

Boards and IPO Firm Survival

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This paper examines the impact of board heterogeneity on the survival of IPO firms five years after listing. Consistent with the resource dependency theory, we find that professional expertise heterogeneity for executive directors increases the likelihood of IPO firm survival. However, this is only the case if executive directors have both past business experience in the industry and financial expertise. This effect is strengthened by the presence of a non-founder CEO who also acts as the board chair. The findings are robust after controlling for potential endogeneity concerns, using alternative estimators, and controlling for internal and external factors. Further analysis reveals that the positive impact of executive professional expertise on IPO firm survival is more pronounced when board changes occur, supporting the notion that IPO firms engage in a beauty contest to attract potential investors.

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1. Introduction

The transition from a private to a public firm constitutes a significant change for initial public offering (IPO) firms due to the increased complexity and exposure associated with the IPO process. Greater uncertainty surrounding IPO firms means that such firms face a liability of newness, i.e., the potential to fail without adequate access to resources that establish unique strategies (Yang and Aldrich 2017). Hence, firms involved in an IPO offer a unique setting to study the implications of director heterogeneity in the boardroom, as this is the first time the board becomes visible to the public. The consensus in prior literature is that heterogeneous boards provide different perspectives by drawing on board members' varied experiences to improve the information available for decision-making (Adams and Ferreira 2009; Carter et al. 2010; Ali et al. 2014). To date, research on IPO firms has linked various board characteristics, including board size, board independence, and venture capitalist representation, to post-IPO events, such as mergers and acquisitions, and stock performance (Chahine and Goergen 2011; Levi et al. 2014; Feng et al. 2019).

In terms of IPO survival, Gounopoulos and Pham (2018) show that the presence of a specialist CEO increases the survival time of IPO firms.¹ Moreover, Zimmerman (2008) has linked top management team heterogeneity to IPO capital raising, providing evidence of a positive relationship. However, there is a paucity of information on the potential impact of board heterogeneity on IPO survival. Answering this question offers new insights to potential IPO firms into how best to face the challenges of being listed on a stock market without prior public operational track records. To this end, this paper examines whether board heterogeneity in terms of professional expertise influences the likelihood of IPO survival.

We acknowledge that directors are multifaceted and may have various competencies associated with their prior experiences (Adams et al. 2018). However, the focus of this paper is on the primary expertise of board members based on fifteen broad categories, which are aggregated into a professional expertise heterogeneity index.² We differentiate between the professional heterogeneity of executive directors (EDs) and that of non-executive directors (NEDs). The rationale for this approach is that prior to listing, boards of IPO firms are smaller,

¹ Gounopoulos and Pham (2018) define specialist CEOs as CEOs with a low generalist index score based on the number of roles the CEO performed, and the number of firms for which the CEO has worked and the number of industries in which the CEO has worked.

² Professional Expertise Heterogeneity Categories include Academic, Accountant, Banker, Consultant, Dentist, Doctor, Engineer, Business with Industry experience, Business without industry experience, Finance Expert, IT Expert, Investment Professional, Lawyer, Scientist, and Politician.

primarily composed of executive directors, with fewer, if any, non-executive directors. In the year before the listing, the ratio of executive to non-executive directors tends to increase substantially due to the listing requirements (Bakers and Gompers 2003). This provides an opportunity to dig deeper into whether heterogeneity within these two groups (executive and non-executive directors) impacts the likelihood of IPO survival. Drawing on the resource dependency and diversity theories, we posit that professional expertise heterogeneity may be beneficial or detrimental to the survival prospects of IPO firms. On the one side, the resource dependency theory views directors as resources that facilitate relationships between the firm and its external environment (Hillman et al. 2000). In this vein, IPO firms with heterogeneous professional expertise have better access to resources and information for strategic decision making, which ultimately improves the survival prospects of the firm post-IPO. On the other side, the diversity theory (Forbes and Milliken 1999) posits that an increase in heterogeneous perspectives results in greater cognitive conflicts and thus less effective decision-making, which may be detrimental to IPO survival.

When it comes to IPO survival, we distinguish between survivors and non-survivors. Survivors are defined as firms that remain publicly traded and independent entities up to 5 years post-IPO (or the last year of the sample period). Non-survivors are firms that exit the sample post-IPO due to mergers or delistings. Although being a non-survivor has a negative connotation, we acknowledge that not all types of exits post-IPO indicate firm failure. For example, following a merger, the firm continues to operate, although not as an independent entity. Hence, from a shareholder perspective, mergers are different from delistings. Mergers may not indicate firm failure as the IPO may be driven by the founders wanting to sell their firm in the near future, while benefitting from a more objective value metric, i.e., a stock price (Hovakimian and Hutton 2010). Delistings are firms that do not survive as independent entities after the IPO and exit the stock market regardless of the reasons for delisting.

We focus on a random sample of 661 IPO firms that listed between 1st January 1997 and 31st December 2015. We then track these firms for up to five years after their IPO, up to 31st December 2020, to determine whether they were survivors or non-survivors. There are 304 survivors and 357 non-survivors (i.e., 236 mergers and 121 delistings) by year 5 post-IPO. We analyse the impact of professional expertise heterogeneity (EDs and NEDs) on the likelihood of IPO survival using the logit estimator in a broader sense and adopting entropy balancing (Hainmueller 2012) to address potential endogeneity concerns as board

characteristics may be endogenous in that, directors with attractive professional expertise may self-select onto the boards of IPO firms that perform better. In further robustness tests, we use the survival analysis models to examine the impact of the main variables of interest on survival time to year 5 post-IPO.

The results suggest that greater executive director (hereafter ED) professional expertise heterogeneity at the IPO improves the likelihood of survival to year 5 post-IPO. While ED professional expertise heterogeneity is an index based on fifteen expertise categories, we dig deeper into the specific combinations that influence the survival of IPO firms. To proceed, we cluster expertise into two groups: a mix of EDs with business expertise and financial expertise, and a mix of EDs with business expertise and technical expertise. EDs with business expertise have experience as executives of the same industry in which the firm operates. Financial expertise is a blanket term used to refer to EDs with professional expertise as accountants, bankers, finance experts, and investment professionals. In turn, technical expertise is a blanket term for EDs offering firm-specific operational expertise as consultants, academics, doctors, engineers, scientists, IT experts, and lawyers.

We only observe the positive effect of ED professional expertise heterogeneity on survival for firms where EDs have a combination of industry experience and financial expertise. This nuanced result is in line with Gounopoulos and Pham's (2018) findings that IPO firms with specialist CEOs are more likely to survive. The results further suggest that this effect is stronger if a Non-Founder CEO at the helm of the firm is also the board chair, indicating a complementary effect. In a bid to explain the mechanism driving the results, we explore the following two channels in a cross-sectional analysis: the beauty contest to attract potential investors through board changes, and the retention of EDs with key professional expertise. On the one hand, the beauty contest argument suggests that IPO firms change their boards to attract potential investors and focus on ED professional expertise combinations that reflect the firm's needs, in turn improving the survival prospects of the firm. On the other hand, IPO firms retain EDs with key professional expertise combinations across the sample period resulting in a higher likelihood of IPO survival. Our findings support the former argument about the beauty contest as they indicate that the effect is more pronounced around the IPO when there are changes to the board.

Importantly, our results are robust using an alternative definition of IPO survival, survival analysis models, and controlling for potential endogeneity concerns. As a further

matter, we controlled for the potential effects of internal governance factors (staggered boards and dual class shares) and external factors (high tech industries and crisis periods), and our results still hold. Finally, in terms of board gender and age heterogeneity, we find no evidence that these measures influence the survival prospects of IPO firms.

The contributions of this paper are as follows. First, we show that ED professional expertise heterogeneity plays a significant role in improving IPO survival, while heterogeneity in terms of gender and age has no impact on the latter. Particularly, IPO firms will benefit from a mix of EDs with business expertise and financial expertise. Hence, the focus of potential issuers should be on improving board heterogeneity along these lines in appointments around the IPO which seem to be more attractive to potential investors. Second, the type of CEO in an IPO firm impacts the likelihood of IPO survival. Founder CEOs may be more focused on mergers, while non-founder CEOs with duality as board chairs complement the EDs' professional expertise to improve the firm's survival prospects.

This paper is organised as follows: Section 2 discusses the theoretical framework and develops the hypotheses tested in the paper. Section 3 reviews the data sources, sample selection, and methodology. Section 4 reports and discusses the impact of the professional expertise heterogeneity index and combinations of professional expertise on IPO survival. We explore the mechanisms driving the results and robustness checks in Section 4, while Section 5 provides a conclusion to the paper.

2. Theoretical Framework and Hypothesis Development

Despite the extensive information disclosed in the IPO prospectus, IPO firms are often relatively unknown to the investing community, as they have limited data for potential investors to analyse and review. With this information gap in mind, IPO firms face the “liability of newness” around the time of listing, while the quality of these firms, specifically their ability to access resources, is imperative for survival post-IPO (Perrault and McHugh 2015).

According to the resource dependency perspective (Pfeffer and Salancik 2003), the firm is an open system, dependent on its external environment, and board members are resources linking the firm to this external environment. At the IPO, heterogeneity of professional expertise in the boardroom shows the ability of the firm to attract directors from different backgrounds with access to invaluable contacts, information, and skills. Hoitash and Mkrtchyan (2021) suggest that directors with heterogeneous backgrounds and experiences improve the information flow to the board and facilitate innovative critical thinking in problem-solving. With this in mind, we argue that greater professional expertise heterogeneity provides

increased access to unique resources, thereby potentially improving the board's advising function, decision-making, and ultimately, the likelihood of survival post-IPO. We draw on the resource dependency theory to predict a positive relationship between professional expertise heterogeneity and IPO survival. As a further matter, we examine whether certain combinations of professional expertise heterogeneity impact the likelihood of IPO survival.

To the best of our knowledge, there is no prior literature analysing the relationship between professional expertise heterogeneity and IPO survival. Nevertheless, a myriad of studies suggests that board characteristics impact various firm outcomes, as director heterogeneity in the boardroom plays a key role in board functioning. Using a board heterogeneity index combining six dimensions (education, experience, profession, gender, age, ethnicity), Anderson et al. (2011) find that board diversity improves firm value. Similarly, Upadhyay and Zeng (2014) find that greater board heterogeneity promotes accountability, improves the firm's access to quality information, reduces its cost of capital, and facilitates information dissemination as diverse boards are more transparent.

At a more granular level, there is a broad literature on the impact of various aspects of board heterogeneity on firm outcomes. Extant literature primarily suggests that greater female board representation impacts financial performance (Adams and Ferreira 2009; Sila et al. 2016) and reduces the level of risk-taking by the firm, as female directors are more risk-averse than their male counterparts (Perryman et al. 2016; Bernile et al. 2018). Furthermore, prior literature suggests that age diversity is related to better firm performance (Ararat et al. 2015) and more sustainable business practices (Post et al. 2011), which ultimately influence the survival prospect of the firm. However, in terms of professional expertise, there is limited research. Extant studies examine specific types of professional expertise including the role of accounting expertise in audit committees (Aldamen et al. 2012), the impact of banking expertise on debt capital (Güner et al. 2008), and the impact of financial expertise on appointment announcements (Davidson et al. 2004). Gray and Nowland (2017) show that there is a positive relationship between professional expertise diversity and firm value, specifically when boards diversify their expertise within a subset of specialist professional expertise (lawyers, accountants, consultants, bankers, and outside CEOs).

Taken together, the literature discussed above suggests that firms with greater board heterogeneity have better governance structures due to more active monitoring, advise giving, innovation, sustainable practices, transparency, and accountability, which improve firm outcomes. We argue that these outcomes influence the survival prospects of the firm.

Therefore, we expect that greater professional expertise heterogeneity at the IPO improves the likelihood of survival post-IPO. We arrive at our first hypothesis.

***H1a.** IPO firms with greater professional expertise heterogeneity at the time of listing are more likely to remain listed as independent entities by year 5 post-IPO.*

Considering that non-survivors comprise mergers and delistings, the following discussion explains why we expect that IPO firms with greater board professional expertise heterogeneity have a higher likelihood of exit post-IPO. As per the diversity theory, we argue that heterogeneity in the boardroom may be detrimental to survival until year 5 post-IPO. The premise lies in the notion that an increase in heterogeneous perspectives results in cognitive conflicts and thus less effective decision-making. We argue that with tougher monitors on the board due to greater heterogeneity, decision-making processes are inherently slower, leading to negative firm outcomes (Adams and Ferreira 2009). Therefore, we expect that greater board professional expertise heterogeneity increases the potential for cognitive conflicts in the boardroom and the outcomes of such conflicts damage the firm's survival prospects. To sum up, greater professional expertise heterogeneity may also negatively impact firm value and performance, which increases the likelihood of exit post-IPO. In accordance with the diversity theory, we develop the competing hypothesis.

