	0.0001
Board size	−0.02	0.664	−0.0013	−0.06	0.144	−0.0199	0.14	0.009	0.0146
Board independence	−2.20	0.021	−0.2377	−0.91	0.190	−0.0643	−0.02	0.986	0.0623
Female board members	−0.69	0.491	−0.1445	0.26	0.748	0.0138	2.28	0.048	0.1946
CEO duality	0.01	0.981	0.0288	−0.14	0.746	0.0254	0.01	0.983	0.0073

Finally, for the post-IPO withdrawal outcome ‘trading’, we can also identify a more pronounced effect of corporate governance characteristics. Here, the board size as well as gender diversity of the board significantly increase the probability of a withdrawn IPO company to have a successful second time IPO. This finding is again in line with the value-protection idea of European boards for IPO companies (Bertoni et al., 2014). For withdrawn IPOs at main exchanges, a higher offer size increases a trading outcome in line with information asymmetry ideas. Interestingly, IPOs at main exchanges that were filed during increases in the leading market indices or heightened market uncertainty (VIX), are less likely to have a successful second time IPO.

4.3 | Post-IPO withdrawal outcomes in a survival setting

The survival analysis in Table 5 and Figures 4–6 provides similar results to the multinomial probit setting. The hazard ratios reported in Table 3 represent the probability ratio that the company post-IPO withdrawal would experience a certain outcome such as ‘inactive’ or ‘M&A’, at a particular given point in time that is not close to 1. It is noted that we only compute the hazard ratios for these two outcomes given the few observations (29) for ‘trading’.

TABLE 5 Survival analysis of post-IPO withdrawal outcomes.

This table reports the results on the survival analysis examining post-IPO withdrawal outcomes. The survival analysis is run with three different endpoints: when the post-IPO withdrawal outcome changes from survival (private) to (i) inactive (81), (ii) M&A (131). The hazard ratio represents the hazard function to the baseline function where for one unit increase in the covariate x , the hazard is multiplied by e^β . For all regressions, the H_0 of proportional hazards assumption was failed to be rejected. The LR χ^2 are 75.29, 75.25, respectively. The data set includes 334 observations.

Variable	Inactive		M&A	
	Hazard ratio	<i>p</i> -val	Hazard ratio	<i>p</i> -val
Regulatory environment				
Rule of law	0.97	0.563	0.99	0.221
Regulatory efficiency	1.04	0.648	0.95	0.090
Market openness	1.06	0.205	1.02	0.188
Economic environment				
10 year government bond	0.47	0.045	0.92	0.390
Credit spread	1.24	0.360	0.91	0.380
Δ GDP	3,541,440	0.468	0.89	0.987
Market environment				
VIX	0.99	0.835	0.99	0.497
Δ Index	9,028,744	0.072	58.29	0.162
Market hotness	0.64	0.277	0.59	0.023
Trading volume	0.50	0.044	1.36	0.152
Negative news	0.52	0.098	0.76	0.243
Offer characteristics				
Offer size	1.02	0.741	1.08	0.025
Secondary shares	0.07	0.001	1.86	0.048
Greenshoe option	4.72	0.421	23.53	0.116
Debt retirement	0.46	0.066	1.01	0.963
Private equity	3.39	0.005	0.79	0.452
Venture capital	0.85	0.792	0.92	0.777
Intellectual capital	3.69	0.023	0.71	0.196
Underwriter	0.84	0.844	1.84	0.111
AIM	0.91	0.804	1.59	0.269
Firm characteristics				
Firm size	0.97	0.575	0.96	0.474
Age	0.79	0.249	0.91	0.259
CapEx	0.88	0.838	1.13	0.877

(Continues)

TABLE 5 (Continued)

Variable	Inactive		M&A	
	Hazard ratio	p-val	Hazard ratio	p-val
Return on assets	1.06	0.668	0.99	0.947
Debt	0.81	0.281	1.20	0.444
High-Tech	0.46	0.111	1.34	0.282
Multinationality	2.42	0.660	0.41	0.162
Corporate governance characteristics				
Retained ownership	0.36	0.068	0.81	0.601
Lock-up	1.00	0.071	1.00	0.599
Board size	1.21	0.003	0.99	0.648
Board independence	0.98	0.988	2.03	0.272
Female board members	1.54	0.554	2.05	0.211
CEO duality	1.27	0.481	0.80	0.451

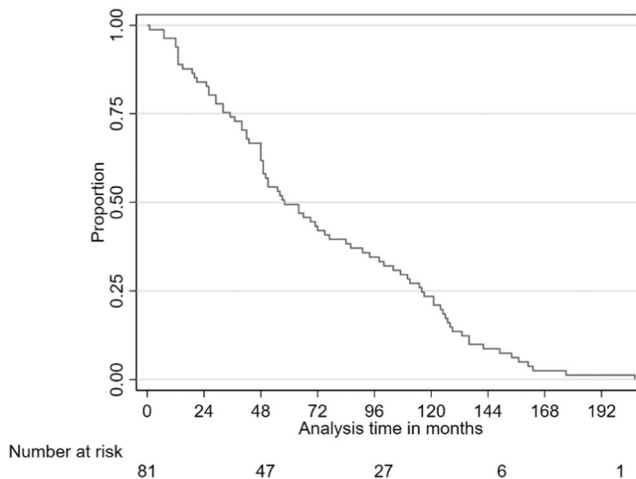


FIGURE 4 Kaplan-Meier survival estimate of post-IPO withdrawal outcome (i) inactive.

