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Impact of legal institutions on IPO survival: A global perspective

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Abstract

Around the world, investors, practitioners, regulators and policy makers seek to understand whether, when and why recently listed stocks, initial public offerings (IPOs) are delisted rather than continue trading (survive). Using data on 7,627 IPOs issued during 2000-2008 across 32 countries, we explore the impact of the legal system on IPO survival. We find that IPOs in countries with better investor protections remain listed for longer. This suggests that better legal systems increase the net benefits companies derive from staying listed. We also provide evidence that better legal systems increase the effectiveness of IPO certification by venture capitalists, underwriters and auditors.

JEL classification: G15, G3, F3, K4

Keywords: IPO; delisting; international markets; legality index; certification hypothesis

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1. Introduction

Around the world, investors, practitioners, regulators and policy makers seek to understand whether, when and why recently listed stocks are delisted. Yet, little is know to date on how delisting varies across countries and regions. This paper examines the impact of the legal system on delistings of initial public offerings (IPOs) across 32 countries around the world. Following the law and finance literature (*e.g.*, LaPorta et al., 1997, 1998, 2006; Berkowitz et al., 2003) we focus on quality of the legal system as measured by the efficiency of the judicial system, the rule of law, the absence of corruption, the risk of expropriation and of contract repudiation, and the extent of shareholder rights. The law and finance literature (Shleifer and Wolfenzon 2002) shows that a country's legal system affects whether companies go public. We argue that legal systems also determine whether companies stay public, and hence whether their stocks remain listed. Legal systems that protect minority shareholders and investors increase the effectiveness of contracts, reduce the (informational and agency) costs of external financing and improve company performance (*e.g.*, LaPorta 2006; Berkowitz 2003). It is reasonable to expect that this reduces the chances of delisting due to poor performance. By reducing the cost of external finance, better legal systems also increases the benefits to company insiders of being listed net of listing costs (Shleifer and Wolfenzon 2002). Hence, we may expect that companies are less likely to opt for voluntary delisting in better legal systems. On the other hand, by facilitating creditor recourse, more efficient legal systems may speed up the delisting and liquidation of poorly performing companies. [1] The direction of the impact of the legal system on IPO survival is ultimately an empirical issue which our analysis aims to resolve.

Either explicitly through (de-)listing rules or implicitly through established practice, IPO markets require the certification of issues by repeated players in financial markets with

[1] Unlike the large Financial Institutes with a '*Too big to fail'* resolution, IPO firms face a relatively higher risk of bankruptcy and failure (see detailed discussions of *Too big to fail* resolutions in Kaufman, 2014).

reputational capital, including underwriters, venture capitalists (VCs), and auditors (Carter and Manaster 1990; Megginson and Weiss 1991). Certification helps resolve asymmetric information and agency problems between issuers and investors through explicit and implicit contracts. For control and monitoring mechanisms such as certification to be effective, requires a legal system that effectively enforces contracts and enables monitors to impact the actions of company insiders and obtain redress from them (Doidge et al., 2013). As a result, we may expect that certification by financial and other backers is likely to be strengthened by more efficient legal systems. Conversely, certification by reputable underwriters and other 'certifiers' relies on intermediaries' reputations to enforce implicit contracts rather than the enforcement of explicit contracts by the legal system. It may be an alternative (*i.e.*, a substitute rather than a complement) to explicit contracting if it involves the use of non-verifiable information that is privately observed by the certifying intermediary. However, the threat of litigation by disgruntled investors also reinforces underwriters' incentives to avoid losing valuable reputation. *A priori*, legality may be either a substitute or a complement for certification, and our analysis aims to resolve this issue empirically.

Almost all prior research on IPO survival focuses on individual countries, in most cases on the U.S. (*e.g.*, Hensler et al., 1997; Jain and Kini, 1999, 2000).[2] Some studies examine IPOs in the UK (Espenlaub et al., 2012).[3] Vismara et al. (2012) provide evidence on survival across several European countries. The quality of the legal system could have a significant impact on IPO survivals or failures. Previous studies on country's legal condition find that cross-country differences in the legal framework affect corporate governance (LaPorta et al. 1998; Mitton 2002) and corporate valuation (LaPorta et al. 2002). However, these studies do not investigate whether the survival profiles of the IPOs varies with the level

[2] Studies of IPO survival in the U.S. include Fama and French (2004), Jain and Kini (1999, 2000), Jain and Martin (2005), and Jain et al. (2008).

[3] The literature on individual countries is limited but growing; see Baschieri et al. (2015) on Italy, Carpentier and Suret (2011) for Canada, Cressy and Farag (2014) for Hong Kong, Liu and Li (2014) for China and Gopalan and Gromley (2013) and Wadhwa et al. (2016) for India.

of legal system across countries. The survival of the IPO firms has implication for various stakeholders as outlined in section 2. To date not much is known whether the quality of the legal system have a positive/negative effect on IPO survival. Single-country (or single-region) studies do not shed light on the impact of the legal system on IPO survival due to minimum variations of the legal conditions variables within a country. Our study contributes to the literature by investigating this impact using a sample of 7,627 IPOs issued during 2000-2008 across 32 countries. The results of our analysis show that better legal systems help IPOs remain listed longer. We show that the quality of the legal system improves IPO survival directly (*e.g.*, by reducing the contracting costs faced by listed firms), and also indirectly by increasing the positive impact on IPO survival of IPO certification by venture-capital backers, underwriters and auditors.

Our study also examines the impact of market conditions on IPO survival. As market conditions vary both across countries and over time, our cross-country analysis of market conditions extends single-country analyses of the impact of (time-series variations in) market conditions on IPO survival. Our analysis controls for a wide range of firm- and issue-specific variables that have been shown to impact IPO survival in single-country setting, and our findings are robust to a range of variations in research design.