***H1b.** IPO firms with greater professional expertise at the time of listing are more likely to be involved in an exit by year 5 post-IPO.*

In addition to these hypotheses, we examine whether there are specific combinations of professional expertise that influence the likelihood of IPO survival. We do not develop hypotheses in this regard but we are guided by prior research, such as Gore et al. (2010) and Gray and Nowland (2017), that examines the impact of expertise combinations in the boardroom. For one, the latter study finds that firm value improves when board heterogeneity reflects a mix of specialist expertise groups (lawyers, accountants, consultants, bankers, and outside CEOs). Whereas Gore et al. (2010) focus more broadly on the implications of financial and technical expertise on firm governance structures, they find that financial experts provide more oversight with regard to financial policies and strategies. Although the prior study relates to mature listed firms, our analysis extends the literature by examining whether there are specific combinations of professional expertise that influence the likelihood of IPO survival.

3. Data and Methodology

3.1 Sample Selection and Data Sources

The sample is derived from the population of US IPOs on the NASDAQ, NYSE, and AMEX between 1st January 1997 to 31st December 2015. The start of the sample period is influenced by data availability in the SEC Edgar database, while the end date allows us to track IPOs in the post-IPO period and analyse survival until year 5 post-IPO. Hence, the effective end date of our sample period is 31st December 2020. Following Boone et al. (2007) and Chahine and Goergen (2011), we excluded the following firms: American Depository Receipts (ADRs), Real Estate Investment Trusts (REITs), unit offerings, spin-offs, carve-outs, closed-end funds, financial firms with Standard Industrial Classification (SIC) codes 6000-6799, and IPOs with an offer price below \$5. This leads us to the initial sample of 2,641 firms from which we randomly select the final sample due to on the labor-intensive manual data collection. The final sample consists of 661 randomly selected US IPO firms, which amounts to 25% of the initial sample. Director-level and firm-level data are manually collected from the offering prospectuses for the pre-IPO year and the IPO year, while data for years 1 to 5 post-IPO are obtained from the proxy statements. The Center for Research in Security Prices (CRSP) database provides data on IPO survivorship status, while the Compustat database is the source for the IPO financial data.

3.2 Methodology

This section discusses the methodologies used to analyse the relationship between professional expertise heterogeneity and the likelihood of survival post-IPO. With the primary focus of this paper being on the likelihood of IPO survival, we estimate logit regressions with the binary dependent variable (i.e., 0 or 1) predicting the conditional probability of IPO survival until year 5 post-IPO. We acknowledge that the classification of survivors and non-survivors in the logit regression is rigid, as IPO firms involved in a merger post-IPO are classified as non-survivors. Moreover, IPO firms that exit through mergers continue to operate, although not as independent entities, as survivors. Therefore, we estimate multinomial logit regressions to differentiate non-survivors that are involved in mergers from delistings and provide further context on the results.³ Equation 1 tests the validity of hypotheses 1a and 1b:

³ The results for the multinomial logit regressions are reported in Appendices 3 and 4. These regressions estimate the probability of a firm being involved in a merger compared to survivors or the probability of the firm delisting compared to survivors based on the measures of professional expertise heterogeneity.

$$\begin{aligned}
IPO\ Survival_{i,t} &= \beta_0 + \beta_1 Professional\ Expertise\ Heterogeneity_{i,x} \\
&+ \sum_{n=2}^5 \beta_n Firm\ Characteristics_{i,x} \\
&+ \sum_{n=6}^{14} \beta_n Board\ Characteristics_{i,x} \\
&+ \sum_{n=15}^{17} \beta_n IPO\ Characteristics_{i,x} + Industry\ Dummies \\
&+ Year\ Dummies + \varepsilon_{i,x}
\end{aligned} \tag{1}$$

where t relates to year 5 post-IPO, x relates to the IPO year (year 0), while i refers to the firm. The dependent variable, *IPO survival*, takes a value of one in the logit regression if the IPO firm is categorised as a survivor up to year 5, and zero otherwise. Professional expertise heterogeneity is based on the Blau index using the proportion of expertise groups on the board. The index is created on the 15 expertise categories identified in Gray and Nowland (2017). These 15 categories are as follows: academic, accountant, banker, consultant, dentist, doctor, engineer, business with industry experience, business without industry experience, finance expert, IT expert, investment professional, lawyer, scientist, and politician. Jung et al. (2023) mention that a director's expertise may be developed from experience within the same industry as that of their firm. As such, we distinguish between firms whose EDs with business expertise have industry experience from those with the same expertise but without such experience. The Blau index, which equally accounts for the differences in these expert categories, is calculated as follows:

$$Blau\ Index\ (Professional\ Expertise\ Index) = 1 - \sum_{i=1}^n P_i^2 \tag{2}$$

where P_i is the proportion of directors in each of the n (expert) categories.⁴ High scores indicate higher professional expertise heterogeneity and vice versa. In addition to the entire board, we differentiate between executive directors' (EDs) and non-executive directors' (NEDs) professional expertise heterogeneity. Furthermore, we explore combinations of professional expertise categories that influence the likelihood of IPO survival.

All IPO survival regression analyses control for firm characteristics, including firm age, firm size, leverage, risk, return on assets, R&D intensity, and asset tangibility (Espenlaub et al.

⁴ Each board member is classified into one expertise category based on prior experience as shown in the prospectus. Expertise is classified based on the work experience of the director following Gray and Nowland's (2017) classification. Further details can be found in Appendix 2.

2012). Board and CEO characteristics linked to IPO survival by previous studies are also included as control variables. These include board size, board independence, board voting share ownership, CEO tenure, founder CEO, CEO duality and venture capitalist board representation (Fischer and Pollock 2004; Jain and Tabak 2008; Gounopoulos et al. 2020). Considering the focus of this paper on IPO survival, we also control for the IPO characteristics highlighted in the literature, including IPO underpricing and the IPO premium (Cirillo et al. 2017; Gounopoulos et al. 2020). All variables are defined in Appendix 1.

In what follows, it is imperative to control for the potential effects of endogeneity. On the one hand, it is possible that greater professional expertise heterogeneity improves the likelihood of IPO survival. On the other hand, it could be the case that directors with certain types of professional expertise are attracted to IPO firms that are perceived as better performing and, inherently, more likely to survive post-IPO. Hence, this would call for a reversal of the direction of causality. To mitigate this issue, we apply entropy balancing (Hainmueller 2012). Entropy balancing adopts a weighing process using distributional properties that achieve a covariate balance between the treated group and the control group such that, except for the treatment, both groups are indistinguishable. The treated group for professional expertise heterogeneity is less clear cut as the index in question is continuous. Hence, we consider IPO firms with above-median professional expertise to be part of the treatment group and those IPO firms with below-median professional expertise to be part of the control group. Covariate balance between the treated and control firms is achieved by weighing the distributional properties of both groups using the following observable firm characteristics: firm age, firm size, ROA, risk, leverage, asset tangibility, and Tobin's Q. The test for the differences between the post-weighing means of covariates confirms the success of entropy balancing (see Appendix 5 for more details). Consequently, we repeat the logit regression in Model (1) on the entropy balanced sample and these are reported as part of the main results.

4. Results

4.1 Descriptive Statistics and Univariate Analysis

Table 1 reports the survival of our sample across time (Panel A), and industries (Panel C). Panel A shows that about 46% of the IPO firms survive until year 5 post-IPO. This percentage is congruent with the other studies on the survival of US IPO, i.e., Gounopoulos and Pham (2018) and Gounopoulos et al. (2020). Panel B of Table 1 shows further details on the three survivorship categories (survivors, mergers, and delistings) in the post-IPO period. Out of the 54% IPO firms that exit the sample up to year 5 post-IPO, about 36% exit through a merger

and the remaining 18% of the firms are delisted. The industry classification and survival rates up to year 5 post-IPO are reported in Panel C. The industry with the largest IPO rate in the sample, the business equipment industry (34%) is ranked 8th out of the 11 industries in terms of survival rates. This is unsurprising as Bach and Smith (2007) show that such firms are less likely to survive post-IPO due to the dynamic nature of the industry and they may therefore be in the target of acquirers post-IPO. The oil, gas, coal extraction and products, chemical and allied products, and healthcare industries have the highest survival rates in year 5 post-IPO of about 69%, 67% and 55%, respectively. These survival rates are comparable with Gounopoulos and Pham (2018) and are attributed to the capital-intensive nature of these industries, as reflected by a higher percentage of fixed assets. Importantly, Table 1 suggests that the distribution of IPOs is sufficiently balanced across survivors and non-survivors to test the validity of the two hypotheses. Furthermore, Table 1 suggests that firms from some industries (i.e., those from the oil, gas, coal extraction and products, chemical and allied products, and healthcare industries) are more likely to survive as independent entities compared to other industries (i.e., the business equipment industry). These patterns suggest the importance of controlling for the industry in the regression analysis.

[Insert Table 1 about here]

Table 2 reports descriptive statistics for the survivors and non-survivors. Panel A focuses on the professional heterogeneity of the entire board, as well as the professional heterogeneity for the executive directors and the non-executive directors. In turn, Panels A, B, C, and D report descriptives for the firm, board and CEO, and IPO characteristics, respectively.

Panel A shows that at the IPO, survivors have on average higher professional expertise heterogeneity for the entire board, the executive directors, and the non-executive directors, compared to non-survivors. For the entire board, the difference between the mean value of the professional expertise index for the survivors (0.522) and the equivalent for the non-survivors (0.484) is significant at the 1% level. A similar pattern is observed for the professional expertise index for the non-executive directors. For the executive professional expertise index, we find that the average for the survivors (0.068) is significantly higher than that for the non-survivors (0.051) at the 5% level. Further, the survivors have a broader range of professional expertise compared to non-survivors. Hence, we find support for H1 that firms with greater professional expertise heterogeneity at the IPO are more likely to survive to year 5 post-IPO.

Panel B compares the firm characteristics at the IPO for the survivors and non-survivors. We find that larger IPO firms are more likely to survive until year 5 post-IPO. Panel C suggests that the boards of the survivors are significantly larger (at the 1% level) than those of the non-

survivors. This evidence is in line with prior literature that IPO firms with larger boards are more likely to survive (Chancharat et al.2012; Chahine and Goergen 2013). On average, 75% of the board of the survivors are independent directors, while the non-survivors have five percentage points fewer independent directors on their boards. The mean difference is significant at the 1% level. The difference in the medians between survivors and non-survivors is also five percentage points and it is also significant at the 1% level. Again, the survivors have more independent boards. The boards of the survivors are also better connected than those of the non-survivors. Put together, Panels B and C suggest that the surviving IPO firms are larger in size with larger and have more independent, and better-connected boards compared to the non-survivors.

Panel D focuses on the IPO characteristics.⁵ The results suggest that the shares of the survivors are on average sold at a premium compared to non-survivors and this is evident from the average gross proceeds of the IPO. The survivors raise \$234 million in the IPO compared to the non-survivors (\$128 million) on average, and this difference is significant at the 1% level. This indicates that firms with larger IPO proceeds are more likely to remain listed as independent entities by year 5 post-IPO.

[Insert Table 2 about here]

Overall, the descriptive statistics are consistent with prior IPO literature on IPO survival. A preliminary conclusion is that IPO firms benefit from greater professional expertise heterogeneity in terms of their survival post-IPO. This is consistent with H1a and Field et al.'s (2013) suggestions that IPO firms require more advice and should therefore appoint directors with salient knowledge and expertise to their boards. In contrast, there is no support for H1b on the potential negative impact of professional expertise heterogeneity on IPO survival.

The Pearson correlation matrix in Table 3 shows that the highest correlation is between board size and board independence (0.395). However, this correlation is moderate and both variables are therefore included at once in the main analysis.

[Insert Table 3 about here]

4.2 Main Regression Analysis

4.2.1 The Impact of Professional Expertise Heterogeneity on IPO Survival

Table 4 reports the results for the impact of professional expertise heterogeneity for the EDs and the NEDs on IPO survival. We report the logit regressions based on the unweighted

⁵ The variables in Panel E are not included as controls but are reported to provide more depth on the profile of IPO firms in the sample.

observations in columns 1 and 2 of Table 4, while the logit regressions for the entropy balanced observations are reported in columns 3 and 4. All variables are winsorised at the 1% and 99% level to mitigate outliers influencing the results and all regressions adjust for industry fixed effects, year fixed effects, and the control variables introduced in the methodology section. For each regression, we report the coefficients, the heteroscedasticity consistent t-statistics, and the respective marginal effects. The results for the professional expertise heterogeneity of the entire board are reported in Appendix 3 as they are insignificant.

The dependent variable for the logit regression in column 1 of Table 4 is a dummy variable that takes a value of one if the firm has survived until year 5 post-IPO, and zero otherwise. Column 1 for the unweighted observations suggests that firms with higher ED professional expertise index at the IPO are more likely to survive post-IPO, while the NED professional expertise index has no impact on the likelihood of survival to year 5 post-IPO. This result is significant at the 5% level. Hence, greater ED professional expertise heterogeneity at the point of listing improves the likelihood of IPO survival.