We can identify that companies which end up inactive file for an IPO during times of lower trading volume and credit conditions, yet higher Δ Index. It is noted that the ratios for Δ GDP and Δ Index are extraordinarily high. The low hazard ratio for secondary shares (0.07) indicates that IPO companies in need of fresh capital in the form of primary shares are more likely to become inactive. In contrast to expectation, observations in this category are more likely to have PE backing (3.39) and disclose their intellectual capital (3.69). Companies that do not sell and consequently die are more likely to have low retained ownership (0.36), yet a larger board size (1.21) which indicates that agency costs play an important role in the post-IPO withdrawal outcome, in line with hypothesis 2.

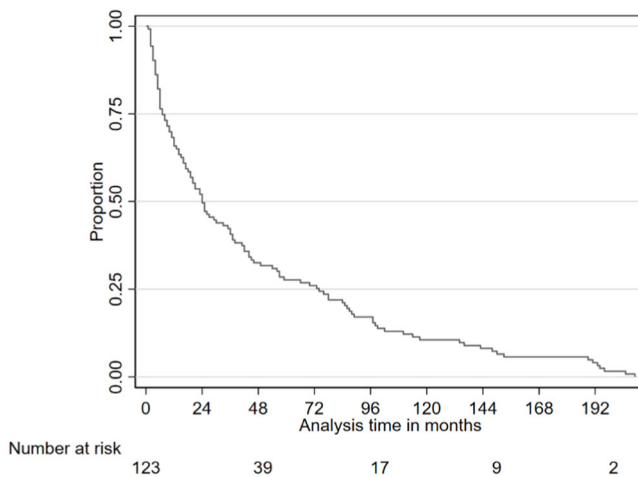


FIGURE 5 Kaplan-Meier survival estimate of post-IPO withdrawal outcome (ii) M&A.

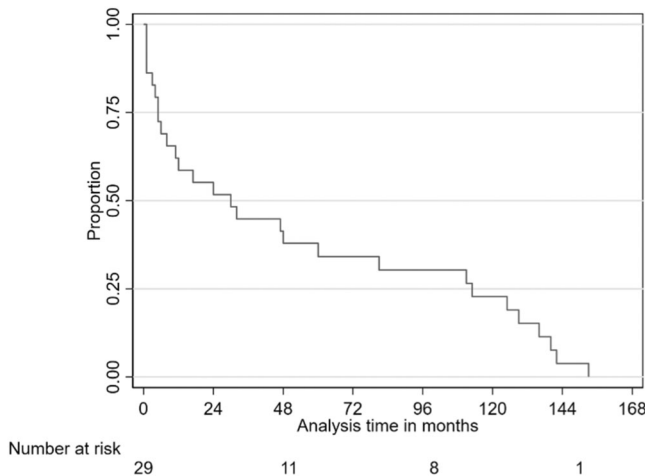


FIGURE 6 Kaplan-Meier survival estimate of post-IPO withdrawal outcome (iii) trading.

Figure 4 portrays the estimated probability of survival according to the time-to-event. In the first year after an IPO filing, around 10% of companies are likely to die with a constant rate thereafter. Within the first year after an IPO filing, around 25% of IPO withdrawn companies are likely to be merged or acquired (Figure 5). Overall, after 2 years around half of the observation in this category are likely to engage in M&A; we can identify a density located within the first 24 months of the IPO filing. Companies are almost twice as likely to issue secondary shares (1.86) indicating that, when insiders intend to exit the company but withdraw from the IPO, they are more likely to be engaged in M&A. Also, larger offers (1.08) that withdraw from the IPO are more likely to have this outcome. While IPOs that file during hot markets and with higher regulatory efficiency are less likely to be engaged in M&A. In terms of companies that are trading after an IPO withdrawal we can observe an almost binomial survival estimate in Figure 6. Either a company is likely to file for a second time IPO within the

first 2 years after a withdrawn IPO filing or only after around 10 years. We can assume that after this prolonged period of time the company is substantially reconfigured.

4.4 | The role of PE and VC

In our sample of 334 withdrawn IPOs, 82 companies are backed by PE and 35 by VC. Every third withdrawn IPO company (36%) is backed by a risk capital provider warranting a further examination. The aftermath of the PE and VC-backed IPO withdrawal companies is evaluated in Figure 7 in contrast to their non-backed counterparts. Not surprisingly, more than half of the firms that are backed by PE/VC that withdrew the IPO end up in the M&A category, compared to 32% of nonbacked IPO withdrawals. In line with hypothesis 4a and previous US evidence (Brau et al., 2010), the post-IPO withdrawal outcome of M&A is more frequent with companies that are backed by PE or VC at the time of the IPO filing with 52%. Likewise, for PE/VC backed withdrawals almost 14% end up trading after another try, whereas only 6% of firms withdrawing from the IPO that are not backed by either PE or VC are in this category. Finally, a much smaller proportion of firms post-IPO withdrawal stay private or become inactive where PE/VC are involved compared to their nonbacked counterparts. In fact, Gill and Walz (2016) argue that an IPO with VC backing can be interpreted as a delayed trade sale. The particular institutionalised investment framework of PE companies pressures a timely and lucrative exit (Harris et al., 2014).