Our results are of interest to stock markets, regulators and policy makers worldwide interested in promoting stock-market listings and improving the availability of external equity to companies. [4] Our results are also of interest to investors seeking to identify stocks suitable for long-term investments, particularly to investors planning to commit capital outside their home market.

The remainder of this paper is organised as follows. Section 2 motivates and outlines our research questions in the context of the conceptual framework and relevant literature.

[4] Stock market investors are also concerned with the Seasoned Equity Offerings (SEOs) and announcement of large capital infusions like government bailout and private equity placement (Elyasiani et al., 2014).

Section 3 discusses our sample and methodology. Section 4 reports our empirical results, and Section 5 concludes the paper.

2. Conceptual Framework and Literature

2.1. Legality and IPO survival

The 'survival' of IPOs, that is, the continued trading of newly listed stocks on the stock market, matters not just to companies, their investors and stakeholders, but more widely to practitioners, policy maker, regulators and even to stock markets themselves. Survival is typically a consequence of good firm performance. As a result, it has been proposed as a proxy for firm performance (*e.g.*, Audretsch and Lehmann, 2005; Espenlaub et al., 2012) and complements return-based measures of post-IPO performance that are often difficult to quantify, suggesting that an appropriate measure of performance for IPO firms is their ability to survive over time (Gerakos et al., 2013). Companies, investors and policymakers are interested in IPO survival because as long as a stock remains listed, the issuing company can raise external funding from public markets. This has implications for its cost of external capital and real investment decisions, which in turn benefit other stakeholders including employees. Legal system that are more effective in reducing the information and agency costs of external equity increase company value (performance) and the net benefits of being listed.

Shleifer and Wolfenzon (2002) show theoretically how the legal system of a country affects the costs and benefits that founder-owners derive from going public. Controlling shareholders of IPO companies are less likely to extract private benefits from minority shareholders in countries with more efficient judicial systems that are characterized by the rule of law, stronger shareholder rights, and where there is less chance of corruption, expropriation and contract repudiation. By reducing the private benefits of controlling shareholders who can extract at the expense of minority shareholders, better legal systems increase the value of IPOs to investors. For a given listing cost, more effective legal systems

increase the net benefits founder-owners derive from listing their companies. Doidge et al. (2013) find empirical support for the prediction that more effective legal institutions increase IPO activity both in terms of numbers and proceeds of IPOs. Their study builds on the previous law and finance literature that demonstrates the impact of legal institutions on IPO activity and on economic and financial development more generally (LaPorta et al., 1997, 1998, 2006; Berkowitz et al., 2003). LaPorta et al., (1997, 1998) find that countries with stronger investor ('anti-director') rights and tighter securities laws have higher numbers of IPOs per capita. Djankov et al. (2008) finds that the ratio of equity issued in IPOs (relative to GDP) is positively correlated with how effectively legal systems restrict insiders' 'self-dealing' transactions. The law and finance literature based on LaPorta et al. (1997, 1998) also shows that legal institutions and rules influence other corporate decisions (capital structure, payout policy, VC contracting and corporate behaviour) and financial performance (Berkowitz, 2003; Cumming et al., 2006; Cumming et al., 2010).

In sum, the existing literature shows that the legal system increases the likelihood that firms choose to go public. However, the impact of the legal system on how long companies stay listed remains unexplored. Following the reasoning of Shleifer and Wolfenzon (2002), it is reasonable to expect that, once listed, companies continue to derive higher net benefits of remaining listed in countries with more effective legal systems. The law and finance literature shows theoretically and empirically that better legal systems improve company performance. Higher company performance in turn reduces the chances of involuntary delisting and liquidation. An important benefit of listing is access to external equity finance. By reducing the information and agency costs of external equity (*e.g.*, by reducing controlling shareholder consumption of private benefits), better legal systems increase the net benefits to companies and their owners not just from becoming listed, but from *being* listed. That is, better legal

systems increase the net benefits of keeping companies listed post-IPO. This leads us to predict that better legal systems reduce the incidence of voluntary delisting.

However, in the case of underperforming companies, an efficient legal system should help to speed up delisting and liquidation to protect investors (including creditors') interests. Extending the 'life' of an underperforming IPO is clearly suboptimal. During normal market conditions, this optimal-termination effect may affect only a small fraction of poorly performing stocks and the positive effect of the legal system on the contracting and performance of healthy stocks is likely to predominate in most circumstances. However, the direction of the impact of the legal system on IPO survival is ultimately an empirical issue which our analysis aims to resolve.

Our paper is related to the limited literature on the impact of regulation on IPO delisting (Simon, 1989; Engel et al., 2007; Burhop et al., 2014; Cattaneo et al., 2015).[5] Simon (1989) examines failure rates of U.S. IPOs before and after the 1933 Securities Act and finds a reduction in failure rates after the introduction of the Act. Engel et al. (2007) examine the impact of the Sarbanes-Oxley Act on delistings from U.S. stock markets, and find evidence that the increased cost of compliance due to the Act reduced the benefit of being listed and caused some firms to delist. Burhop et al. (2014) compare the survival of IPOs on the Berlin and London stock markets in the decade prior to World War I. They find that London IPOs perform (and survive) equally well as Berlin IPOs despite less stringent regulation in London. Their study highlights the difficulty of comparing the impact of regulation across (a small number of) stock markets adopting alternative approaches to regulation. Cattaneo et al. (2015) examine the impact of changes in regulation on IPO survival in a single country (Italy) over an extensive (150-year) sample period. They find that improvements in investor protection over time increase IPO survival. In-depth studies of individual countries over long

[5] Unlike the studies discussed here, our empirical analysis examines the impact of cross-country variations in legal institutions as opposed to the impact of changes in regulation over time.

periods complement cross-country studies, but it is difficult to adequately control for the impact of contemporaneous variations in unobservable (or unobserved) variables in studies of single or small numbers of countries.