The marginal effects in column 2 show that the ED professional expertise index at the IPO increases the likelihood of survival by approximately 35.9%. It is unsurprising that the findings emerge in firms with heterogeneous ED professional expertise as executive directors in IPO firms typically have a higher level of firm-specific information. With a range of expertise in the boardroom, Desai (2016) suggests that directors are able to assess and influence their firm's strategy more effectively. In the case of our sample firms, such EDs may influence their firm's strategy through their varied professional expertise. Consistent with the resource dependency theory, our findings indicate that ED professional expertise heterogeneity provides access to invaluable contacts and experiences for board members that improves the likelihood of survival post-IPO. As in Gray and Nowland (2017), professional expertise heterogeneity in the boardroom improves firm value of mature listed firms. For IPO firms, the patterns emerging from the results show that this positive effect on IPO survival emanates from heterogeneous ED professional expertise.

Using the entropy balanced observations, we re-estimate the logit regressions in columns 3 and 4. The results are consistent with the results from the unweighted observations as they suggest that ED professional expertise heterogeneity at the IPO improves the likelihood of survival to year 5 post-IPO by at least 48%. These results are stronger and significant at the 1% level. Hence, our main results are robust after controlling for the potential effects of endogeneity.

[Insert Table 4 about here]

The results for the control variables in Table 4 (column 1) show that larger IPO firms, firms with better-connected boards, and IPOs that are perceived to be of higher value, as indicated by the IPO premium, have a higher likelihood of survival. These results are significant at the 5% level or better. Our results are consistent with the prior IPO survival studies of Jain and Tabak (2008), Guo and Zhou (2016) and Feng et al. (2019) that find that larger firms with better-connected boards have a higher likelihood of survival at the 1% level of significance. We also find that IPO firms with higher leverage have a lower likelihood of survival at the 5% level of significance. The marginal effects suggest that IPO firms with higher leverage are 30% more likely to be involved in an exit post-IPO.⁶ These findings support Field and Karpoff's (2002) results that IPO firms with higher leverage are more likely to be involved in mergers post-IPO as they are more vulnerable.⁷ Overall, the results in Table 4 show strong evidence that firms whose executive directors have a range of different professional expertises are more likely to survive as independent entities to year 5 post-IPO. Hence the results in Table 4 are consistent with the predictions of hypothesis 1a. An important conclusion is that IPO firms' focus in structuring their boards around the IPO should be on improving heterogeneity in executive directors' professional expertise.

4.2.2 Combination(s) of ED Professional Expertise

As a further step in our analysis, we examine whether specific combinations of ED professional expertise in the boardroom explain the positive impact on the likelihood of IPO survival. Table 5 presents a preliminary analysis for the distribution of executive directors' professional expertise. There are fifteen board expert categories: accountant, banker, consultant, dentist, doctor, engineer, business with industry experience, business without industry experience, finance expert, IT expert, investment professional, lawyer, scientist, and politician.⁸ However, executives do not have professional expertise as dentists or politicians. The majority (93%) of executive directors in the boardroom have business expertise; hence, we distinguish between firms where EDs with business expertise have industry experience from those without such experience. This approach improves the variation of ED professional expertise in the sample.

Panel A of Table 5 shows that the majority (75%) of IPO firms surviving to year 5 post-IPO have at least one ED with business expertise and industry experience, while 18% of IPO

⁶ Unreported multinomial logit regressions indicate that this exit tends to be through a merger.

⁷ Considering that 97% of the IPO firms involved in a merger in the sample are targets, these findings are consistent with prior literature.

⁸ See Appendix 1 for detailed definitions of each type of professional expertise.

firms are without industry experience. This distribution is similar for non-survivors. All the other expertise categories are much less well represented. To examine combinations of professional expertise in the boardroom, we create indicator variables for the purpose of our analysis that distinguish between groups and estimate the logit regressions on these variables in Panel B of Table 5. The first indicator variable *Business Expertise with Industry Experience* is for firms where all executive directors on the board have only business and industry experience (implying a concentration of professional expertise). The alternative to this is *Business without Industry* highlighting firms with a similar homogenous professional expertise but without industry experience. *Business with Industry facing Other Expertise* refers to firms where executives are a mix of other expertise groups (accountant, banker, consultant, doctor, engineer, finance expert, IT expert, investment professional, lawyer, and scientist) facing business expertise with industry experience. *Business without Industry facing Other Expertise* refers to firms where executives are a mix of other expertise groups (accountant, banker, consultant, doctor, engineer, finance expert, IT expert, investment professional, lawyer, and scientist) facing business expertise without industry experience. These indicator variables outlined above allow us to conduct initial testing on whether a specific combination of ED professional expertise influences the likelihood of IPO survival.

[Insert Table 5 about here]

Panel B of Table 5 shows that the main results emerge from firms where EDs have business expertise with industry experience facing other expertise at the IPO. In detail, such IPO firms have an 18% higher likelihood of survival, and these results are significant at the 5% level (see columns 3 and 4). These findings suggest the firm survival implications of Jung et al.'s (2023) argument that directors with industry expertise are more likely to be trusted by their fellow directors, viewed as legitimate, and potentially influence decision making. There is no significant evidence suggesting that alternative combinations (*Business with Industry*, *Business without Industry*, *Business without Industry facing Other Expertise*) influence the likelihood of IPO survival (see columns 1,2, 5 to 8, Panel B of Table 5)

We further investigate the findings in Table 5 to identify whether firms with a mix of EDs with business expertise & industry experience facing other expertise are more likely to survive to year 5 post-IPO. The rationale of the analysis in Table 6 is to unearth the specific combinations of ED professional expertise heterogeneity that improve the likelihood of IPO survival. Particularly, we answer the question on the types of “other expertise” facing EDs with business expertise & industry experience. To this end, Panel A of Table 6 reports a distribution

of firms where EDs have a mix of business expertise & industry experience facing other expertise categories (i.e., academic, accountant, banker, consultant, doctor, engineer, finance expert, IT expert, investment professional, lawyer, and scientist) by survivorship categories. However, Panel A shows that the distribution across survivors, mergers, and delistings is uneven in terms of the variation across survivorship groups. For example, ED business expertise & industry experience facing ED Academic have 0% of survivors, 0% for mergers but 0.8% for delistings (0.2% for all non-survivors). Therefore, we cluster the combinations of ED professional expertise into two broad categories by creating indicator variables for each combination. The first indicator variable *Financial Expertise* refers to firms' EDs with business expertise & industry experience who are facing EDs with financial expertise as accountants, bankers, finance experts, or investment professionals. The second indicator variable *Technical Expertise* refers to firms whose EDs with business expertise and industry experience are facing EDs with consultancy, academic, doctor, engineering, scientific, IT, and legal expertise. The rationale behind the clustering along the lines of *Technical Expertise* is that directors with such expertise typically offer firm-specific operational expertise.

[Insert Table 6 about here]

Panel B of Table 6 shows that our results emanate from firms where the executive directors have a mix of business expertise & industry experience and financial expertise at the IPO, as such firms are more likely to survive to year 5 post-IPO. Particularly, the marginal effects for the logit regression in column 2 show that in the main sample, there is a 30% higher likelihood of IPO survival similar to the 32% reported in column 4 for the entropy balanced sample. These nuanced results build on Gounopoulos and Pham (2018) findings that IPO firms where CEOs have specialist CEOs are more likely to survive. Indeed, our results show that in terms of IPO survival, it is about the combination of professional expertise for the entire executive directors' group in the boardroom rather than the CEO alone. Although the presence of business expertise is important, we find that a mix of executive directors with industry experience and financial-related expertise ensures a higher likelihood of survival post-IPO.

4.2.3 Mechanism behind the Impact of ED Professional Expertise on IPO Survival

Next, we examine the mechanism driving the main results that greater ED professional expertise heterogeneity at the IPO improves the likelihood of survival. Specifically, in IPO firms where EDs are a mix of business expertise & industry experience facing financial expertise. We explore two potential channels in Table 7 using cross-sectional analysis to explain the results. The first channel we explore is whether the positive effect emerges around

periods of board changes implying that EDs professional expertise portrays a more attractive IPO firm to potential investors. The second channel posits that the positive effect of ED professional expertise on IPO survival is a consequence of IPO firms retaining key ED professional expertise. Panel A of Table 7 shows that board changes occur around the IPO with an additional executive director joining the board in the year of the IPO. Further board changes occur in year 2 post-IPO when on average one executive director leaves the board as the number of non-executive directors increases. Hence, if our findings are driven by the first channel, we expect the positive effect in the cross-sectional analysis in Panel B of Table 7, to be clustered around the IPO year and year 2 post-IPO. Conversely, if the second channel drives the results, we expect that the positive effect is evident in all cross-sections. The cross-sectional analyses in Panel B of Table 7, examine the impact of ED professional expertise combinations (i.e., business expertise with industry experience facing financial or technical expertise) in the pre-IPO year, the IPO year, year 1, 2, 3 and 4, respectively, on the likelihood of IPO survival.

The results in Panel B of Table 7 support the first channel i.e., board changes affecting ED professional expertise portray a more attractive firm to potential investors, improving the likelihood of IPO survival. In detail, we find that the positive effect of *Financial Expertise* emanates in the pre-IPO year (columns 1 and 2), indicating a 21% higher likelihood of survival, significant at the 10% level, which becomes stronger in the IPO year (column 3 and 4) once board changes occur, with a 30% higher likelihood of IPO survival, significant at the 1% level. This effect then disappears in year 1 post-IPO (columns 5 and 6) but emerges again in year 2 post-IPO (columns 7 and 8) when further changes to the board occur, suggesting a 23% higher likelihood of survival to year 5 post-IPO, and significant at the 10% level. Columns 9 to 12 relating to years 3 and 4 post-IPO show no relationship between *Financial Expertise* and the likelihood of IPO survival. Overall, the results from Table 7 show that it is not just about the mix of executive directors with business and financial expertise at the IPO but also ensuring that this mix is represented in board changes, that increases the likelihood of survival post-IPO.

[Insert Table 7 about here]

In Table 8, we test whether the main results are influenced by the type of CEO (Founder CEO, Founder CEO with duality, Non-Founder CEO with Duality) at the helm of affairs in the firm. For example, a founder CEO will most likely be attached to the firm and motivated to ensure the firm remains operational. This does not always mean survival as an independent entity as Gao and Jain (2012) show that Founder CEOs are more entrenched than Non-Founder

CEOs and use this position to gain higher acquisition premiums as target firms post-IPO.⁹ A CEO who is also the board chair will have sufficient influence to impact decisions in the boardroom, that have performance implications for the firm (Adams et al. 2005). Table 8 explores through interaction terms whether the presence of a Founder CEO, Founder CEO Duality or Non-Founder CEO Duality in firms where executive directors have a mix of business expertise & industry experience facing financial expertise influences the likelihood of IPO survival. The logit regression results in columns 1 and 2 refer to the interaction of *Financial Expertise* and *Founder CEO* and show that the positive effect of the former on the likelihood of IPO survival is decreased when a Founder CEO is at the helm of affairs. In fact, such firms are 25% less likely to survive.¹⁰ On the other hand, the interaction of *Financial Expertise* and *Non-Founder CEO Duality* (columns 5 and 6) drives the positive effect of ED business executive expertise facing ED financial expertise on the likelihood of IPO survival. The implication is that our results are driven by powerful CEOs with discretion in decision making whereas executive directors have professional expertise in management and finance. Hence, CEO duality complements the combination of business and financial expertise of other executive directors in the boardroom to improve the likelihood of IPO survival.

[Insert Table 8 about here]

Overall, the findings from this section provide deeper insights into the main results suggesting that ED professional expertise heterogeneity improves the likelihood of IPO survival. First, we find that the main results are driven by IPO firms where board changes yield a combination of executive directors with business and financial expertise. As a second matter, the effect of such a combination of executive directors will be stronger and positive in firms with Non-Founder CEO duality indicating a complementary effect but negative for firms with Founder CEOs at the helm. A potential explanation for the negative mitigating effect of Founder CEOs on the likelihood of survival is that such firms were taken public as merger-motivated IPOs. Hence, it is not only about heterogeneity of executive director professional expertise but also the type of CEO leading the firm.

⁹ 97% of firms that exit through a merger in our sample are target firms.