Interestingly, in our sample we can identify high activity of PE acquisitions of withdrawn IPOs. Meaning that of the 131 M&A post-IPO withdrawal outcomes, 46 companies (35%) are acquired by PE after the IPO withdrawal. Out of those 46 PE targets almost half (26) of the companies are backed by PE (6 by VC) at the time of IPO filing and subsequent withdrawal. Gompers et al. (2016) and Kaplan and Strömberg (2009) identify trade sales or secondary buyouts as the most frequent exit routes for PE investors. As a further investigation, Table 6 reports the determinants of being taken over by PE post-IPO withdrawal. Overall, market conditions decrease the likelihood of being targeted by PE that includes the level of regulatory efficiency ($p = 0.02$, $ME = -2.5\%$), credit conditions (10-year government bond: $p = 0.02$,

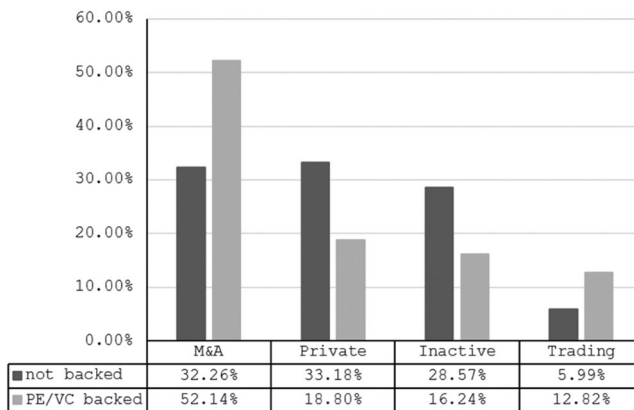


FIGURE 7 Post-IPO withdrawal outcomes for private equity (PE)/venture capital (VC)-backed versus not backed companies.

TABLE 6 Determinants of post-IPO withdrawal private equity targets.

This table reports the results on the survival analysis examining post-IPO withdrawal outcomes targeted by private equity. The database includes 113 IPO withdrawals in the category M&A, 46 observations are targeted by PE and 67 are not bought by PE. Average Marginal Effects are defined as follows: the probit employs normalisation that fixes the standard deviation of the error term to 1 where each coefficient represents the average marginal effect of a unit change on the probability that the dependent variable takes the value of either 1 (PE target), given that all other independent variables are constant (Aldrich & Nelson, 1984).

Variable	Coef.	p-val	Marginal effect
Regulatory environment			
Rule of law	0.02	0.304	0.0048
Regulatory efficiency	−0.08	0.015	−0.0250
Market openness	0.02	0.515	0.0056
Economic environment			
10 year government bond	0.38	0.024	0.1185
Credit spread	−0.47	0.002	−0.1470
ΔGDP	10.56	0.335	3.2918
Market environment			
VIX	−0.04	0.089	−0.0139
ΔIndex	−1.87	0.659	−0.5832
Market hotness	−0.64	0.034	−0.1986
Trading volume	0.19	0.554	0.0592
Negative news	0.03	0.928	0.0092
Offer characteristics			
Offer size	0	0.976	−0.0005
Secondary shares	0.68	0.084	0.2120
Greenshoe option	4.56	0.046	1.4208
Debt retirement	0.74	0.040	0.2428
Private equity	0.82	0.022	0.2716
Venture capital	−0.02	0.965	−0.0072
Intellectual capital	0.42	0.291	0.1399
Underwriter	0.61	0.358	0.1914
AIM	0.39	0.509	0.1313
Firm characteristics			
Firm size	0.17	0.030	0.0533
Age	0.04	0.766	0.0116
CapEx	−4.07	0.100	−1.2697
Return on assets	0.61	0.018	0.1888

(Continues)

TABLE 6 (Continued)

Variable	Coef.	<i>p</i> -val	Marginal effect
Debt	0.43	0.265	0.1325
High-Tech	0.43	0.249	0.1425
Multinationality	0.69	0.422	0.2145
Corporate governance characteristics			
Retained ownership	1.84	0.003	0.5723
Lock-up	0	0.750	0.0001
Board size	−0.01	0.875	−0.0024
Board independence	−2.59	0.009	−0.8067
Female board members	1.11	0.227	0.3466
CEO duality	−1.48	0.003	−0.2815

ME = 11.85%; credit spread: $p = 0.00$, ME = −14.70%), VIX ($p = 0.09$, ME = −1.39%) and hot markets ($p = 0.03$, ME = −19.86%). Especially those characteristics hint in the directions that PE strategically acquire withdrawn IPOs and not, for instance, while markets are volatile or ‘hot’. We can identify that offer characteristics of the original IPO filing such as the proportion of secondary shares ($p = 0.08$, ME = 21.20%), greenshoe option ($p = 0.05$, ME = 142.08%), the intent to retire debt ($p = 0.04$, ME = 24.28%) and PE backing ($p = 0.02$, ME = 27.16%) are important characteristics of PE targets. This provides evidence in favour of PE taking advantage of inside owners that want to exit the withdrawn IPO company. In terms of firm characteristics, PE target withdrawn IPO companies that are larger ($p = 0.03$, ME = 5.33%), have strong financial fundamentals (return on assets, $p = 0.02$, ME = 18.88%) and exhibit stronger corporate governance characteristics. As such, higher retained ownership significantly increases the likelihood to be targeted by PE ($p = 0.00$, ME = 57.23%), while board independence ($p = 0.01$, ME = −80.67%) and CEO duality ($p = 0.00$, ME = −28.15%) decrease the same.