To date, there is no cross-country study investigating the impact of the legal system on IPO survival. This study aims to fill this gap by studying the impact of the legal system on IPO survival using a substantial sample of IPOs that went public during 2000-2008 in one of 32 countries across the world. We measure the quality of the legal system using the legality index of Berkowitz et al. (2003). Based on the work of LaPorta et al. (1997, 1998), Berkowitz et al. (2003) construct this index as a weighted sum of the separate LaPorta et al. (1997, 1998) indicators on the efficiency of the judicial system, the rule of law, absence of corruption, (absence of) risk of expropriation and contract repudiation.[6] A higher legality index reflects a stronger legal system with better investor protection. Following previous studies (Cumming et al., 2007, 2010), we use the legality index to overcome the issue of high correlations among the separate LaPorta et al. (1997, 1998) factors.

In addition to the legality index, we also include a separate indicator of the origin of a country's legal systems being Common Law as opposed to Civil Law. Common Law systems are of English origin, while civil law systems have French, German or Scandinavian origins. Previous findings show that English common law systems typically provide more rights to (minority) investor and better protection and enforcement of their rights (LaPorta et al., 1997, 1998; Cumming et al., 2010). In addition to the direct (country-wide) effect of the legal system on IPO survival, we expect that the legal system also has an indirect effect by interacting with other control mechanisms within each country. Here, we focus on the certification of IPOs by financial backers and intermediaries involved in the issue. Single-country studies have shown the significant impact of certification on IPO survival. Jain and

[6] See Appendix A1 for details.

Kini (1999) find that investment bankers' prestige is positively related to IPO survival. Jain and Kini (2000) show a positive impact of pre-IPO venture-capital backing on survival, and confirm the positive impact of underwriter reputation. Jain and Martin (2005) investigate the impact of audit quality and find that it is positively related to survival. Kooli and Meknassi (2007) document the positive impact of underwriter reputation on survival. Cognizant of this certification effect, some stock markets require explicitly, while other stock markets encourage implicitly, that IPOs are to be certified by reputable financial firms and backers.[7] For instance, in the UK Alternative Investment Market, stocks are involuntarily delisted if they are no longer 'supervised' by a recognised financial firm acting as the stocks nominated advisor (Espenlaub et al., 2012).

The legal system impacts the relationship between issuing firms and their pre-IPO financial backers, as well as between issuers and underwriters (and other intermediaries and advisors) involved in the IPO (Cumming et al., 2010). We expect that better investor protection and contracting in more effective legal systems, including the threat of legal action from entrenched investors, provide strong incentives to pre-IPO financial backers, intermediaries, advisors and agents involved in the IPO to reliably certify the quality of IPOs. Better contract enforcement renders contractual agreements between certifying agents (VC firms, underwriters and auditors) and the issuing companies (and their pre-IPO owners) more binding and credible to outside investors. Hence, we expect that better legal systems enhance the certification effect of IPO backing by venture-capital backers, underwriters and auditors.

On the other hand, certification by reputable underwriters and other 'certifiers' relies on intermediaries' reputation to enforce implicit contracts rather than the enforcement of explicit contracts by the legal system. Certifying backers and intermediaries often privately observe information about the issuing firm that is non-verifiable by third parties (such as

[7] See the literature on certification of IPOs through venture capital backing following Megginson and Weiss (1991). See the literature following Carter and Manaster (1990) and Carter et al. (1998) on the impact of underwriter reputation on IPOs.

courts). Consequently, certification may be independent of, or be used as a substitute for, explicit contracting. *A priori*, the interaction effect between the legal system and certification may be either positive (if the two control mechanisms are complements), negative (if they are substitutes), or zero (if they are unrelated). Our analysis aims to resolve the issue empirically.

Existing single-country studies do not shed light on the impact of legality on the relation between IPO survival and certification, *i.e.*, the indirect effect of legality on IPO survival through its interaction with certification. Our study is the first to examine this important issue. While the direct effect of legality helps explain the variation in IPO survival across countries (but not within countries), a significant interaction effect between legality and certification explains the variation in IPO survival within a given country.

2.2. IPO Market Conditions

Our survival analysis also examines the impact that conditions (returns) in a country's IPO market at the time of the IPO have on the survival of the IPO. Evidence from single-country studies suggests that the initial returns of other recent issues prior to an IPO, reflecting the 'hotness' of the IPO market, impact IPO survival. Previous U.S. studies find that IPOs issued during hot markets to have shorter times to delisting (Demers and Joos 2007; Bhattacharya et al., 2010) and characterised by high initial IPO returns volatility (Lowry et al., 2010). Our analysis examines the impact of market activity using the hot-issue measure of Demers and Joos (2007), namely the country-specific average initial returns of IPOs issued during the three months prior to the month of the IPO. While the U.S. IPO market is characterised by dramatic ups and downs in IPO volumes over time, other markets (*e.g.*, in Europe and Asia) have been shown to be less cyclical (Vismara et al., 2012; Espenlaub et al., 2015). Our analysis sheds light on whether the impact of market 'hotness' on survival is also found in more stable IPO markets. While single-country studies are limited to examining how variations in hotness over time affect IPO survival, our cross-country analysis allows us to

examine the impact of both time-series as well as cross-country variations in hotness. That is, we examine whether IPOs issued in countries (and during period) with hot IPO markets have shorter (or longer) times to delisting.