¹⁰ Panel B of Appendix 4 shows that these firms are 57% more likely to be involved in a merger compared to survivors

4.3 Robustness Checks and Further Analysis

4.3.1 *Alternative Definition of IPO Survival*

We test the robustness of our main results using an alternative definition of IPO survival from prior literature. Mergers are not always an indication of firm failure. To this end, we explore another definition of survivors that includes mergers as censored survivors if they rank above the median for four performance-based measures consistent with Espenlaub et al. (2012). The four performance measures are cash to total assets, operating income to total assets, total liabilities to total assets and current assets to current liabilities. The rationale for using these measures in the classification of mergers into censored survivors is to distinguish between poorly performing firms and well performing firms that are acquired. Based on this classification, there are 17 mergers classified as censored survivors and included in the group of survivors. This new classification yields a sample of 321 survivors and 340 non-survivors (219 mergers and 121 delistings). Based on this classification, we re-run the logit regression on the main and entropy balanced samples in Table 9, examining the impact of ED professional expertise heterogeneity on the likelihood IPO survival). The results using this classification are similar to the main results and reported in Tables 4 and 6 discussed in the main results. In summary, firms with ED professional expertise heterogeneity at the IPO (columns 1 and 2), specifically a mix of EDs with business and financial expertise (columns 3 and 4) have a higher likelihood of survival to year 5 post-IPO. The marginal effects indicate that the higher likelihood of survival post-IPO ranges between 27% and 46% for IPO firms with this combination of ED professional expertise. Therefore, IPO firms will benefit from considering the type of professional expertise held by executive directors around the IPO.

[Insert Table 9 about here]

4.3.2 *Survival Analysis on ED Professional Expertise Heterogeneity*

We argue that an analysis estimating the timing of the event provides further context for understanding the impact of our primary variable of interest *Financial Expertise* (depicting a mix of EDs with business & industry experience facing financial expertise) on the likelihood of survival post-IPO. In the Cox model, the dependent variable is the survival time, while the dependent variable in the accelerated failure time model is the time to failure. The estimations for the Cox and AFT models are reported in Table 10. For each estimation, we report the coefficients, robust t-statistics, hazard ratios, and time ratios. There are 661 firm observations of which 357 (54%) IPO firms experience failure (exit) up to year 5 post-IPO. The average survival time for non-survivors is 3.9 years post-IPO. In the current empirical context, a

negative (positive) coefficient indicates that a predictor decreases (increases) the likelihood of exit from the sample or improves (worsens) IPO survival. If the hazard ratio is greater (less) than one, it implies that the non-survivor firm has a shorter (greater) time to the event/exit from the sample. Conversely, if the time ratio is less (greater) than one, it implies that the non-survivor firm has a greater (shorter) time to failure/exit from the sample. A hazard/time ratio, which equals one shows that there is no difference between survivors and non-survivors.

Table 10 reports the results for the Cox model (columns 1 to 4) and AFT model (columns 5 to 8) for the impact of ED professional expertise on survival time. We find evidence from both models suggesting that IPO firms with a mix of executives with business and financial expertise have longer survival times at the 5% level of significance. The hazard ratio reported in column 2 suggests that increasing *Financial Expertise* by one unit at the IPO increases survival time by 51.5%. Similarly, the time ratio in column 6 suggests that increasing the former by one unit decreases time to failure by 65.4% implying a lower likelihood of exit.¹¹ To provide some context, the results from the Cox model indicate that a mix of executives with business and financial expertise increases average survival time from 3.9 years to 5.9 years (3.9×1.515). Hence the main logit regression results are robust to survival analysis models.

[Insert Table 10 about here]

4.3.3 Controlling for Internal Governance and External Factors

There are certain internal governance factors such as staggered boards, serving as anti-takeover devices, or dual class shares, separating voting rights in decision making processes, that may influence the survival prospects of a firm (Cremers et al.2017; Howell 2017). Staggered boards refer to boards where directors are elected to different classes and serve terms of three years with only one class up for re-election in each year. Hence, the potential for exit through acquisition post-IPO may be less in firms with staggered boards. Firms with dual class shares have two classes of shares, A & B with Class A typically eligible to vote in decision-making, or with a higher voting right compared to Class B which either have no or low voting rights. In the IPO context, dual class shares may impact board members' influence on the decision-making process and consequently, the likelihood of IPO survival. Therefore, Panel A of Table 11 controls for the potential effects of staggered boards (columns 1 and 2) and dual class shares (columns 3 and 4) in IPO firms. We find a similar positive effect of *Financial Expertise* on the

¹¹ The likelihood of exit is computed based on the hazard ratio as $100(1-HR) \%$.and it is measured in percentages. For example, the likelihood of exit for *Financial Expertise* in Table 10 is calculated as $100*(1-0.485) \%= 51.5\%$ consistent with Sashegyi and Ferry (2017). The likelihood of failure is computed from the time ratio as follows $(TR-1) \%$.and it is measured in percentage.

likelihood of IPO survival across Panel A. IPO firms with this combination of executive directors at the point of listing have between 30-39% higher likelihood of survival and these results are significant at the 1% level. As expected, we find that firms with staggered boards are more likely to survive to year 5 post-IPO, although this effect is dampened marginally when interacting with *Financial Expertise* and *Staggered Boards*. However, there is no evidence suggesting that the presence of dual class shares impacts the likelihood of IPO survival.

[Insert Table 11 about here]

Next, we focus on external factors (i.e., the presence of high tech firms in the sample or listing during a crisis period) that may influence the likelihood of IPO survival to year 5 post-IPO. High tech firms are highly competitive and are characterised by the continuous development of technological products whereas crisis periods increase firms' exposure to financial difficulty. Hence, IPO firms with executive director professional expertise heterogeneity may face challenges in making salient decisions that help firms maintain competitive advantage and navigate crisis periods. Panel B of Table 11 reports the results using interaction terms to test whether firms in high tech industries (columns 1 and 2) or listed within crisis periods (columns 3 and 4) impact our findings. Columns 1 and 2 in Panel B report the results for the interaction of *Financial Expertise* and the *High Tech Industries* indicator variable. We find that the interaction term has no significant impact on IPO survival, but *Financial Expertise* has a significant positive impact on the likelihood of IPO survival. Thus, a combination of executive directors with business and financial expertise still improves the survival prospect of an IPO firm regardless of whether that firm is in the high tech industry or not.

Columns 3 and 4 report the results for the interaction of *Financial Expertise* and the *Crisis Period*. As expected, we find that the individual effects for IPO firms listed in a crisis period are negative and significant at the 5% level in terms of the likelihood of IPO survival. This suggests that firms listed in a crisis period are 12% less likely to survive based on the marginal effects. Furthermore, the individual effects for *Financial Expertise* are also positive and significant similar to the main results. However, the interaction term shows no evidence that firms with greater ED professional expertise heterogeneity listed within a crisis period are more or less likely to survive post-IPO.

Overall, our findings from the main results still hold after controlling for internal governance and external factors that influence the likelihood of IPO survival. Hence, the results are not driven by these factors.

4.3.4 Other Measures of Board Diversity and IPO Survival

Notwithstanding the focus of this paper on professional expertise heterogeneity, we explore whether other measures of board heterogeneity prevalently examined in prior literature such as gender or age impact the likelihood of IPO survival. Following the same pattern as the main analysis, we report the results for gender (*Female Board Rep*) and age (*Age Heterogeneity Index*) of the entire board in Panel A of Table 12 and executive and non-executive directors in Panel B of Table 12. Heterogeneity in terms of gender is measured as the percentage of females in the boardroom (Adams and Ferreira 2009; Sila et al. 2016). Age heterogeneity is measured as the standard deviation of the board's age divided by the mean age of the board (standard deviation of board age/mean of board age). A larger standard deviation (larger age differences between board members) and lower mean age (higher representation of young board members) generate higher age heterogeneity values. High scores indicate greater age heterogeneity (Ali et al. 2014). There is no evidence in Panels A or B of a relationship between the measures of board heterogeneity for gender or age and the likelihood of IPO survival. This is an interesting result given that the majority of the literature on board heterogeneity focuses on these measures. Hence, we provide new evidence confirming that in terms of board heterogeneity and the likelihood of IPO survival, the professional expertise of executive directors on the board is the important factor for IPO firms to focus their resources at the point of listing.

[Insert Table 12 about here]

5. Conclusion

This paper analyses the relationship between board heterogeneity and IPO survival. Board heterogeneity is measured based on the professional expertise of the entire board, executive and non-executive directors. We find consistent evidence after controlling for potential endogeneity concerns, that executive director professional expertise heterogeneity at the IPO improves the likelihood of survival post-IPO. Particularly, this positive effect emerges in firms where executive directors have a mix of business and financial expertise and is apparent around periods of board changes. Additionally, if a Non-Founder CEO at the helm of the firm is also the board chair, the positive impact of ED professional expertise heterogeneity on the likelihood of IPO survival is higher indicating a complementary effect. Our results are robust using an alternative definition of IPO survival, survival analysis models, and controlling for internal governance/ external factors such as staggered boards, dual class shares, high tech industries and crisis periods. Finally, in terms of other measures of board heterogeneity (gender and age) we find no evidence that these measures influence the survival prospect of IPO firms.

The main contribution of this paper to the literature is twofold. First, we show that in terms of IPO survival, the role of executive directors' professional expertise heterogeneity is more pronounced compared to gender or age. Hence, the focus of IPO firms and potential issuers should be on improving board heterogeneity along these lines in board appointments. Particularly, executive directors with management level or financial expertise. Second, the type of CEO in an IPO firm impacts the likelihood IPO survival; Founder CEOs may be more focused on mergers while non-founder CEOs with duality as board chair complement the EDs professional expertise to improve the firm's survival prospects. Therefore, IPO firms need to consider the type of CEO hired at the point of listing as these have implications for the firm's survival prospects.

To conclude, this paper provides guidance to IPO firms on board characteristics to consider in appointment decisions in terms of heterogeneity that influences the likelihood of survival post-IPO. Although regulations such as the NASDAQ board diversity listing standard require greater board heterogeneity and disclosure, this standard focuses on the demographic attributes of board members. Our findings in this paper show that incorporating professional expertise in such listing standards works towards improving the survival prospect of IPO firms after listing.

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Table 1: IPO Survival Rates Across Time and Industries

This table shows the distribution of IPO survivorship for the sample period. There are three main survivorship categories: Survivors, Mergers and Delistings. Panel A shows the percentage of firms that survived in the post-IPO period up to year 5 post-IPO, where year 0 is the IPO year. Panel B shows the distribution of IPOs by survivorship category. Survivors are defined as firms that remain publicly traded as an independent entity up to year 5 post-IPO or the last year of the sample period. Mergers are firms that are involved in a merger or are acquired after listing and they lose their identity as independent entities post-IPO. Delistings are firms that do not survive as independent entities after the IPO and exit the stock market regardless of the reason for delisting. There are only 20 bankruptcies in the sample and hence we do not differentiate between bankruptcies from the other reasons for delisting. Panel C shows the industry distribution of firms at the IPO (year 0) and five years post-IPO (year 5) as well as the survival rates for each industry.

Panel A: Post-IPO Survival Relative to IPO Year						
Years After IPO	IPOs	Percentage				
0	661	100.00				
1	565	85.48				
2	508	76.85				
3	466	70.50				
4	431	65.20				
5	304	45.99				

Panel B: Post-IPO Survival by Category						
Years After IPO	Survivors	%	Mergers	%	Delistings	%
1	565	85.48	64	9.68	32	4.84
2	508	76.85	99	14.98	54	8.17
3	466	70.50	124	18.76	71	10.74
4	431	65.20	144	21.79	86	13.01
5	304	45.99	236	35.70	121	18.31

Panel C: Fama-French Industry Classification for Surviving Firms to Year 5 post-IPO						
Industry	Year 0	Percentage	Year 5	Percentage	Survival Rate	
Consumer non-durables	21	3.18	7	2.30	33.33	
Consumer durables	10	1.51	5	1.64	50.00	
Manufacturing	35	5.30	19	6.25	54.29	
Oil, gas, coal extraction and products	16	2.42	11	3.62	68.75	
Chemical and allied products	6	0.91	4	1.32	66.67	
Business equipment	226	34.19	96	31.58	42.48	
Telephone and television transmission	33	4.99	11	3.62	33.33	
Utilities	4	0.61	2	0.66	50.00	
Wholesale, retail, and some services	79	11.95	35	11.51	44.30	
Healthcare, medical equipment, drugs	132	19.97	72	23.68	54.55	
Other	99	14.98	42	13.82	42.42	
Total	661	100.00	304	100.00	45.99	

Table 2: Descriptive Statistics for Survivors and Non-Survivors

This table provides descriptive statistics in year 0 for the 661 IPOs in the sample. Consistent with the hypotheses, the independent and control variable are grouped based on survival. Survivors are defined as firms that remain publicly traded and independent entities up to year 5 post-IPO. Non-Survivors relate to all other firms that are not classified as survivors and exit the sample post-IPO due to a merger or delisting. t-test results show the differences in the means between survivors and non-survivors in year 0. Wilcoxon rank-sum test on the difference in medians is conducted. The Wilcoxon rank-sum test is used to test the equality of medians for the unmatched data when survivors are compared to non-survivors. This table shows the significant results from the t-test in the columns relating to survivors. Prof Exp. Index is an expertise index of board heterogeneity using the proportion of expertise groups on each board. It is computed as follows: $1 - \sum_{i=1}^n P_i^2$ where P_i is the proportion of group members in each of the i (15 professional expertise) categories. High scores indicate higher professional expertise heterogeneity and vice versa. Each director is classified based on their primary expertise disclosed in the prospectus into one Prof. Exp category. This measure is further computed for EDs and NEDs on the board. All firm and board controls are defined in Appendix 1. *, **, *** represent significance at the 10%, 5% and 1% levels, respectively.