Axelson et al. (2013) stipulate that the ability of PE to identify market movements and undervalued targets plays a pivotal role in transaction pricing and value creation. PE often moves into undervalued and out-of-favour sectors. Information acquisition costs pose a main hurdle for any transaction (Allen & Faulhaber, 1989) while the (withdrawn) IPO reveals a high degree of information (Daily et al., 2005; Hsieh et al., 2011; Sherman & Titman, 2002). The (withdrawn) IPO might significantly reduce the valuation uncertainty and PE information acquisition costs. Consequently, PE seize the opportunity. In Figure 8 the timing of PE targets’ acquisition is displayed. Overwhelmingly, PE moves into the withdrawn IPO companies within the first 2 years after the original IPO filing (ca. 60%). Particularly, more than 30% of PE target acquisitions are within the first year. It almost appears as if PE were presented with potential target companies ‘on the silver platter’ and move in quickly.

In summary, PE and VC-backed companies are more frequently taken over or traded post-IPO withdrawal. This provides evidence for hypotheses 4a, 4b and the dual-track strategy pursued by PE and VC. Especially the finding on PE targets and the high proportion of secondary buyouts are informative. The particular investment framework of PE and VC companies pressure for a timely and lucrative exit. Likewise, the acclaimed value-enhancing ownership of PE and VC (Gompers et al., 2016) may positively influence the outcome post-IPO

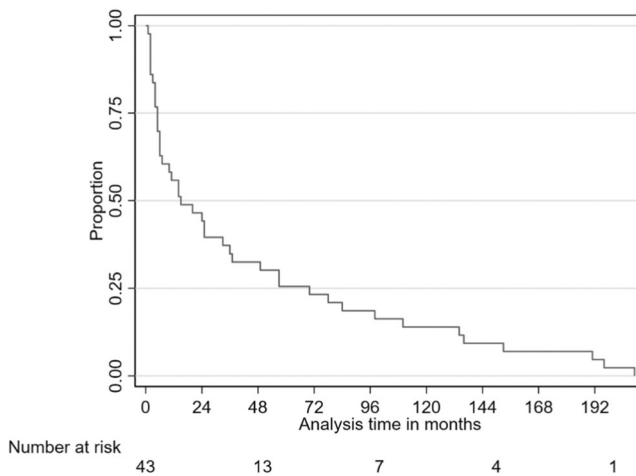


FIGURE 8 Kaplan-Meier survival estimate of post-IPO withdrawal private equity targets.

withdrawal. Likewise, the obsession with an exit strategy favours a dual-track strategy (Brau et al., 2010). In the context of IPO withdrawals, we follow this idea in concluding that PE and VC turn around the ‘failure’ into a ‘successful’ post-IPO withdrawal outcome. We provide additional qualitative information on the deal size of PE and VC-backed IPO withdrawals in Supporting Information S1: Appendix A.1.

4.5 | Comparison with existing findings

While most results for the largest European equity markets show similarities but also pronounced differences to the US-based research. This does not lead to an overthrow of the findings for the US equity market, but enforces the necessity to examine IPO phenomena within various institutional settings. Boeh and Dunbar (2013) examine 588 IPO withdrawals between 1999 and 2004 in the United States with the following distributions of post-IPO withdrawal outcomes: 11% inactive, 42% M&A, 36% private and 13% trading. In our European data set from 2001 to 2015, a higher proportion of 24% become inactive mainly at the AIM, whereas the proportion of companies that remain private is lower (28%). Moreover, the M&A activity is slightly lower at 39% and only 8% return to the market. The variance in numbers can most likely be explained by the difference in time and settings. Lian and Wang (2012) explore the valuation multiples of M&A before and after the company withdraws from the IPO. Even though we do not examine valuation multiples, we find that there is a beneficial dual-track strategy for PE and VC investors (see Supporting Information S1: Appendix A.1 on the qualitative exploration of deal terms). Dunbar and Foerster (2008) analyse the determinants of successful second time IPOs in the United States. They identify VC involvement, due to its certification effect, as one of the key drivers which is consistent with our findings. We however distinguish between PE and VC involvement and argue for a dual-track strategy of VC and PE to exit their investments. We can only establish a significant impact of PE, though. Interestingly, the underwriters' prestige does not influence the post-IPO withdrawal outcome in contrast to the US findings (Boeh & Dunbar, 2013). We argue that the particular European

IPO landscape may lead IPO firms to not choose underwriter based on reputation, but on previous linkages as suggested in Klein et al. (2016).

Furthermore, in comparison with evidence on postoffering outcomes of completed IPOs, we can identify similarities and differences. While Ragozzino and Reuer (2007) identify post-IPO acquisitions at 18% in the United States, Gao et al. (2013) evidence that the number of acquisitions postoffering are growing, especially shortly after the IPO. We find a similar pattern in our post-IPO withdrawal sample. Most relatedly to our sample, Signori and Vismara (2017) who study post-IPO M&A activity in Europe between 1995 and 2009, find that around 16% acquire and 18% are targeted during the first 3 years after the IPO. Our results evidence that most of the withdrawn IPO companies are merged or acquired within the first 2 years after filing. Interestingly, we identify similar effects of offer and firm characteristics for withdrawn IPOs that engage in M&A after the withdrawal compared to the findings for post-IPO M&A in Signori and Vismara (2017). Investigating IPOs in Europe between 1998 and 2014, Chemmanur et al. (2023) postulate that the IPO significantly increases the probability of M&A. We find that the provision of intellectual capital in the IPO prospectus significantly increases the probability of a merger or acquisition after the IPO withdrawal. Engelen et al. (2020) find a decreased likelihood of high-tech, knowledge-intensive firms to go public with smaller valuation of those that are successful in the IPO. This leads us to conclude, that the IPO provides valuable information for acquirers and that insiders are able to exit, regardless of success or withdrawal. Especially for withdrawn IPO firms that publish their intellectual capital in their prospectus, an M&A outcome is likely.