2.3. Control Variables

Our analysis controls for the effects of a wide range of variables that have been shown to impact IPO survival in single-country studies. These include firm listing time characteristics, specifically firm size, profitability, sales, trading record (age), insider ownership, market-to-book ratio, leverage, cash holdings, growth of total assets and industry. We also control for issue characteristics including IPO initial returns and issue year.

Existing evidence from single-country studies suggests these control variables significantly impact IPO survival.[8] Hensler et al. (1997) report that IPO survival is positively related to firm age, size, initial IPO returns and insider ownership (suggesting a negative impact of public float on survival). Jain and Kini (1999) find that firm size and profitability (pre-IPO operating performance) are positively related to IPO survival. Kooli and Meknassi (2007) confirm the positive impact of firm size. Market-to-book ratio (measuring growth opportunities) and asset growth may be expected to increase long-term earnings and hence the chances of firm survival. On the other hand, Fama and French (2004) find that high-growth stocks in the U.S. tend to have lower survival rates. Similarly, higher cash holdings and lower leverage may auger well for the long-term financial stability of the firm. On the other hand, they may also be the cause of company failure if they give rise to agency costs of equity due to the lack of financial discipline allowing self-interested managers to waste company funds. Inside ownership, *i.e.*, the proportion of shares held by insiders is essentially the opposite of 'public float' which can be defined as (1 - insider ownership). Hence, there is

[8] See also the studies noted in Footnote 1 above. For conciseness, we discuss only key papers here and do not provide a comprehensive literature review. Some papers not discussed here include Schultz (1993), Seguin and Smoller (1997), Bradley et al. (2006). For a discussion of these papers and their findings, see e.g., Espenlaub et al. (2012).

potentially a trade-off between a positive impact of public float on IPO survival through increased stock liquidity allowing more efficient trading, and a negative agency effect through the dispersion of share ownership. As all past evidence is based on single-country studies, we have no *a priori* expectations on the impact of the control variables on IPO survival across our sample of 32 countries. Our approach of including both country- and firm-specific variables is consistent with previous cross-country studies (e.g. Engelen and Essen 2008, 2010: Boulton et al 2010; Espenlaub et al. 2015).

3. Data and Methodology

Our initial sample comprises of all IPOs listed between January 2000 and December 2008 sourced from the Thomson Financials Securities Data Companies (SDC) Platinum New Issues database. In each country, we focus on IPOs which are listed on the main market where listing requirements and delisting rules are well-defined. We follow LaPorta et al. (1998) to identify the list of countries to be included in our sample of international IPOs. In line with common practice in the IPO literature, we exclude closed-end funds, right offerings, and unit offerings (Hasan et al., 2011). Consistent with Lin et al. (2013), we exclude IPO companies with offering price less than the converted, domestic-currency equivalent of $1.00. We also exclude cross-listed firms and ADRs as they are likely to be affected by the regulatory and legal requirements of more than one country. Next we collect the firm-level IPO-date financial data for these newly listed IPO firms from SDC Platinum New Issue database, Worldscope and Datastream. For an observation to be included in our final sample, we require both accounting data (total assets, earnings, sales, and debt level) and market data (first-day returns and market capitalization at the time of listing) to be available for the newly

listed firms. After imposing these restrictions, we are left with the final 'full' sample of 7,627 IPOs across 32 countries listed during 2000 to 2008.[9]

For our analysis of the impact of certification on IPO survival, we require data on VC backing, underwriter and auditor identity (and reputation). We collect these data from IPO prospectuses from SDC. We also collect data on two further control variables: insider ownership and firm age. We collect ownership from IPO prospectuses and the founding and incorporation dates of firms (to calculate firm age) from Worldscope and the Amadeus Osiris database. These additional data requirements reduce our sample to 4,755 observations across 32 countries. To check if our reduced sample is representative of our larger, initial sample, we conduct a non-parametric Kolmogorov-Smirnov test of the equality of distributions. The null hypothesis of equality of the distributions cannot be rejected at conventional significance levels. Descriptive statistics for both samples are given in Appendix A4.

To eliminate the impact of outliers, we trim firm-level variables, namely the initial return, and earnings at the upper and lower one-percent level. We winsorize size, cash holding, debt level, market to book, sales, and ownership concentration only at the upper one-percent level since they have a lower bound value of zero. Since it is an international study, winsorization is undertaken at the country-level.

We track each IPO firm in our sample until March 2015 to determine whether and when the stock is delisted from the stock market. We use stock-market lists of the listed stocks in each stock-market to identify whether a stock is delisted, and Datastream to identify when it is delisted. We define survivors as stocks that continue to trade on the stock market

[9] Following Boulton et al. (2010), we start with the 49 countries used in LaPorta et al. (1997, 1998) studies, impose the restrictions outlined in the text, and then exclude countries with fewer than 5 IPOs. Compared to previous cross-country IPO studies, our resulting sample is larger than that of Boulton et al. (2010) covering more countries and IPO years. However, compared to Lin et al. (2013) and Doidge et al. (2013), our sample period is shorter and we cover fewer countries. At country-level, our sample of IPO firms is comparable to Fan et al. (2007) for China, Espenlaub et al. (2012, 2015) for the UK and Jain and Kini (1999, 2000) for the USA. In terms of our overall sample size, this is also comparable to the multi-country IPO studies of Engelen and Essen (2008, 2010),

on which they initially list, or transfer to another stock market. Non-survivors (also referred to as 'failures' or 'deaths') are stocks that are delisted from the stock market for any reason other than moving to other stock market or being taken over by another firm. If a firm is delisted as a result of being the target of a merger or acquisition (M&A), we classify it as a censored survivor unless the target firm is in financial distress at the time of the acquisition. In our sample of 7,627 IPOs, 754 firms delist due to M&A. Of these, 606 firms are merged or acquired while in financial distress and are thus classified as non-survivors;[10] the remaining 148 stocks are classified as censored survivors. In appendix A6, we also check whether our results are robust to alternative definitions of survival (specifically, treating all M&As as failures).