	Survivors N=304		Non-Survivors N=357	
	Mean	Median	Mean	Median
Panel A: Executive and Non-Executive Director Professional Heterogeneity				
Prof. Exp. Index	0.522	0.571	0.484***	0.494***
ED Prof. Exp. Index	0.068	0.000	0.051**	0.000
NED Prof. Exp. Index	0.499	0.560	0.450***	0.480***
Panel B: Firm Characteristics				
Firm Age (years)	11.225	8.000	9.991	6.000***
Firm Size	5.247	4.973	4.742***	4.716***
Leverage	0.157	0.013	0.156	0.017
Risk	0.416	0.109	0.410	0.102
Return on Assets	-0.113	-0.011	-0.144	-0.050*
R&D Intensity	0.094	0.042	0.082	0.015**
Asset Tangibility	0.260	0.145	0.237	0.136
Panel C: Board and CEO Characteristics				
Board Size	7.243	7.000	6.737***	7.000***
Board Independence (%)	74.973	80.000	70.230***	75.000***
Board Voting Share Ownership (%)	41.361	43.876	41.564	43.299
Board Connections	1.943	1.667	1.507***	1.333***
CEO Tenure (years)	5.908	4.000	5.429	4.000
Founder CEO	0.359	0.000	0.375	0.000
CEO Duality	0.461	0.000	0.476	0.000
VC Board Representation	0.747	1.000	0.720	1.000
Panel D: IPO Characteristics				
IPO Underpricing	-0.248	-0.092	-0.270	-0.105
IPO Premium	0.884	0.808	0.788**	0.783
Panel E: Other IPO Investor Metrics				
Gross IPO Proceeds (\$'m)	233.871	99.5295	128.061***	77.146***
Foreign VC Firms	0.112	0.000	0.070*	0.000
Local VC Firms	0.332	0.000	0.311	0.000
Top-tier Investment Bank	8.039	9.001	7.846	8.750**

Table 3: Pearson's Correlation Matrix

This table shows the Pearson's correlation matrix for all the explanatory variables included in our analysis for board diversity. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(1) Prof Exp Index	1.000																			
(2) ED Prof Exp. Index	0.175*	1.000																		
(3) NED Prof Exp. Index	0.694*	-0.032	1.000																	
(4) Firm Age	-0.006	0.053	0.020	1.000																
(5) Firm Size	-0.001	-0.139*	-0.007	0.220*	1.000															
(6) Leverage	-0.014	-0.005	-0.070	0.202*	0.357*	1.000														
(7) Risk	0.069	0.061	0.089	-0.127*	-0.291*	-0.110*	1.000													
(8) Return on Assets	-0.101*	-0.041	-0.075	0.180*	0.350*	0.052	-0.387*	1.000												
(9) R&D Intensity	0.057	-0.108*	0.089	-0.094	-0.251*	-0.169*	0.216*	-0.569*	1.000											
(10) Asset Tangibility	-0.071	0.005	-0.034	0.169*	0.244*	0.297*	-0.191*	0.163*	-0.188*	1.000										
(11) Board Size	0.231*	-0.010	0.236*	0.047	0.344*	0.117*	-0.036	-0.025	0.015	0.024	1.000									
(12) Board Independence	0.245*	-0.375*	0.233*	-0.017	0.252*	0.086	-0.044	-0.017	0.131*	-0.009	0.395*	1.000								
(13) Board Voting Share Own.	0.069	-0.128*	0.086	0.005	0.265*	0.158*	0.051	-0.047	0.095	-0.048	0.237*	0.293*	1.000							
(14) Board Connections	0.008	0.040	-0.078	0.037	-0.005	0.027	-0.083	0.092	-0.073	-0.027	-0.020	-0.050	0.071	1.000						
(15) CEO Tenure	-0.013	0.076	-0.042	0.168*	-0.055	0.001	-0.123*	0.181*	-0.023	0.065	-0.050	-0.019	-0.077	0.133*	1.000					
(16) Founder CEO	0.039	0.058	0.008	-0.150*	-0.220*	-0.160*	0.004	-0.038	0.009	-0.129*	-0.090	-0.089	-0.144*	0.136*	0.344*	1.000				
(17) CEO Duality	-0.009	0.089	-0.028	-0.041	-0.045	0.012	-0.074	0.116*	-0.116*	0.063	-0.104*	-0.102*	-0.070	0.101*	0.197*	0.258*	1.000			
(18) VC Board Rep.	0.182*	-0.177*	0.090	-0.027	0.225*	0.000	-0.043	-0.033	0.129*	-0.066	0.255*	0.353*	0.237*	0.216*	-0.107*	-0.042	-0.089	1.000		
(19) IPO Underpricing	-0.021	0.080	-0.010	0.092	-0.022	0.126*	0.023	0.080	-0.020	0.117*	0.043	0.019	0.045	-0.082	0.070	-0.103*	0.011	-0.137*	1.000	
(20) IPO Premium	0.033	-0.069	0.010	0.109*	0.072	0.193*	0.099	-0.131*	0.050	-0.017	0.095	0.053	0.158*	0.042	-0.023	-0.029	-0.023	0.081	-0.012	1.000

Table 4: Logit Regression of Professional Expertise Heterogeneity on Post-IPO Survival

This table reports the logit and multinomial regression results for the impact of Executive and Non-Executive Prof. Exp.heterogeneity on IPO survival to year 5 post-IPO. The dependent variable, survivors is a dummy variable that takes a value of one if a firm remains publicly traded as an independent entity to year 5 post-IPO and zero otherwise. Columns 1 and 2 report the results for the main sample while columns 3 and 4 illustrates that the effect of ED Professional expertise heterogeneity index on the likelihood of survival to year 5 post-IPO is robust after accounting for endogeneity using entropy balancing approach. All variables are defined in Appendix 1. ME stands for marginal effects on the likelihood of IPO survival. t statistics are heteroscedasticity consistent and reported in the parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variables	Survivors to year 5			
	Main Sample t=0		Entropy Balanced Sample t=0	
Independent Variables	(1)	ME (2)	(3)	ME (4)
ED Prof. Exp. Index t	1.447** (2.454)	0.359** (2.455)	1.957*** (3.058)	0.483*** (3.056)
NED Prof. Exp. Index t	0.192 (0.398)	0.047 (0.395)	0.031 (0.060)	0.008 (0.060)
Firm Age t	0.000 (0.059)	0.000 (0.063)	-0.001 (-0.145)	-0.000 (-0.145)
Firm Size t	0.260*** (2.783)	0.064*** (2.739)	0.212** (2.010)	0.052** (2.014)
Leverage t	-1.191** (-2.141)	-0.296** (-2.151)	-0.270 (-0.479)	-0.067 (-0.479)
Risk t	0.104 (1.007)	0.026 (1.008)	0.023 (0.223)	0.006 (0.223)
Return on Assets t	0.788 (1.572)	0.195 (1.564)	1.212** (2.319)	0.299** (2.318)
R&D Intensity t	0.957 (1.125)	0.237 (1.121)	1.656* (1.695)	0.408* (1.695)
Asset Tangibility t	0.518 (1.263)	0.128 (1.255)	0.408 (0.895)	0.101 (0.896)
Board Size t	0.061 (1.085)	0.015 (1.083)	0.054 (0.895)	0.013 (0.895)
Board Independence t	0.010 (1.592)	0.003 (1.597)	0.011 (1.517)	0.003 (1.518)
Board Connections t	0.172** (1.987)	0.043** (1.985)	0.200** (2.249)	0.049** (2.247)
Board Voting Share Ownership t	-0.002 (-0.557)	-0.001 (-0.558)	-0.004 (-0.980)	-0.001 (-0.979)
CEO Tenure t	0.012 (0.654)	0.003 (0.631)	0.019 (0.915)	0.005 (0.916)
Founder CEO t	0.054 (0.263)	0.014 (0.268)	-0.080 (-0.364)	-0.020 (-0.364)
CEO Duality t	0.098 (0.525)	0.024 (0.528)	0.202 (1.003)	0.050 (1.003)
VC Board Representation t	-0.347 (-1.473)	-0.086 (-1.473)	-0.359 (-1.450)	-0.089 (-1.449)
IPO Underpricing t	-0.126 (-0.718)	-0.031 (-0.720)	-0.211 (-1.167)	-0.052 (-1.168)
IPO Premium t	0.377** (2.003)	0.093** (1.972)	0.425* (1.894)	0.105* (1.892)
Constant	-3.887*** (-4.435)		-3.878*** (-4.190)	
Industry and Year Dummies	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661
Pseudo R ²	0.116		0.131	
Chi-square	89.8***		88.419***	
Log Likelihood	-403.010		-404.032	

Table 5: Distribution of ED Professional Expertise and Impact on IPO Survival

The below table provides context on the distribution of ED professional expertise across the survivorship categories in Panel A, and reports the results for the logit regressions testing the combinations of ED professional expertise that influence the likelihood of IPO survival to year 5 post-IPO in Panel B. *Other Expertise* in this table excludes Dentist and Politician as there are no EDs with such expertise at the IPO. All the professional expertise categories are defined in Appendix 1. ME stands for marginal effects on the likelihood of IPO survival. t statistics are heteroscedasticity consistent and reported in the parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: ED Board Professional Expertise Categories by Survivorship Categories								
	% of Survivors (N=304)		% of Mergers (N=236)		% of Delistings (N=121)			
Business with Industry Experience	75.00		80.08		74.38			
Business without Industry Experience	18.42		18.22		22.31			
Other Expertise								
Academic	0.00		0.00		0.83			
Accountant	2.30		1.27		3.31			
Banker	0.00		0.00		0.83			
Consultant	0.66		1.69		4.13			
Doctor	1.97		0.42		2.48			
Engineer	3.29		0.85		0.00			
Finance Expert	2.96		1.27		4.13			
IT Expert	2.30		0.00		0.83			
Investment Professional	2.30		1.27		2.48			
Lawyer	2.30		2.12		0.83			
Scientist	3.29		1.27		0.83			
Panel B: Logit for the Impact of ED Professional Expertise Combinations on the Likelihood of IPO Survival								
Dependent variable	Survivors to year 5							
	ED Business with Industry Experience Facing ED				ED Business without Industry Experience Facing ED			
	t=0		t=0		t=0		t=0	
Independent Variables	(1)	ME (2)	(3)	ME (4)	(5)	ME (6)	(7)	ME (8)
Business with Industry τ	-0.214 (-1.075)	-0.053 (-1.075)						
Other Expertise τ			0.716** (2.127)	0.178** (2.126)	-0.273 (-1.084)	-0.068 (-1.084)		
Business without Industry τ							0.205 (0.369)	0.051 (0.369)
NED Prof. Exp. Index τ	0.257 (0.532)	0.064 (0.532)	0.184 (0.381)	0.046 (0.381)	0.213 (0.437)	0.053 (0.437)	0.251 (0.518)	0.062 (0.518)
Constant	-3.484*** (-3.993)		-3.757*** (-4.364)		-3.446*** (-3.879)		-3.550*** (-4.018)	
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661	661	661	661	661
Pseudo R ²	0.111		0.115		0.111		0.109	
Chi-square	84.725***		87.497***		88.028***		85.381***	
Log Likelihood	-405.637		-403.730		-405.646		-406.144	

Table 6: Combination of ED Business Expertise and Other Expertise Groups

This table reports the results on whether a specific combination of ED Business Expertise & Industry Experience and Other Expertise groups impacts the likelihood of IPO survival to year 5 post-IPO. Panel A reports the distribution of each combination across survivorship categories of the sample. To improve variation in the sample for analysis, we cluster ED professional expertise into two groups: ED Business Industry Experience facing EDs with **Financial Expertise** or **Technical Expertise**, respectively. Finally, Panel B reports the logit regressions using the main sample and entropy balanced sample for the impact of both groups on the likelihood of survival post-IPO. For brevity, Financial Expertise is an indicator variable for firms where ED Business Expertise with Industry Experience facing EDs with Financial Expertise (a blanket term used to refer to EDs with professional expertise as accountants, bankers, finance experts and investment professionals). Technical Expertise is an indicator variable for firms where ED Business Expertise with Industry Experience facing EDs with Technical Expertise (a blanket term for EDs offering firm specific operational expertise as consultants, academics, doctors, engineers, scientists, IT experts, lawyers). All variables are defined in Appendix 1. ME stands for marginal effects on the likelihood of IPO survival. t statistics are heteroscedasticity consistent and reported in the parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Combinations of ED Business with Industry Experience Facing ED				
	% of Survivors (N=304)	% of Mergers (N=236)	% of Delistings (N=121)	
Financial Expertise	5.26	1.70	5.80	
Accountant	1.60	0.40	2.50	
Banker	0.00	0.00	0.80	
Finance Expert	2.30	0.80	1.60	
Investment Professional	1.60	0.80	0.80	
Technical Expertise	4.93	3.81	4.96	
Academic	0.00	0.00	0.80	
Consultant	0.30	1.30	1.70	
Doctor	0.70	0.40	0.80	
Engineer	1.00	0.40	0.00	
IT Expert	1.00	0.00	0.80	
Lawyer	1.30	1.30	0.00	
Scientist	1.30	0.40	0.80	
Panel B: Logit Regressions for the Impact of ED Business with Industry Experience Facing Financial or Technical Expertise on the Likelihood of IPO Survival				
Dependent Variables	Survivors to year 5			
	Main Sample t=0	Entropy Balanced Sample t=0		
Independent Variables	(1)	ME (2)	(3)	ME (4)
Financial Expertise τ	1.229*** (2.651)	0.305*** (2.651)	1.313*** (2.801)	0.324*** (2.801)
Technical Expertise τ	0.229 (0.518)	0.057 (0.518)	0.425 (0.863)	0.105 (0.863)
NED Prof. Exp. Index τ	0.226 (0.470)	0.056 (0.470)	0.057 (0.113)	0.014 (0.113)
Constant	-3.892*** (-4.475)		-3.797*** (-4.041)	
Firm and Board Controls	Yes	Yes	Yes	Yes
Industry and Year Dummies	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661
Pseudo R ²	0.118		0.130	
Chi-square	90.337***		87.749***	
Log Likelihood	-402.214		-404.498	