Finally, we compare our findings with the equity crowdfunding firm outcomes in the UK, as especially the AIM share commonalities of features (Cumming et al., 2019; Signori & Vismara, 2018). Signori and Vismara (2018) find that about 18% of firms are failing, 9% receiving VC-backing and only 1% being engaged in M&A. These numbers, apart from the failure rate, are in contrast to our withdrawn IPO outcomes. We argue that the event of an IPO is more effective in overcoming information asymmetries compared to a less regulated equity crowdfunding. The IPO due diligence makes for a favourable target in contrast to crowdsourcing campaigns. Similar to evidence on equity crowdfunding (see for instance Cumming et al., 2019), we find that a higher separation of ownership and control reduces the success of the outcome.

5 | ROBUSTNESS CHECKS

To assess the adequacy of the results, several robustness checks are executed. When using a subset of 16 explanatory variables which show significance in a stepwise analysis on the determinants of IPO withdrawal in Helbing et al. (2019), we find consistency of results with our multinomial probit base setting (see Supporting information S1: Table A.1).

Our analysis is based on post-IPO withdrawal outcomes, but some may not yet be realised by the end of the sample period. To further address possible sample selection bias, we specify a two-stage Heckman selection model. Using all 2808 IPO filings identified in Helbing et al. (2019), both completed and withdrawn, we first determine the probability of IPO withdrawal and second specify a multinomial probit setting. The results are reported in Supporting information S1: Table A.2 and show that the inverse mills ratio is not significant for any of the outcomes. The magnitude of the coefficient estimates for our variables of interest remain qualitatively similar.

We aim to identify the principal component (PC) that accounts for the maximum amount of variance in the data with the smallest number of mutually independent underlying factors. The six different principal component vectors, one for each category, are then used to specify the multinomial probit model (see Supporting information S1: Table A.3). The results are similar in nature to the main analysis such that offer characteristics are the most important driver for companies that merge or are acquired while corporate governance characteristics are reducing an 'inactive' outcome. In a nutshell, the different robustness tests are consistent with the results presented in the main analysis.

6 | CONCLUSION

In this paper, we examine all 334 withdrawn IPO filings between 2001 and 2015 in the United Kingdom, France, Germany, Italy, Scandinavia and Spain identified in Helbing et al. (2019). This unique European sample gives our empirical analysis substance covering different countries, stock exchanges, EU harmonisation directives and economic cycles. The post-IPO withdrawal outcomes are classified into four categories: private, inactive, M&A, and trading. To identify the determinants and timing of these post-IPO withdrawal outcomes, we make use of detailed regulatory, economic and market conditions as well as hand-collected offer, firm and corporate governance characteristics at the time of the IPO filing. Some interesting results emerge. Against common belief, only a marginal fraction returns to the market, while most companies engage in M&A or remain private. Younger and smaller companies end up inactive and predominantly file at the less regulated AIM with low ownership retention and board independence. It seems that 'bad' companies may try to circumvent regulations at the official stock exchanges, making them more likely to die. In that sense, better corporate governance increases the probability of a 'trading' outcome. However, we do not find evidence that IPOs filed during unfavourable market conditions are more likely to have a second time IPO. Much in contrast, IPOs filed during favourable market conditions are more likely to become inactive. We identify a difference in outcomes for PE and VC-backed and non-backed companies. A special role is asserted to PE and VC since backed IPO withdrawals are more frequently engaged in a second time IPO or M&A. The particular investment framework of PE and VC pressures a timely and lucrative exit. PE target withdrawn IPO companies and move in quickly, exploiting the desire of insiders to exit. Moreover, we address possible endogeneity concerns by exploiting the regulatory shock of the introduction of the MiFID across the main stock exchanges and the AIM. While stricter regulation does not seem to statistically impact post-IPO withdrawal outcomes, when a company files the IPO at the main exchange, this significantly reduces the probability of an inactive status post-IPO withdrawal.

In a survival setting we find further evidence for a dual-track strategy of IPO companies. Companies engage in 'M&A' or 'trading' outcomes *shortly* after a withdrawn IPO filing while the rate of death is constant. Our results remain robust when exploring several alternative settings. Given the empirical evidence on post-IPO withdrawal outcomes in Europe, we conclude that IPOs are not withdrawn because timing is unfavourable or because the IPO candidate is unfit, apart from the AIM observations. Rather, IPOs seem to be part of a dual-track strategy, whereby companies remain private, if it does not work out. Especially, older and more robust companies do not seem to be dependent on the IPO. Considering trade or secondary sale opportunities, PE and VC managers pursue multiple exit routes. The IPO may be used as a marketing mechanism and withdrawn in favour of a superior exit; a success dressed as a failure.