The survival rates of IPOs are estimated non-parametrically using the Kaplan-Meier method based on the following expression:

$$S(t_j) = \prod_{i=1}^{j} \left(\frac{n_i - d_i}{n_i} \right)^{\delta_i} \tag{1}$$

or equivalently

$$S(t_j) = \left(\frac{n_j - d_j}{n_j} \right) S(t_{j-1}) \tag{2}$$

where $S(t_j)$ is the estimated survival function in year t_j measuring the probability of survival beyond t_j conditional on the IPO being listed at least until year t_j. n_i is the number of the IPOs that are listed in a given regional subsample (or for the pooled sample) at the start of year t_j, also known as the risk set at t_j. d_j is the number of the IPOs delisted during year t_j. δ_i is equal to one if there is a failure, and zero otherwise. Alternatively, *EQ. 1* can be restated as *EQ. 2* to express the survival function in year t_j as the probability of survival in year t_j conditional on the stock being listed at least up to year t_j times the survival function of the previous year t_{j-1}.

[10] Following Gomez (2015), we assume that failed firm takeovers do not really enhance the value of the acquiring firm, therefore we classify the target as a non-survivor.

Next, we estimate a survival model known as Accelerated Failure Time (AFT) model to examine the determinants of the survival rates. Like the Cox (1972) model, the AFT model allows for the fact that companies are tracked over different time periods. For instance, firms listed at the beginning of the sample period are treated similarly in the estimation model as firms listed at the end of the sample period. Observations that dropped out of the study but continue to survive are treated as (right) censored. Unlike the Cox (1972) model, the AFT method allows the impact of the independent variables on survival time to vary over the post-IPO period depending on the length of time since listing. That is, the AFT model allows for the possibility that the determinants of IPO survival may be particularly pronounced in the period soon after the IPO and less so in the longer term. AFT model is typically expressed in terms of a log-linear function with respect to time (Hensler et al., 1997; Bradburn et al., 2003):

$$\mathrm{Ln}(\mathrm{T_j}) = \beta_0 + \beta_i X_i + \varepsilon_j \qquad (3)$$

where Ln(T_j) is the natural logarithm of the survival time or time to failure, X_i denotes an independent variable ('covariate') i with coefficient β_i. In the AFT model, $\exp\sum\beta_i X_i$ is an *acceleration factor*. The effect of the covariates is to extend or shrink the length of survival time by a constant relative amount $\exp\sum\beta_i X_i$. If $\exp\sum\beta_i X_i > 1$ survival time is increased, and if $\exp\sum\beta_i X_i < 1$ survival time is decreased (Bradburn et al., 2003).

We measure the marginal effect of an individual explanatory variable in the AFT model using its 'time ratio'. The time ratio is calculated as the exponential of the estimated coefficient of a variable (Bradburn et al., 2003; Espenlaub et al., 2012). A positive coefficient implies a time ratio above one, indicating that an increase in the covariate increases the survival time. More specifically, the time ratio measures the extent to which changes in the independent variables speed up or slow down the occurrence of delisting. Given a one-unit increase in the independent variable, survival time increases by a multiple equal to the time

ratio. As AFT is a parametric model, it is necessary to specify the distribution of the baseline survival function. We use the likelihood ratio or Wald test to determine the appropriate distribution in case of nested models, such as comparing the Weibull against the exponential distribution, or the gamma against the Weibull or log-normal distributions. The AIC is the appropriate test to choose the best-fitting model in the case of a non-nested model between the log-logistic and the log-normal distribution. The AIC is defined as:

$$AIC = -2LnL + 2(k + c) \qquad (4)$$

where L is the maximized value of the likelihood function, k is the number of model covariates and c is the number of model-specific distributional parameters. Either of the log-normal or log-logistic models has two distributional parameters *i.e. c=2*. The AIC test shows that log-normal distribution has lower AIC value than the log-logistic model, and hence we select the log-normal distribution.

For robustness check and comparative purposes, we also estimate the Cox (1972) Proportional Hazard model as applied by, Carpentier and Suret (2011) and Espenlaub et al. (2012). The Cox (1972) model is a non-parametric model that requires no assumption about the failure distribution. The dependent variable in the Cox (1972) model measures the risk of failure (by contrast, the dependent variable in the AFT model is the natural logarithm of survival time). In the Cox (1972) model, the marginal effect of an independent variable is measured by the *so-called* hazard ratio (calculated as the exponential coefficient from the Cox (1972) model). A positive (negative) coefficient implies a hazard ratio of greater (less) than one and indicates that an increase in the covariate increases (reduces) the failure rate. In comparing the results of the AFT and Cox (1972) models, we expect that a given independent variable with a positive sign and a time ratio above one in the AFT model will have a negative coefficient and a hazard ratio of less than one in the Cox (1972) model (due to the structural differences between the two models).

The main variables of interest included in our analysis of IPO survival below are the legality index (Berkowitz et al., 2003) and three interaction terms of legality with each one of three measures of certification: venture-capital backing, underwriter reputation and auditor reputation. As a further indicator of the legal system, we include an indicator that the country's legal origin is Common Law (as opposed to Civil Law). We also include measures of return conditions in the IPO market (Hot Issue) and stock market (Market_return). Finally, we control for a broad range of firm and issue characteristics. Appendix A1 summarises the definitions and sources of our variables.