Table 7: Board Changes and Retention of Key ED Professional Expertise

This table tests the mechanism driving the impact of ED professional expertise on IPO survival. Panel A provides descriptives on board changes and retention across the sample period while Panel B tests in cross-sections, the impact of ED professional expertise combination on IPO survival. ME stands for marginal effects on the likelihood of IPO survival. t statistics are heteroscedasticity consistent and reported in parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Distribution of ED and NED Board Change, and Retention of ED Professional Expertise Combinations by Survivorship Categories												
	Sample	Pre-IPO Year	IPO Year	IPO+1	IPO+2	IPO+3	IPO+4	IPO+5				
ED Board Size		1.48	1.58	1.55	1.48	1.40	1.33	1.28				
ED Prof. Exp. Index		0.06	0.06	0.06	0.05	0.05	0.04	0.04				
NED Board Size		4.12	5.39	5.65	5.83	5.98	6.09	6.12				
NED Prof Exp Index		0.38	0.47	0.51	0.51	0.51	0.51	0.52				
% of EDs retained on the board	Full sample			89.91	70.64	55.07	41.50	29.63				
	Survivors			92.45	83.18	74.35	59.63	45.28				
	Mergers			89.32	60.41	40.64	27.15	18.57				
	Delistings			84.71	59.38	35.25	24.41	12.26				
% of ED Business with Industry Experience facing Financial Expertise Retained	Survivors		5.30	4.01	2.92	2.56	2.83	2.19				
Mergers			1.70	1.63	1.52	1.47	1.16	1.14				
	Delistings		5.80	4.24	3.10	2.27	1.61	0.00				
% of ED Business with Industry Experience facing Technical Expertise Retained	Survivors		4.90	3.71	3.14	2.59	2.18	1.61				
Mergers			3.81	2.74	2.21	1.74	0.00	0.00				
	Delistings		4.96	3.95	1.94	1.08	0.00	0.00				
Panel B: Cross Sectional Logit Regressions for the Impact of ED Business with Industry Experience Facing Financial or Technical Expertise on IPO Survival												
Dependent Variables												
	Survivors to year 5											
	Pre-IPO Year t=-1		IPO Year t=0		IPO+1 t=1		IPO+2 t=2		IPO+3 t=3		IPO+t=4	
Independent Variables	(1)	ME (2)	(3)	ME (4)	(5)	ME (6)	(7)	ME (8)	(9)	ME (10)	(11)	ME (12)
Financial Expertise t	0.850*	0.212*	1.229***	0.305***	0.646	0.162	0.953*	0.233*	0.429	0.097	1.032	0.217
	(1.658)	(1.658)	(2.651)	(2.651)	(1.193)	(1.193)	(1.710)	(1.709)	(0.808)	(0.808)	(1.331)	(1.330)
Technical Expertise t	0.257	0.064	0.229	0.057	0.105	0.026	0.048	0.012	0.495	0.112	1.913	0.403
	(0.548)	(0.548)	(0.518)	(0.518)	(0.219)	(0.219)	(0.081)	(0.081)	(0.653)	(0.655)	(1.387)	(1.417)
NED Prof. Exp. Index t	1.106**	0.275**	0.226	0.056	0.732	0.183	0.588	0.144	0.050	0.011	0.278	0.059
	(2.244)	(2.246)	(0.470)	(0.470)	(1.227)	(1.227)	(0.965)	(0.966)	(0.077)	(0.077)	(0.399)	(0.400)
Constant	-2.673***		-3.892***		-4.249***		-3.688***		-3.685***		-1.185	
	(-3.222)		(-4.475)		(-3.883)		(-3.265)		(-3.091)		(-0.857)	
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661	661	661					458	458
Pseudo R ²			0.118		0.112		0.129		0.143		0.152	
Chi-square			90.337***		72.393**		71.286**		65.061**		54.103	
Log Likelihood			-402.214		-337.940		-289.591		-251.123		-208.157	

Table 8: Type of CEO at the Helm

This table tests whether the main results are driven by the presence of a Founder CEO, Founder CEO Duality or Non-Founder CEO Duality using interaction terms. ME stands for marginal effects on the likelihood of IPO survival. t statistics are heteroscedasticity consistent and reported in the parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variables	Survivors to year 5					
	ED Business with Industry Experience Facing ED					
Independent Variables	(1)	ME (2)	(3)	ME (4)	(5)	ME (6)
Financial Expertise _t	1.660*** (3.244)	0.412*** (3.244)	1.445*** (2.692)	0.359*** (2.693)	0.165 (0.293)	0.041 (0.293)
Founder CEO _t	0.087 (0.295)	0.022 (0.295)				
Founder CEO Duality _t			0.135 (0.594)	0.033 (0.594)		
Non-Founder CEO Duality _t					-0.097 (-0.399)	-0.024 (-0.399)
Financial Expertise * Founder CEO _t	-2.697** (-2.355)	-0.669** (-2.355)				
Financial Expertise * Founder CEO Duality _t			-0.776 (-0.746)	-0.193 (-0.746)		
Financial Expertise * Non-Founder CEO Duality _t					2.759** (2.544)	0.685** (2.541)
Technical Expertise _t	0.207 (0.470)	0.051 (0.470)	0.220 (0.496)	0.055 (0.496)	0.221 (0.503)	0.055 (0.503)
NED Prof. Exp. Index _t	0.251 (0.521)	0.062 (0.521)	0.250 (0.515)	0.062 (0.515)	0.343 (0.700)	0.085 (0.700)
Constant	-3.978*** (-4.540)		-3.962*** (-4.534)		-4.052*** (-4.673)	
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661	661	661
Pseudo R ²	0.123		0.119		0.127	
Chi-square	93.477***		90.955***		94.087***	
Log Likelihood	-399.942		-401.920		-398.069	

Table 9: Alternative Definition of IPO Survival

This table reports the logit regression results for the impact of ED and NED Prof. Exp. heterogeneity on IPO survival to year 5 post-IPO. We explore other definitions of survivors that include mergers as censored survivors if they rank above the median for four performance-based measures consistent with Espenlaub et al. (2012). The four performance measures are cash to total assets, operating income total assets, total liabilities to total assets and current assets to current liabilities. Based on this classification, there are 17 mergers classified as censored survivors and included in the group of survivors. Accordingly, there are 321 survivors and 340 non-survivors (219 mergers and 121 delistings). The results using this classification are similar to the main results reported in Tables 4 and 7. Censored survivors is a dummy variable that takes a value of one if a firm is a survivor or merger that ranks above the median of the four performance measures and zero otherwise. Columns 1 to 4 report the results for the main sample while columns 5 to 8 illustrate that the effect of ED Professional expertise heterogeneity on the likelihood of IPO survival to year 5 post-IPO is robust after accounting for endogeneity using the entropy balancing approach. All variables are defined in Appendix 1 ME stands for marginal effects on the likelihood of IPO survival. t statistics are heteroscedasticity consistent and reported in parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable	Censored Survivors to Year 5							
	Main Sample t=0				Entropy Balanced Sample t=0			
	Heterogeneity Index	ED Business with Industry Experience Facing ED		Heterogeneity Index	ED Business with Industry Experience Facing ED			
Independent Variables	(1)	ME (2)	(3)	ME (4)	(5)	ME (6)	(7)	ME (8)
ED Prof. Exp. Index t	1.309** (2.184)	0.327** (2.185)			1.851*** (2.847)	0.461*** (2.847)		
Financial Expertise t			1.108** (2.355)	0.277** (2.355)			1.232** (2.567)	0.307** (2.568)
Technical Expertise t			0.338 (0.775)	0.084 (0.775)			0.543 (1.122)	0.135 (1.122)
NED Prof. Exp. Index t	0.093 (0.195)	0.022 (0.186)	0.112 (0.236)	0.028 (0.236)	-0.050 (-0.098)	-0.012 (-0.097)	-0.031 (-0.061)	-0.008 (-0.061)
Constant	-3.404*** (-3.945)		-3.431*** (-4.016)		-3.310*** (-3.625)		-3.261*** (-3.530)	
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661	661	661	661	661
Pseudo R ²	0.109		0.111		0.124		0.123	
Chi-square	83.084***		84.440***		83.141***		83.870***	
Log Likelihood	-407.800		-406.970		-409.719		-409.920	

Table 10: Survival Analysis of ED Professional Expertise Heterogeneity

This table reports the Cox proportional hazard model and the accelerated failure time model for the impact of ED professional expertise heterogeneity on survival time and time to failure. There are 661 observations for IPOs of which 357 firms are Non-Survivors. The average survival time for IPOs is 3.9 years for non-survivors. Survival time is used to generate the hazard rate, while the time to failure is used to generate the time ratio that influences the occurrence and timing of merger or delisting. All independent and control variables are defined in Appendix 1. t statistics are reported in parentheses and heteroscedasticity is consistent. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Independent Variables	COX model $t=0$				Accelerated Failure Time Model $t=0$			
	ED Business with Industry Experience Facing ED		Heterogeneity Index		ED Business with Industry Experience Facing ED		Heterogeneity Index	
	(1)	HR (2)	(3)	HR (4)	(5)	TR (6)	(7)	TR (8)
ED Prof. Exp. Index t			-0.424 (-1.609)	0.654			0.435* (1.667)	1.545
Financial Expertise t	-0.723** (-2.286)	0.485*			0.728** (2.287)	1.654*		
Technical Expertise t	0.065 (0.226)	1.067			-0.019 (-0.066)	0.981		
NED Prof. Exp. Index t	-0.239 (-1.068)	0.787	-0.182 (-0.797)	0.833	0.339 (1.536)	1.404	0.285 (1.262)	1.330
Firm Age t	0.001 (0.119)	1.001	0.001 (0.116)	1.001	-0.001 (-0.169)	0.999	-0.001 (-0.191)	0.999
Firm Size t	-0.117** (-2.422)	0.890*	-0.115** (-2.377)	0.892*	0.120** (2.528)	1.127*	0.118** (2.472)	1.125*
Leverage t	0.132 (0.861)	1.141	0.115 (0.741)	1.122	-0.192 (-1.298)	0.825	-0.173 (-1.156)	0.841
Risk t	-0.036 (-0.568)	0.964	-0.048 (-0.715)	0.953	0.026 (0.409)	1.027	0.038 (0.556)	1.038
Return on Assets t	-0.552** (-2.251)	0.576*	-0.585** (-2.283)	0.557*	0.505** (2.161)	1.657*	0.543** (2.214)	1.722*
R&D Intensity t	-0.817 (-1.560)	0.442	-0.828 (-1.563)	0.437	0.747 (1.413)	2.111	0.767 (1.431)	2.153
Asset Tangibility t	-0.276 (-1.265)	0.759	-0.296 (-1.339)	0.744	0.278 (1.254)	1.320	0.295 (1.317)	1.343
Board Size t	-0.021 (-0.599)	0.979	-0.021 (-0.586)	0.980	0.030 (0.863)	1.030	0.030 (0.863)	1.030
Board Independence t	-0.004 (-1.127)	0.996	-0.005 (-1.352)	0.995	0.004 (1.042)	1.004	0.005 (1.243)	1.005
Board Connections t	-0.091* (-1.713)	0.913	-0.090* (-1.689)	0.914	0.103* (1.930)	1.109	0.103* (1.909)	1.108
Board Voting Share Ownership t	0.001 (0.331)	1.001	0.001 (0.401)	1.001	-0.001 (-0.260)	0.999	-0.001 (-0.319)	0.999
CEO Tenure t	-0.013 (-1.144)	0.987	-0.011 (-0.935)	0.989	0.011 (0.906)	1.011	0.008 (0.703)	1.008
Founder CEO t	-0.003 (-0.023)	0.997	0.014 (0.116)	1.014	0.005 (0.046)	1.006	-0.013 (-0.112)	0.987
CEO Duality t	0.065 (0.624)	1.067	0.048 (0.464)	1.050	-0.040 (-0.381)	0.961	-0.020 (-0.193)	0.980
VC Board Representation t	0.224* (1.764)	1.251	0.235* (1.852)	1.265	-0.232* (-1.788)	0.793	-0.240* (-1.847)	0.787
IPO Underpricing t	0.142 (1.425)	1.153	0.170* (1.667)	1.185	-0.124 (-1.287)	0.883	-0.152 (-1.545)	0.859
IPO Premium t	-0.122 (-0.966)	0.885	-0.128 (-1.019)	0.879	0.153 (1.168)	1.165	0.158 (1.212)	1.172
Constant					-0.047 (-0.111)		0.016 (0.037)	
Ind. and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	661		661		661		661	
No. of failures	357		357		357		357	
Pseudo R ²	0.019		0.018					
Chi-square	102.034***		97.347***		108.546***		103.511***	