We believe that our paper has substantial implications for investors, practitioners, and policy makers. The IPO process in a globalised world is too complex to be generalised by single country studies, and that the role of VC and PE involvement, especially, cannot be captured through broad generalisation. We provide further evidence on the link between the IPO and M&A markets. This implies that the IPO with its various outcomes, in particular the IPO withdrawal, needs to be carefully considered within theoretical frameworks of corporate finance. Similarly to completed IPOs, we claim that information evaluation costs are significantly lowered for the withdrawn IPO company making it a target for merger and acquisition whereby PE in particular targets IPO withdrawals. We conclude that every IPO filing produces valuable information, even the withdrawn ones. The theoretical implication suggests that an IPO withdrawal is not per se a negative event. The IPO does not seem to be the conclusive step in the company's life cycle but rather a strategic choice within the continuum of governance, regulation and exits of insiders. Hence, insiders of IPO companies might as well benefit from a withdrawn IPO. Likewise, in line with previous studies on regulatory oversight, policy makers should be encouraged to adjust regulations to foster disclosure transparency and accessibility to stock markets in Europe. Especially the role of information provision and governance for IPOs filing at second-tier markets such as the AIM should be carefully discussed.

Admittedly, our study has limitations. First, we acknowledge that our survival data is censored and post-IPO withdrawal outcomes might change as the window of observation becomes larger. We are confident however that we have captured the short- and midterm of outcomes with an observation window of at least 5 years. Second, we acknowledge that we have an important boundary condition. Our underlying statistical models assume that the company actively switches from private to a specific post-IPO withdrawal outcome such as M&A, inactive or second time IPO. While we attempt to address this in our additional settings and several robustness tests, it is not completely possible to endogenise this choice. Future research can further develop the theoretical mechanism of the dual-track strategies of IPO firms. Investigating the particular role of the underwriter in the pursuit of alternative routes is an interesting avenue for future research.

Our data is retrieved from commercial data providers such as Bloomberg and Thomson Reuters Refinitiv, hence we are not able to freely share our data set. However, we have included a detailed description of the data generation procedure to facilitate replication. This has been added to Supporting Information S1: Appendix A.2.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from Bloomberg. Restrictions apply to the availability of these data, which were used under license for this study. Data are available from the author(s) with the permission of Bloomberg.

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REFERENCES

- Abdulla, Y., Dang, V. A., & Khurshed, A. (2016). Debt maturity and initial public offerings. *Review of Quantitative Finance and Accounting*, 47(4), 1129–1165.
- Aggarwal, R., Berrill, J., Hutson, E., & Kearney, C. (2011). What is a multinational corporation? Classifying the degree of firm-level multinationality. *International Business Review*, 20(5), 557–577.

- Akerlof, G. A. (1970). The market for “lemons”: Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, 84(3), 488–500.
- Aktas, N., Andres, C., & Ozdakak, A. (2018). The interplay of IPO and M&A markets: The many ways one affects the other. In D. Cumming & S. Johan (Eds.), *The Oxford handbook of IPOs* (p. 201). Oxford University Press.
- Akyol, A. C., Cooper, T., Meoli, M., & Vismara, S. (2014). Do regulatory changes affect the underpricing of European IPOs? *Journal of Banking & Finance*, 45, 43–58.
- Aldrich, J. H., & Nelson, F. D. (1984). *Linear probability, logit, and probit models*. Sage QASS Series.
- Allen, F., & Faulhaber, G. R. (1989). Signalling by underpricing in the IPO market. *Journal of Financial Economics*, 23, 303–323.
- Arthurs, J. D., Busenitz, L. W., Hoskisson, R. E., & Johnson, R. A. (2009). Signaling and initial public offerings: The use and impact of the lockup period. *Journal of Business Venturing*, 24(4), 360–372.
- Axelson, U., Jenkinson, T., Strömberg, P., & Weisbach, M. S. (2013). Borrow cheap, buy high? The determinants of leverage and pricing in buyouts. *The Journal of Finance*, 68(6), 2223–2267.
- Bancel, F., & Mittoo, U. R. (2009). Why do European firms go public? *European Financial Management*, 15(4), 844–884.
- Bergbrant, M. C., Bradley, D., & Hunter, D. M. (2017). Does bank loan supply affect the supply of equity capital? Evidence from new share issuance and withdrawal. *Journal of Financial Intermediation*, 29, 32–45.
- Bertoni, F., Meoli, M., & Vismara, S. (2014). Board independence, ownership structure and the valuation of IPOs in continental Europe. *Corporate Governance: An International Review*, 22(2), 116–131.
- Bhagat, S., & Bolton, B. (2008). Corporate governance and firm performance. *Journal of Corporate Finance*, 14, 257–273.
- Boeh, K. K., & Dunbar, C. G. (2013). Post IPO withdrawal outcomes.
- Boeh, K. K., & Dunbar, C. G. (2021). Raising capital after IPO withdrawal. *Journal of Corporate Finance*, 69, 102020.
- Boeh, K. K., & Southam, C. (2011). Impact of initial public offering coalition on deal completion. *Venture Capital*, 13(4), 313–336.
- Brau, J. C., & Fawcett, S. E. (2006). Initial public offerings: An analysis of theory and practice. *The Journal of Finance*, 61(1), 399–436.
- Brau, J. C., Sutton, N. K., & Hatch, N. W. (2010). Dual-track versus singletrack sell-outs: An empirical analysis of competing harvest strategies. *Journal of Business Venturing*, 25(4), 389–402.
- Brav, A., & Gompers, P. A. (2003). The role of lockups in initial public offerings. *Review of Financial Studies*, 16(1), 1–29.
- Busaba, W. Y. (2006). Bookbuilding, the option to withdraw, and the timing of IPOs. *Journal of Corporate Finance*, 12(2), 159–186.
- Busaba, W. Y., Benveniste, L. M., & Guo, R.-J. (2001). The option to withdraw IPOs during the premarket: Empirical analysis. *Journal of Financial Economics*, 60, 73–102.
- Busaba, W. Y., Li, Y., & Yang, G. (2015). Market volatility and IPO filing activity. quarterly. *Journal of Finance*, 5(4), 1–46.
- Cattaneo, M., Meoli, M., & Vismara, S. (2015). Financial regulation and IPOs: Evidence from the history of the Italian stock market. *Journal of Corporate Finance*, 31, 116–131.
- Certo, S. T. (2003). Influencing initial public offering investors with prestige: Signaling with board structures. *The Academy of Management Review*, 28(3), 432–446.
- Chemmanur, T. J., & Fulghieri, P. (1999). A theory of the going-public decision. *Review of Financial Studies*, 12(2), 249–279.
- Chemmanur, T. J., & He, J. (2011). IPO waves, product market competition, and the going public decision: Theory and evidence. *Journal of Financial Economics*, 101(2), 382–412.
- Chemmanur, T. J., Signori, A., & Vismara, S. (2023). The exit choices of European private firms: A dynamic empirical analysis. *Journal of Financial Markets*, 65, 100821.
- Cookson, R. (2015, October 28). Music streaming service Deezer abandons IPO. Financial Times. <https://www.ft.com/content/297a28ce-7d65-11e5-a1fe-567b37f80b64>
- Cumming, D. (2008). Contracts and exits in venture capital finance. *Review of Financial Studies*, 21(5), 1947–1982.