4. Empirical findings

4.1 Descriptive statistics

Table 1 presents descriptive statistics on the variables used in our analysis. Appendix A1 summarises the definitions and sources of our variables. Panel A reports numbers of surviving and delisted (failed) IPOs by year for the pooled sample and broken down by regions. The four regions are: North America (Canada and U.S.), Europe (including the U.K.), BRICS (Brazil, Russia, India, China and South Africa), and Asia-Pacific (including Australia and New Zealand). Appendix A2 lists the countries and summarizes country-by-country sample size, numbers of surviving and delisted (failed) stocks alongside the county's legality index.

The figures in Panel A of Table 1 show substantial differences in IPO survival across regions: the percentage of surviving IPOs (of total IPOs) ranges widely with the BRICS countries showing the highest percentage of survivors, followed by Asia-Pacific, then North America, and finally Europe with the lowest percentage. Based on the whole sample period, only 62 percent of IPOs survive in Europe compared to 93 percent in the BRICS countries. The North American figure of 75 percent is similar to that of the pooled sample comprising

all 32 countries (78 percent). This ranking of regions in terms of the percentages of surviving IPOs holds for each of the IPO years.

Due to the unequal lengths of the tracking windows (from IPO until the year of delisting or March 2015), the figures in Panel A of Table 1 are not comparable across IPO years. To resolve this issue, we next present comparable figures, specifically the non-parametric survival rates estimated using the Kaplan-Meier method outlined in Section 3. Panel B of Table 1 reports survival rates over three and five years post-listing for the pooled sample and separately for each of the four regions. The survival rate for the pooled sample ranges between 87 percent (for the IPO firms listed in 2004) and 91 percent (IPOs listed in 2003) over three-years post-listing and between 69 percent (IPOs in 2000) and 88 percent (IPOs in 2008) over five-years. Three-year survival rates in North-America are similar to those for the pooled sample ranging from 81 percent (for IPOs in 2004-5) to 79 percent (for IPOs in 2000). However, over the longer five-year window, North American survival rates are substantially lower than for the pooled sample, ranging from 62 percent (for IPOs in 2000) to 85 percent (for IPOs in 2007). These figures correspond to failure rates of 15-38 percent and are comparable to failure rates (ranging between 20-35 percent) reported for North-American IPOs in previous studies (Hensler et al., 1997; Jain and Kini, 2000; Jain et al., 2008).

Survival rates in Europe are particularly low, and the drop-off in listings between three to five years post-IPO is particularly severe. The three-year survival rates in Europe range from 70 to 84 percent, while five-year rates drop to as low as 47 percent (for IPOs 2003). However, in more recent years five-year survival rates have increased substantially to 75-78 percent (for IPOs in 2007-8). By contrast, the BRICS and Asia-Pacific regions show consistently high survival rates over the medium (3-year) term and in the Asia-Pacific region also over the longer (5 year) term.

Panel C shows univariate analyses of survivors and delisted stocks. For the sample as a whole and for all regions except North America, the means of the legality index are statistically significantly higher for the survivors than for delisted stocks (at significance levels of 10 percent and above). The lack of significant difference in North America is due to the low variation in legality across both time and countries within this region (comprising the U.S. and Canada). For the full sample and all regions besides North America, the values of the binary legal-origin (Common Law) indicator show that greater proportions of stocks survive in Common Law countries than in Civil Law countries. (There is obviously no variation in the Common Law indicator across North American countries.). In sum, our univariate analysis suggests a positive impact of the legal system (in terms of legality and of common law origin) on IPO survival across all four regions and across our full, global sample.

In the full sample, and separately in each region, the proportions of delisted stocks are significantly higher among stocks issued during hot periods in the IPO market (Hot Issue) than among those issued during cold markets. By contrast, conditions in the wider stock market (Market_return) appear to have no significant univariate relation with IPO survival.

Two of the three measures of IPO certification: VC Backing and Underwriter Reputation, have statistically significantly higher means for surviving stocks than for delisted stocks in full sample and all four regional subsamples. By contrast, Auditor Reputation appears positively related with IPO survival for the full sample and in North America, but has an insignificant, negative association with survival in the other regions.

The table also shows univariate analyses for the control variables used in our multivariate analysis. For North American IPOs all the explanatory variables are significantly different between surviving and delisted stocks, and most variables are on average higher for surviving stocks. The significance and signs of differences in means are broadly consistent

with previous evidence, and indicate the need to control for these variables in our multivariate analysis. Most of the directions of the effects of the control variables on IPO survival are qualitatively the same across all four regions.

[Please insert Table 1 about here]

In sum, Table 1 demonstrates substantial regional variations in IPO survival, and the univariate analysis in Panel C of Table 1 indicates a number of significant determinants of IPO survival including our variables of interest: Legality Index, Common Law and Hot Issue markets. Next, we use multivariate analysis (AFT model) to examine whether the joint effects of these variables and the extent to which these variables explain the observed variation in IPO survival. The correlation matrix in Appendix A3 suggests there is no multicollinearity among our explanatory variables.

4.2 Multivariate analysis

To assess the direct and indirect impact of legality on IPO survival, we estimate an AFT model of IPO survival. To assess the direct impact of the legal system on IPO survival we include the *Legality Index* (Berkowitz et al., 2003). To assess the indirect impact of legality on survival through its effect on IPO certification, we include interaction terms between *Legality* and each of three certification measures: binary indicators of venture-capital backed IPOs, underwriter reputation and auditor reputation. To further measure the quality of the legal system, we include the *Common Law* legal-origin indicator. In addition, we include measures of market conditions in the IPO market (*Hot Issue*) and the stock market (*Market_return*). Our model controls for a broad range of firm and issue characteristics including issue year and industry. Appendix A1 summarises the definitions and sources of our variables. Table 3 reports the results of the AFT model based on the full (or 'pooled') 32-country sample of 7,627 IPOs and separately for each of the four regions. Robust standard errors are clustered by country.