Table 11: Controlling for Internal Governance and External Factors

This table reports results testing whether the impact of ED Professional Expertise on IPO survival is influenced by Internal Governance (staggered boards and dual class shares) or External factors (high tech industries and crisis periods). Columns 1 and 2 of Panel A presents the results for the interaction between *Financial Expertise* and *Staggered Boards* while columns 3 and 4 in the same panel report the results for the controlling for *Dual Class Shares* as there are no firms with dual class shares where EDs have a mix of business and financial expertise. In Panel B, the first two columns report the results for the interaction between *Financial Expertise* and *High Tech Industries* while the last two columns show the results interacting the former with the crisis period indicator variable. All variables are defined in Appendix I. ME stands for marginal effects on the likelihood of IPO survival. t statistics are heteroscedasticity consistent and reported in parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Internal Governance Factors				
Dependent Variables		Survivors to year 5		
ED Business with Industry Experience Facing ED				
Independent Variables	Staggered Boards		Dual Class Shares	
	t=0	ME	t=0	ME
Financial Expertise _t	1.598*** (3.072)	0.396*** (3.075)	1.213*** (2.617)	0.301*** (2.618)
Staggered Boards _t	1.829*** (7.826)	0.454*** (7.848)		
Dual Class Shares _t			-0.130 (-0.408)	-0.032 (-0.408)
Financial Expertise* Staggered Boards _t	-1.667* (-1.673)	-0.414* (-1.673)		
Technical Expertise _t	0.325 (0.711)	0.081 (0.710)	0.237 (0.534)	0.059 (0.534)
NED Prof. Exp. Index _t	0.450 (0.848)	0.112 (0.848)	0.233 (0.483)	0.058 (0.483)
Constant	-4.521*** (-4.951)		-3.891*** (-4.464)	
Firm and Board Controls	Yes	Yes	Yes	Yes
Industry and Year Dummies	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661
Pseudo R ²	0.188		0.118	
Chi-square	142.967***		90.296***	
Log Likelihood	-370.270		-402.151	
Panel B: External Factors				
Independent Variables	High Tech Industries		Crisis Periods	
	t=0	ME	t=0	ME
Financial Expertise _t	1.382** (2.568)	0.343** (2.569)	1.168** (2.148)	0.290** (2.147)
High Tech Industries _t	0.237 (0.923)	0.059 (0.923)		
Crisis Period _t			-0.464** (-2.098)	-0.115** (-2.098)
Financial Expertise* High Tech Industries _t	-0.508 (-0.525)	-0.126 (-0.525)		
Financial Expertise* Crisis Period _t			-0.334 (-0.314)	-0.083 (-0.314)
Technical Expertise _t	0.232 (0.522)	0.058 (0.522)	0.312 (0.744)	0.077 (0.744)
NED Prof. Exp. Index _t	0.211 (0.437)	0.052 (0.437)	0.645 (1.400)	0.160 (1.401)
Constant	-3.923*** (-4.478)		-4.195*** (-5.047)	
Firm and Board Controls	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	No	No
Industry Dummies	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661
Pseudo R ²	0.119		0.091	
Chi-square	91.430***		72.450***	
Log Likelihood	-401.725		-414.420	

Table 12: Analyses for the Impact of Gender and Age Heterogeneity on Post-IPO Survival

This table reports the logit regression results for the impact of gender and age heterogeneity on IPO survival to year 5 post-IPO. In columns 1 and 2, survivors is a dummy variable that takes a value of one if a firm remains publicly traded as an independent entity to year 5 post-IPO and zero otherwise. The dependent variable in columns 3 to 8 is a categorical variable that takes a value of one, if the IPO firm is a survivor up to year 5, two if the IPO firm is involved in a merger up to year 5, and three if the IPO firm is involved in a delisting from the stock exchange to year 5. All variables are defined in Appendix 1 ME stands for marginal effects on the likelihood of IPO survival. The marginal effects in columns 4 and 6 relate to the probability of an IPO firm exiting through a merger or delisting only and is not compared to survivors as in the multinomial logit. t statistics are heteroscedasticity consistent and reported in the parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Panel A: The Impact of Gender and Age Heterogeneity on the Likelihood of IPO Survival								
Dependent Variables	Survivors to year 5		Mergers in year 5		Delistings in year 5		Mergers in year 5	
	Logit Models t=0		Compared to Survivors				Compared to Delistings	
Independent Variables			Multinomial Logit t=0					
	(1)	ME (2)	(3)	ME (4)	(5)	ME (6)	(7)	ME (8)
Female Board Rep _t	-0.012 (-1.323)	-0.003 (-1.323)	0.013 (1.361)	0.003 (1.317)	0.010 (0.724)	0.000 (0.322)	0.004 (0.280)	0.003 (1.317)
Age Heterogeneity Index _t	0.568 (0.357)	0.141 (0.357)	-0.209 (-0.117)	-0.013 (-0.032)	-1.370 (-0.642)	-0.081 (-0.654)	1.161 (0.533)	-0.013 (-0.032)
Constant	-3.416*** (-3.891)		2.121** (2.283)		3.465*** (2.973)		-1.344 (-1.228)	
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661	661	661	661	661
Pseudo R ²	0.111		0.143		0.143		0.143	
Chi-square	84.988***		3658.36 3		3658.36 3		3811.02 9	
Log Likelihood	-405.371		-586.944		-586.944		-586.944	
Panel B: The Impact of Executive Director and Non-Executive Director Gender and Age Heterogeneity on the Likelihood of IPO Survival								
Dependent Variables	Survivors to year 5		Mergers in year 5		Delistings in year 5		Mergers in year 5	
	Logit Models t=0		Compared to Survivors				Compared to Delistings	
Independent Variables			Multinomial Logit t=0					
	(1)	ME (2)	(3)	ME (4)	(5)	ME (6)	(7)	ME (8)
ED Female Board Rep _t	-0.008 (-1.525)	-0.002 (-1.525)	0.009 (1.477)	0.002 (1.635)	0.007 (0.987)	0.000 (0.542)	0.002 (0.231)	0.002 (1.635)
NED Female Board Rep _t	-0.007 (-0.878)	-0.002 (-0.877)	0.007 (0.760)	0.001 (0.685)	0.008 (0.669)	0.000 (0.464)	-0.002 (-0.123)	0.001 (0.685)
ED Age Heterogeneity Index _t	-0.805 (-0.705)	-0.200 (-0.705)	0.535 (0.408)	0.093 (0.307)	1.321 (0.858)	0.068 (0.760)	-0.786 (-0.481)	0.093 (0.307)
NED Age Heterogeneity Index _t	-0.145 (-0.105)	-0.036 (-0.104)	0.990 (0.638)	0.273 (0.769)	-1.326 (-0.737)	-0.110 (-1.067)	2.316 (1.266)	0.273 (0.769)
Constant	-3.252*** (-3.707)		1.937** (2.083)		3.252*** (2.840)		-1.315 (-1.229)	
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661	661	661	661	661
Pseudo R ²	0.113		0.145		0.145		0.145	
Chi-square	85.000***		3792.253***		3792.253***		3874.951***	
Log Likelihood	-404.617		-585.355		-585.355		-585.355	

Appendix

Appendix 1: Variable Definitions

Dependent Variables	Description
Survivors (Logit/Multinomial logit)	Survivors is a dummy variable that takes a value of one if IPO firms remains publicly traded as an independent entity up to year 5 post-IPO or the last year of the sample period, and zero otherwise. Firms involved in IPOs less than 5 years ago but are surviving up to year 4 post-IPO are also included as survivors in the sample.
Mergers (Multinomial logit)	Mergers is a dummy variable that takes a value of one if IPO firms are involved in a merger or are acquired after listing and lose their identity as independent entities post-IPO, and zero otherwise.
Delistings (Multinomial logit)	Delisting is a dummy variable that takes a value of one if IPO firms do not survive as independent entities after the IPO and exit the stock market regardless of the reasons for delisting, and zero otherwise.
Independent Variables (Executive and Non-Executive Directors)	
Professional Expertise Index	<p>An expertise index based on the Blau index using the proportion of expertise groups on each board. Professional Expertise includes the following 15 categories: Academic, Accountant, Banker, Consultant, Dentist, Doctor, Engineer, Business Executive with Industry Experience, Business Executive without Industry Experience, Finance Expert, IT Expert, Investment Professional, Lawyer, Scientist, Politician</p> $1 - \sum_{i=1}^n P_i^2$ <p>Where P_i is the proportion of group members in each of the i categories. High scores indicate higher professional expertise diversity.</p>
Board Professional Expertise Categories	
Academic	Dummy variable that takes a value of one if the director has prior or current experience as an academic i.e., lecturer or other academic roles in higher institutions.
Accountant	Dummy variable that takes a value of one if directors on the board are chartered accountants or have accounting experience such as, as a CPA, and otherwise zero.
Banker	Dummy variable that takes a value of one if directors have experience in the banking industry, and otherwise zero.
Business with Industry Experience	Dummy variable that takes a value of one if the directors on the board have experience as business executives in the same industry as the firm, for example the director in a pharmaceutical firm has prior experience as a Chief financial officer or President in another pharmaceutical firm, and otherwise zero.
Business without Industry Experience	Dummy variable that takes a value of one if the directors on the board have experience as business executives in firms from other industries, for example the director in a pharmaceutical firm has prior experience as a Chief financial officer or President in a technology firm, and otherwise zero.
Consultant	Dummy variable that takes a value of one if directors have experience as a consultant regardless of the industry, and otherwise zero.
Dentist	Dummy variable that takes a value of one if the directors are dentists on the board, and otherwise zero.
Doctor	Dummy variable that takes a value of one if the directors are medical doctors on the board, and otherwise zero
Engineer	Dummy variable that takes a value of one if directors have engineering experience, and otherwise zero.
Finance Expert	Dummy variable that takes a value of one if directors have experience in the finance industry such as mutual funds or other financial firms, and otherwise zero.

IT Expert	Dummy variable that takes a value of one if directors have experience in technological firms.
Investment Professional	Dummy variable that takes a value of one if directors have experience as a venture capitalist or in private equity, and otherwise zero.
Lawyer	Dummy variable that takes a value of one if directors are lawyers with prior or current experience in legal firms, and otherwise zero.
Scientist	Dummy variable that takes a value of one if directors have experience as scientific researchers. It is evident that the majority of IPO firms in each survivorship category have executive directors on the board with expertise as a business executive.
Politician	Dummy variable that takes a value of one if directors have political experience and have occupied a government position, and otherwise zero.

ED Professional Expertise Combinations

Business with Industry	Dummy variable that takes a value of one if the firm has EDs with Business & Industry Experience only, and otherwise zero
Business without Industry	Dummy variable that takes a value of one if the firm has EDs with Business but no Industry Experience only, and otherwise zero
Business with Industry facing Other Expertise	Dummy variable that takes a value of one if the firms EDs are a mix with Business & Industry Experience facing Other Professional Expertise categories, and otherwise zero
Business without Industry facing Other Expertise	Dummy variable that takes a value of one if the firms EDs are a mix without Business & Industry Experience facing Other Professional Expertise categories, and otherwise zero
Business with Industry facing Financial Expertise	Dummy variable that takes a value of one if the firms EDs are a mix with Business & Industry Experience facing Financial Expertise (i.e., accountant, banker, finance expert and investment professional) categories, and otherwise zero
Business with Industry facing Technical Expertise	Dummy variable that takes a value of one if the firms EDs are a mix with Business & Industry Experience facing Technical Expertise (i.e., Academic, Consultant, Doctor, Engineer, Scientists, IT experts, lawyers,) categories, and otherwise zero

Control Variables

Firm Age	The number of years since incorporation of the firm.
Firm Size	The natural log of total assets.
Leverage	The ratio of the book value of long-term debt to total assets.
Risk	The return variance is measured as the standard deviation of the daily stock return annualised as computed in CRSP using the formula below: $r_t = \left(\frac{p_t * f_t + d_t}{p_{t'}} \right) - 1$ <p>where r_t = return on purchase at t, p_t= last sale price or closing bid/ask average at time t; d_t= cash adjustment for t; f_t = price adjustment factor for t; $p_{t'}$= last sale price or closing bid/ask average at time of last available price < t.</p>
Return on Assets (ROA)	Earnings before interest, taxes, depreciation, and amortisation divided by total assets.
R&D Intensity	The natural log of one plus the ratio of research and development expenditures to total assets.
Asset Tangibility	The net property, plant and equipment scaled by total assets
Board Size	The number of directors on the board
Board Independence	Percentage of independent directors on the board relative to board size. Director independence is measured in line with prior literature as a director who: is not a substantial shareholder of the firm up to 5%; had not been employed in any executive capacity by the company within the last 5 years; is not retained as a professional adviser by the company (either personally or through their firm); is not a significant supplier or customer of the company; has no significant contractual relationship with the company other than as a director.