- Cumming, D., Johan, S., & Li, D. (2011). Exchange trading rules and stock market liquidity. *Journal of Financial Economics*, 99(3), 651–671.
- Cumming, D., Meoli, M., & Vismara, S. (2019). Investors' choices between cash and voting rights: Evidence from dual-class equity crowdfunding. *Research Policy*, 48, 103740.
- Daily, C. M., Certo, S. T., & Dalton, D. R. (2005). Investment bankers and IPO pricing: Does prospectus information matter? *Journal of Business Venturing*, 20(1), 93–111.
- Dambra, M., Field, L. C., & Gustafson, M. T. (2015). The JOBS Act and IPO volume: Evidence that disclosure costs affect the IPO decision. *Journal of Financial Economics*, 116, 121–143.
- Djerbi, C., & Anis, J. (2015). Boards, retained ownership and failure risk of French IPO firms. *Corporate Governance*, 15(1), 108–121.
- Dunbar, C. G. (1998). The choice between firm-commitment and best-efforts offering methods in IPOs: the effect of unsuccessful offers. *Journal of Financial Intermediation*, 7, 60–90.
- Dunbar, C. G. (2011). IPOs in registration.
- Dunbar, C. G., & Foerster, S. R. (2008). Second time lucky? Withdrawn IPOs that return to the market. *Journal of Financial Economics*, 87(3), 610–635.
- Engelen, P. J., & van Essen, M. (2010). Underpricing of IPOs: Firm-, issue and country-specific characteristics. *Journal of Banking & Finance*, 34(8), 1958–1969.
- Engelen, P. J., Meoli, M., Signori, A., & Vismara, S. (2020). The effects of stricter regulation on the going public decision of small and knowledge-intensive firms. *Journal of Business Finance & Accounting*, 47, 188–217.
- Enriques, L., & Volpin, P. (2007). Corporate governance reforms in continental Europe. *Journal of Economic Perspectives*, 21(1), 117–140.
- Espenlaub, S., Khurshed, A., & Mohamed, A. (2012). IPO survival in a reputational market. *Journal of Business Finance & Accounting*, 39(3), 427–463.
- Fan, P., & Yamada, K. (2019). Same bed different dream composition of IPO shares and withdrawal decisions in weak market conditions. *Small Business Economics*, 55, 955–974.
- Field, L. C., & Karpoff, J. M. (2002). Takeover defenses of IPO firms. *The Journal of Finance*, 57(5), 1857–1889.
- Gao, X., Ritter, J. R., & Zhu, Z. (2013). Where have all the IPOs gone? *Journal of Financial and Quantitative Analysis*, 48, 1663–1692.
- Gerakos, J., Lang, M., & Maffett, M. (2013). Post-listing performance and private sector regulation: The experience of London's alternative investment market. *Journal of Accounting and Economics*, 56(2–3), 189–215.
- Gill, A., & Walz, U. (2016). Are VC-backed IPOs delayed trade sales? *Journal of Corporate Finance*, 37, 356–374.
- Gompers, P., Kaplan, S. N., & Mukharlyamov, V. (2016). What do private equity firms say they do? *Journal of Financial Economics*, 121, 449–476.
- Harris, R. S., Jenkinson, T., & Kaplan, S. N. (2014). Private equity performance: What do we know? *The Journal of Finance*, 69(5), 1851–1882.
- Helbing, P. (2019). A review on IPO withdrawal. *International Review of Financial Analysis*, 62, 200–208.
- Helbing, P., Lucey, B. M., & Vigne, S. A. (2019). The determinants of IPO withdrawal—Evidence from Europe. *Journal of Corporate Finance*, 56, 415–436.
- Hoque, H., & Lasfer, M. (2015). Directors' dealing and post-IPO performance. *European Financial Management*, 21(1), 178–204.
- Howton, S. D., Howton, S. W., & Olson, G. T. (2001). Board ownership and IPO returns. *Journal of Economics and Finance*, 25(1), 100–114.
- Hsieh, J., Lyandres, E., & Zhdanov, A. (2011). A theory of merger-driven IPOs. *Journal of Financial and Quantitative Analysis*, 46(5), 1367–1405.
- Imai, K., & Dyk, D. A. (2005). MNP: R package for fitting the multinomial probit model. *Journal of Statistical Software*, 14(3), 1–32.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305–360.
- Johan, S. A. (2010). Listing standards as a signal of IPO preparedness and quality. *International Review of Law and Economics*, 30, 128–144.
- Kaplan, S. N., & Strömberg, P. (2009). Leveraged buyouts and private equity. *Journal of Economic Perspectives*, 23(1), 121–146.