Consistent with our expectations, we find that the quality of the legal system (measured by the *Legality Index* and *Common Law*) has a significant positive impact on IPO survival. For the pooled sample and in each of the four regions, the coefficient of *Legality* is positive and statistically significant at 5 percent. The time ratio of 1.1712 for the pooled 32-country sample indicates that a one-unit increase in the Legality Index increases survival times by 17.12 percent. A one-unit increase in the *Legality Index* represents an improvement in the legal system equivalent to the difference in *Legality* between the U.S. (20.85) and Switzerland (21.91); see Appendix A2.

The magnitude of the impact of the legal system on IPO survival is similar (though somewhat smaller) when examining each of the four regions separately. In the Asia-Pacific region, *Legality* increases survival times by 13 percent, in the BRICS countries by 10 percent and in Europe by 8 percent. In North America, the corresponding increase is only 5 percent, but this is due to the small amount of variation in *Legality* between Canada and the U.S.: For either country, the average value of the Legality Index over our sample period is around 21 (see Appendix A2.).

Examining the impact of the legal origin of countries, we find for the pooled sample a positive coefficient on *Common Law* of 0.33 that is statistically significant at 5 percent and corresponds to a time ratio of 1.39. This indicates that IPOs in common law countries have nearly 40 percent longer survival times than those in civil law countries. Within the separate regions, the impact of Common Law on IPO survival is even more pronounced: IPOs in common law countries have survival times that are nearly twice those in civil law countries in Europe and the Asia-Pacific region, and across BRICS countries they are three times longer.

Examining the impact of IPO market conditions on IPO survival, we find that *Hot Issue markets* (measured by the average levels of initial returns of issues prior to a given IPO) have significantly negative impact on IPO survival times: IPOs that are issued in countries

with hot IPO markets, or during hot-issue periods, have comparatively poorer survival prospects. The coefficient of *Hot issue markets* is statistically significant at 5 percent for the 32-country pooled sample and for each of the regional subsamples. The time ratio of 0.9746 for the pooled sample indicates that a one-percentage point increase in the average initial returns of prior IPOs reduces survival time by just over 2.5 percent. The impact of *Hot issue markets* in North America is similar to that in the pooled 32-country sample. The strongest impact of *Hot issue markets* is found in the Asia-Pacific region, followed by Europe, where a one-percentage point increase in pre-IPO average initial returns reduces IPO survival time by between 4-5 percent. The smallest impact (close to no effect with a time ratio of 0.9935) occurs in the BRICS region. Our finding of a negative impact of *Hot Issue markets* is consistent with previous single-country results in the U.S. and U.K. (Demers and Joos, 2007; Bhattacharya et al., 2010; Espenlaub et al., 2012). Our finding that this effect varies considerably across regions extends the insights of these single-country studies.

[Please insert Table 2 about here]

Next, we use our reduced sample (with available data on the relevant additional VC, underwriter and auditor variables) to study the impact on IPO survival of IPO certification by underwriters, auditors and venture capitalists. The results for the *Legality Index* remain qualitatively unchanged confirming the significant positive impact of better legal systems on IPO survival. The *Common Law* indicator remains qualitatively unchanged and statistically significant in each of the regions (except North America) but it becomes insignificant in the pooled 32-country sample (with a p-value of only 0.23). The impact of *Hot Issue markets* also remains broadly comparable; in fact, its impact becomes more significant and pronounced than in Table 3, with a higher significance level of 1 percent for the pooled sample, and time ratios indicating a stronger effect particularly for North America.

Examining the certification measures, we find that VC backing and underwriter reputation impact IPO survival positively and significantly (at 5 percent) in all regions and for the pooled sample. This is consistent with single-country studies of the impact on IPO survival of underwriter and venture-capital certification (Jain and Kini 1999, 2000, Kooli and Meknassi 2007). Certification through reputable underwriters is similar in all four regions (and in the pooled sample as a whole) but plays a slightly stronger role in North America. In North America, IPOs that are underwritten by reputable banks have survival times that are almost 23 percent longer than those without reputable underwriters. The corresponding increase in survival times in other regions ranges from 11 to 18 percent.

The positive impact of VC backing (observed in all regions) is particularly strong in North America where the survival times of VC-backed IPOs are more than twice those of unbacked IPOs. In the BRICS countries, the increase in survival times through VC backing is 40 percent, while in Europe and in the Asia-Pacific region survival times increase by just 11-13 percent. Much research has focused on VC backing of IPOs in North American practice and research, but VC certification of IPOs seems economically less significant in other regions. In fact, some European findings suggest that the impact of VC backing on IPO survival may be small or insignificant; and in some countries and time periods, VC backing may even have a negative impact (Manigart et al., 2002; Vismara et al., 2012).

We find comparatively less evidence for IPO certification by auditors. Auditor reputation appears to have no significant impact on IPO survival across the pooled sample in Table 3 (although the variable does become significant at 10 percent in Table 4 below). In Table 3, *Auditor Reputation* is statistically significant at the 10 percent level only for IPOs in North America and among the BRICS countries. In economic terms, the effect is small in North America (with reputable auditors increasing IPO survival times by just 3 percent). In BRICS countries, by contrast, reputable auditors increase survival times by *circa* 30 percent.