Board Connections	This is the average number of connections the board has to other boards in terms of board seats
Board Voting Share Ownership	The total percentage of voting shares owned by the board.
CEO Tenure	The number of years the CEO has served on the board.
Founder CEO	A variable that takes a value of one if the founder of the firm is the CEO, and zero otherwise.
CEO Duality	A dummy variable that takes a value of one if the CEO is also the board chair, and zero otherwise.
VC Board Representation	A dummy variable that takes a value of one if a Venture Capitalist Director is present on the board, and zero otherwise.
IPO Underpricing	The difference between the price at the end of the first day of trading and the offer price expressed as a fraction of the offer price.
IPO Premium	The difference between the offer price and the book value per share expressed as a fraction of the offer price.
High Tech Industries	A dummy variable that takes a value of one if an IPO firm has an industry SIC code of 3571, 3572, 3575, 3577, 3578 (computer hardware), 3661, 3663, 3669 (communications equipment), 3671, 3672, 3674, 3675, 3577, 3678, 3679 (electronics), 3812 (navigation equipment), 3823, 3825, 3826, 3827, 3829 (measuring and controlling devices), 3841, 3845 (medical instruments), 4812 4813 (telephone equipment), 4899 (communications services), 7371–7375, 7378, or 7379 (software), and zero otherwise, consistent with Guonopoulos and Pham (2018).
Crisis Period	A dummy variable that takes a value of one if an IPO firm is listed within the dot com bubble (2000 to 2001) or the subprime financial crisis (2007 to 2008)
Staggered Boards	A dummy variable that takes a value of one if the board is staggered, and otherwise zero.
Dual Class Shares	A dummy variable that takes a value of one if a firm has dual class shares, and otherwise zero.

Other Measures of Board Heterogeneity

Female Board Representation	Percentage of females on the board of directors.
Age Heterogeneity Index	The standard deviation of board age divided by the mean age of the board. Using the coefficient of variation formula (SD of Board Age/ Mean of Board Age). Larger standard deviation (larger age differences between board members) and lower mean age (higher representation of young board members) would generate higher age diversity values. High scores indicate greater age diversity

Appendix 2: Professional Expertise Category Coding

This table illustrates how Professional Expertise has been coded in the IPO sample using a sample firm, Ameresco Inc, an energy company listed in 2010. The board has 8 members. 3 Executive Directors(EDs) and 5 Non-Executive Directors(NEDs). The below focuses on the coding of three EDs on the board.

Director Title		Biography	Professional Expertise Category Coding
1 st ED	Chairman of the Board of Directors, President and Chief Executive Officer	CEO: “Mr. X has served as chairman of our board of directors and our president and chief executive officer since founding Ameresco in 2000. Mr. X previously founded Noresco, an energy services company, in 1989 and served as its president and chief executive officer until 2000. Noresco was acquired by Equitable Resources, Inc. in 1997. Mr. X was a founding member and previously served as the president, and is currently a director, of the National Association of Energy Service Companies, a national trade organization representing the energy efficiency industry. We believe that Mr. X is qualified to serve as a director because of his 31 years of experience in the energy services and renewable energy industries, his leadership experience, skill and familiarity with our business gained from serving as our chief executive officer for over a decade, as well as his experience developed through founding and serving as chief executive officer of two previous energy services companies.”	Business Expertise with industry experience
2 nd ED	Executive Vice President, Business Development and Director	Other ED : “Mr. Y has served as our executive vice president, business development , as well as a director, since 2000. From 1992 to 2000, Mr. Y was a senior vice president at Noresco . We believe that Mr. Y is qualified to serve as a director because of his extensive knowledge of our business, gained through more than a decade as an executive officer, and his more than 20 years of experience in the energy services and renewable energy industries . We also believe that Mr. Y brings a deep understanding of operations and strategy to our board of directors. ”	Business Expertise with industry experience
3 rd ED	Executive Vice President, General Counsel and Secretary and Director	Other ED : “ Mr. Z has served as our executive vice president, general counsel and secretary , as well as a director, since 2000. From 1996 to 2000, Mr. Z was executive vice president of Public Power International, Inc., an independent developer of power projects in south Asia and Europe . We believe that Mr. Z is qualified to serve as a director because of his extensive experience with energy regulations, federal, state and local regulatory authorities and complex energy construction and financing projects, gained through more than 23 years of energy- legal practice , and his more than a decade as an executive officer of our company”.	Lawyer

Appendix 3: Analyses for the Impact of Professional Expertise and Skills Diversity on Post-IPO Survival

This table reports the logit and multinomial logit regressions testing the impact of professional expertise heterogeneity on the likelihood of IPO survival to year 5 post-IPO. All variables are defined in Appendix 1. ME stands for marginal effects on the likelihood of IPO survival. The marginal effects in columns 4 and 6 relate to the probability of an IPO firm exiting through a merger or delisting only and is not compared to survivors as in the multinomial logit. t statistics are heteroscedasticity consistent and reported in the parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variables	Survivors to year 5		Mergers in year 5		Delistings in year 5		Mergers in year 5	
	Logit Models t=0		Compared to Survivors				Compared to Delistings	
Independent Variables			Multinomial Logit t=0					
	(1)	ME (2)	(3)	ME (4)	(5)	ME (6)	(7)	ME (8)
Panel A: The Impact of Professional Expertise Diversity and IPO Survival								
Prof. Exp. Index t	0.110 (0.165)	0.027 (0.165)	-0.057 (-0.079)	-0.005 (-0.033)	-0.307 (-0.351)	-0.018 (-0.361)	0.250 (0.296)	-0.005 (-0.033)
Constant	-3.526*** (-3.778)		2.277** (2.335)		3.559*** (2.897)		-1.282 (-1.132)	
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	661	661	661	661	661	661	661	661
Pseudo R ²	0.109		0.141		0.141		0.141	
Chi-square	84.660***		3466.488***		3466.488***		3450.444***	
Log Likelihood	-406.330		-588.034		-588.034		-588.034	

Appendix 4: Analyses for the Impact of ED Board Professional Expertise Combinations on Post-IPO Survival

This table reports the logit and multinomial regression results for the impact of ED Professional Expertise on IPO survival to year 5 post-IPO. The dependent variable is a categorical variable that takes a value of one, if the IPO firm is a survivor up to year 5, two if the IPO firm is involved in a merger up to year 5, and three if the IPO firm is involved in a delisting from the stock exchange up to year 5. All variables are defined in Appendix 1. ME stands for marginal effects relating to the probability of an IPO firm exiting through a merger or delisting only and is not compared to survivors as in the multinomial logit. t statistics are heteroscedasticity consistent and reported in the parentheses. *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variables	Mergers in year 5			Delistings in year 5		Mergers in year 5	
	Compared to Survivors			Compared to Delistings			
Panel A: ED Business & Ind. Experience facing EDs Financial Expertise							
Independent Variables t=0	(1)	ME (2)	(3)	ME (4)	(5)	ME (6)	
Financial Expertise _t	-1.951** (-3.246)	-0.453*** (-3.262)	-0.487 (-0.794)	0.022 (0.582)	-1.464** (-2.062)	-0.453*** (-3.262)	
Technical Expertise _t	-0.149 (-0.302)	-0.028 (-0.248)	-0.275 (-0.429)	-0.014 (-0.353)	0.126 (0.192)	-0.028 (-0.248)	
Constant	2.757*** (3.021)		3.613*** (3.152)		-0.856 (-0.801)		
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes	
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	
No. of observations	661	661	661	661	661	661	
Pseudo R ²	0.150		0.150		0.150		
Chi-square	3427.446***		3427.446***		3419.743***		
Panel B: Interacting ED Business & Ind. Experience facing EDs Financial Expertise with Founder CEO							
Financial Expertise _t	-3.585** (-4.079)	-0.834*** (-4.120)	-0.637 (-1.015)	0.054 (1.320)	-2.948*** (-3.092)	-0.834*** (-4.120)	
Founder CEO _t	0.074 (0.249)	0.024 (0.357)	-0.261 (-0.678)	-0.018 (-0.777)	0.334 (0.795)	0.024 (0.357)	
Financial Expertise* Founder CEO _t	4.573*** (3.413)	1.409*** (4.618)	-12.342*** (-9.822)	-0.898*** (-6.803)	16.915*** (12.813)	1.409*** (4.617)	
Constant	2.978*** (3.180)		3.529*** (3.052)		-0.551 (-0.503)		
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes	
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	
No. of observations	661	661	661	661	661	661	
Pseudo R ²	0.158		0.158		0.158		
Chi-square	3984.770***		3984.770***		3968.300***		
Panel C: Interacting ED Business & Ind. Experience facing EDs Financial Expertise with Founder CEO Duality							
Financial Expertise _t	-1.137** (-2.339)	-0.245** (-2.175)	-0.970* (-1.684)	-0.032 (-0.873)	-0.167 (-0.260)	-0.245** (-2.175)	
Founder CEO Duality _t	-0.130 (-0.523)	-0.022 (-0.394)	-0.317 (-0.991)	-0.017 (-0.891)	0.187 (0.593)	-0.022 (-0.394)	
Financial Expertise* Founder CEO Duality _t	0.283 (0.262)	0.008 (0.032)	2.126** (2.173)	0.132** (2.126)	-1.843 (-1.520)	0.008 (0.032)	
Constant	2.722*** (3.000)		3.959*** (3.381)		-1.237 (-1.131)		
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes	
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	
No. of observations	661	661	661	661	661	661	
Pseudo R ²	0.150		0.150		0.150		
Chi-square	3095.359***		3095.359***		3108.063***		
Panel D: Interacting ED Business & Ind. Experience facing EDs Financial Expertise with Non-Founder CEO Duality							
Financial Expertise _t	-0.842 (-1.243)	-0.202 (-1.403)	0.575 (0.783)	0.060 (1.337)	-1.417* (-1.898)	-0.202 (-1.403)	
Non-Founder CEO Duality _t	0.129 (0.549)	0.027 (0.540)	0.069 (0.226)	0.001 (0.076)	0.061 (0.195)	0.027 (0.540)	
Financial Expertise* Non-Founder CEO Duality _t	-16.834*** (-19.175)	-3.702*** (-16.540)	-2.410* (-1.792)	0.254*** (2.577)	-14.424*** (-10.922)	-3.702*** (-16.541)	
Constant	2.895*** (3.151)		3.687*** (3.238)		-0.792 (-0.738)		
Firm and Board Controls	Yes	Yes	Yes	Yes	Yes	Yes	
Industry and Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	
No. of observations	661	661	661	661	661	661	
Pseudo R ²	0.157		0.157		0.157		
Chi-square	5199.357***		5199.357***		5266.549***		

Appendix 5: Entropy Balancing- Diagnostic Test on the Differences in Covariates Post-Match

This table reports the entropy balancing results that ensure better covariate balance between the treated firms and control groups by weighing observations such that the post-weighting mean for treated and control samples are equal along the matching dimensions. Panel A reports the diagnostic tests relating to professional expertise heterogeneity index. We report the standardised mean differences for treated and re-weighted control samples, as well as the variance ratio comparing both samples to show that entropy balancing is achieved. After re-weighting the observations, the mean difference is on average zero while the variance ratio is on average one in all Panels.

	Treated			Control			Std Mean Diff	Variance Ratio
	Mean	Variance	Skewness	Mean	Variance	Skewness		
<i>Panel A: Prof. Exp. Index</i>		N=327			N=334			
Firm Age	12.917	162.869	3.071	12.917	182.664	2.738	0.000	0.892
Firm Size	5.227	2.656	0.085	5.227	2.656	0.085	0.000	1.000
Return on Assets	-0.252	0.295	-3.345	-0.252	0.295	-3.345	0.000	1.000
Risk	0.279	0.397	4.478	0.279	0.397	4.478	0.000	1.000
Leverage	0.194	0.069	1.619	0.194	0.069	1.619	0.000	1.000
Asset Tangibility	0.329	0.112	1.590	0.329	0.112	1.590	0.000	1.000
Tobin's Q	2.977	8.919	4.342	2.977	8.919	4.342	0.000	1.000