- Kartsonaki, C. (2016). Survival analysis. *Diagnostic Histopathology*, 22(7), 263–270.
- Klein, D., & Li, M. (2009). Factors affecting secondary share offerings in the IPO process. *The Quarterly Review of Economics and Finance*, 49, 1194–1212.
- Klein, P. G., Wuebker, R., & Zoeller, K. (2016). Relationship banking and conflicts of interest: Evidence from German initial public offerings. *Journal of Corporate Finance*, 39, 210–221.
- Latham, S., & Braun, M. R. (2010). To IPO or not to IPO: Risks, uncertainty and the decision to go public. *British Journal of Management*, 21, 666–683.
- Lian, Q., & Wang, Q. (2009). Does the market incorporate previous IPO withdrawals when pricing second-time IPOs? *Financial Management*, 38(2), 357–380.
- Lian, Q., & Wang, Q. (2012). Acquisition valuations of withdrawn IPOs: When IPO plans turn into mergers. *Journal of Banking & Finance*, 36, 1424–1436.
- Loughran, T., & Ritter, J. R. (1995). The new issues puzzle. *The Journal of Finance*, 50(1), 23–51.
- Lowry, M. (2003). Why does IPO volume fluctuate so much? *Journal of Financial Economics*, 67, 3–40.
- McCulloch, R. E., Polson, N. G., & Rossi, P. E. (2000). A Bayesian analysis of the multinomial probit model with fully identified parameters. *Journal of Econometrics*, 99(1), 173–193.
- Migliorati, K., & Vismara, S. (2014). Ranking underwriters of European IPOs. *European Financial Management*, 20(5), 891–925.
- La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2006). What works in securities laws? *The Journal of Finance*, 61(1), 1–32.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *The Journal of Finance*, 52(3), 1131–1150.
- Ragozzino, R., & Reuer, J. J. (2007). Initial public offerings and the acquisition of entrepreneurial firms. *Strategic Organization*, 5(2), 155–176.
- Reiff, A., & Tykrová, T. (2021). IPO withdrawals: Are corporate governance and VC characteristics the guiding light in the rough sea of volatile markets? *Journal of Corporate Finance*, 67, 101908.
- Reuer, J. J., & Shen, J.-C. (2004). Sequential divestiture through initial public offerings. *Journal of Economic Behavior & Organization*, 54, 249–266.
- Ritter, J. R. (1987). The costs of going public. *Journal of Financial Economics*, 19, 269–281.
- Ritter, J. R. (2003). Differences between European and American IPO markets. *European Financial Management*, 9(4), 421–434.
- Ritter, J. R., Signori, A., & Vismara, S. (2013). Economies of scope and IPO activity in Europe. In *Handbook of research on IPOs* (pp. 11–34). Edward Elgar Publishing.
- Ritter, J. R., & Welch, I. (2002). A review of IPO activity, pricing, and allocations. *The Journal of Finance*, 57, 1795–1828.
- Sherman, A. E., & Titman, S. (2002). Building the IPO order book: Underpricing and participation limits with costly information. *Journal of Financial Economics*, 65(1), 3–29.
- Shi, Y., Liu, W. M., & Ho, K. Y. (2016). Public news arrival and the idiosyncratic volatility puzzle. *Journal of Empirical Finance*, 37, 159–172.
- Signori, A., & Vismara, S. (2017). Stock-financed M&A of newly listed firms. *Small Business Economics*, 48, 115–134.
- Signori, A., & Vismara, S. (2018). Does success bring success? The post-offering lives of equity-crowdfunded firms. *Journal of Corporate Finance*, 50, 575–591.
- Singh, I., & Mitchell Van der Zahn, J. L. W. (2007). Does intellectual capital disclosure reduce an IPO's cost of capital? The case of underpricing. *Journal of Intellectual Capital*, 8(3), 494–516.
- Takahashi, H., & Yamada, K. (2015). IPOs, growth, and the impact of relaxing listing requirements. *Journal of Banking & Finance*, 59, 505–519.
- Tykrová, T., & Walz, U. (2007). How important is participation of different venture capitalists in German IPOs? *Global Finance The Journal*, 17(3), 350–378.
- Vandemaële, S. (2003). Choice of selling mechanism at the IPO: The case of the French second market. *European Financial Management*, 9(4), 435–455.
- Vismara, S., Paleari, S., & Ritter, J. R. (2012). Europe's second markets for small companies. *European Financial Management*, 18(3), 352–388.

Zingales, L. (1995). Insider ownership and the decision to go public. *The Review of Economic Studies*, 62, 425–228.

SUPPORTING INFORMATION

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

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