[Please insert table 3 about here]

Based on our findings on the separate impacts on IPO survival of the legal system and of certification (in Tables 2 and 3), we next examine the interaction effect between the legal system and certification by VC backers, underwriters and auditors. Table 4 presents the results of AFT models that include interaction terms between '*High legality*' and each of the three certification measures: VC backing, underwriter reputation and auditor reputation. We control for regional effects using dummies and robust standard errors are clustered by country.[11] *High legality* is a binary indicator for countries with Legality index of above the median of Legality index of 19.318 (midway between the values of Hong Kong and Singapore). The coefficients of each of the three interaction terms between *High Legality* and the certification variables are positive and statistically significant (at 5 percent for underwriter and auditor reputation, and at 10 percent for VC backing). These positive signs are evidence that the quality of the legal system reinforces the effect of certification by VC investors and by reputable underwriters and auditors. All three interaction effects are economically significant. The time ratio on the interaction of *High Legality* with *VC Backing* is 1.1641, while the time ratio of the (un-interacted) *VC Backing* indicator is 1.1465. This indicates that VC-backed IPOs remain listed for periods that are nearly 15 percent longer than those of unbacked IPOs in countries that have legal systems of below-median quality. By contrast, in countries that have legal systems of *above*-median quality, this effect of VC certification is amplified and more than doubled to 31.06 (= 14.65 + 16.41) percent.

The corresponding results for underwriter reputation show that IPOs certified by reputable underwriters in high-quality legal systems have survival times that are not just 5 percent longer than uncertified IPOs, as in countries with lesser quality legal systems, but 14.3 percent (4 .8 plus 9.5 percent) longer. This suggests that better legal institutions almost

11 Our results are qualitatively unchanged if we use country dummies instead of regional dummies.

triple the impact of underwriter certification. In the case of auditor certification, a high-quality legal system adds an impressive 39 percentage points. Thus, certification by reputable auditors (*Auditor Reputation*) increases IPO survival times by (5 + 39) percent in countries with above-median legal systems. This indicates that the effectiveness of auditor certification of IPOs depends almost entirely on a well-functioning legal system.

Alongside the significant interaction effects, there remains a significant, positive direct impact of *High Legality* on IPO survival (as the coefficient of the un-interacted legality indicator remains positive and significant at 5 percent in all models in Table 4). The time ratios on *High Legality* range from 2.02 to almost 2.6 indicating that IPOs in countries with legal systems of above-median quality have between two to 2.6 times longer survival times than IPOs in other countries.

[Please insert table 4 about here]

4.3 Robustness Checks

We test the robustness of our results using a number of variations to our research design. To examine whether our results are sensitive to the distributional assumptions made in using the AFT model, we re-estimate the model in Table 4 using the non-parametric Cox (1972) model. We find our results are qualitatively unchanged. The results of Cox (1972) models estimated using the pooled sample of all 32 countries is shown in Appendix A5. In interpreting the results, it needs to be borne in mind that a variable with a positive impact on survival time (*i.e.*, a positive coefficient in the AFT model) will have a negative impact on the hazard of delisting (*i.e.* a negative coefficient in the Cox (1972) model).

Our approach to classifying M&A delistings in the analysis presented in Tables 1-4 above classifies M&A delistings of poorly performing companies as failures because for investors such M&As are likely to involve similar wealth effects as delistings for negative reasons (such as liquidation). The approach in our analysis above treats M&As of well-

performing companies as censored survivors because such delistings are likely to imply lower or no losses to investors and other interested parties. Alternately, it may be argued that all delistings are negative news, and should be classified as failures. Also, our earlier approach relies on a reasonably accurate measurement of the pre-M&A target company performance. Following previous studies we examine the robustness of our results to alternative treatments of M&A delistings (Howton, 2006; Espenlaub et al., 2012). Specifically, we re-classify all M&A delistings irrespective of firm performance as failures (non-survivors). Using this approach, as reported in Appendix A6, we find that all our results on the impact of legality, certification and IPO market conditions remain qualitatively unchanged.

5. Conclusion

Around the world, investors, practitioners, regulators and policy makers seek to understand whether, when and why recently listed stocks are delisted rather than continue trading. Based on the theoretical developments and empirical findings of the law and finance literature, we argue that legal systems that effectively protect investors' interests, enforce contracts and control the information and agency costs of external financing, not only encourage companies to list their stocks (as shown in previous studies) but also ensure that IPO companies are able and willing to stay listed.

Using data on 7,627 IPOs issued during 2000-2008 in one of 32 countries, our empirical findings confirm that better legal systems significantly increase the length of time IPO stocks remain listed (*i.e.*, IPO survival times). Our multivariate analysis controls for a wide range of other determinants of IPO survival and is robust to various changes in research design. Our results show that a one-unit increase in the Legality Index constructed by Berkowitz et al. (2003), *i.e.*, an increase in the Legality Index from its value in the U.S. (20.85) to that in Switzerland (21.91), increases survival times by over 17 percent. We find that IPOs in countries with legal systems of above-median quality (*i.e.*, with values of the

Legality Index above that of Hong Kong) have between two to 2.6 times longer survival times than IPOs in countries with below-median legality. Our results show that IPOs in countries with legal institutions originating in the UK common law system have nearly 40 percent longer survival times than those with civil law systems.

We further examine whether better legal systems have an indirect impact on IPO survival by amplifying the effectiveness of IPO certification by VC investors and reputable underwriters and auditors. Our results show that legal systems of above-median quality significantly amplify the effect of IPO certification on IPO survival: doubling the certification effect in the case of VC certification, and tripling it in the case of underwriter certification; and in the case of auditor certification, we find that its effectiveness depends almost entirely on a well-functioning (above-median) legal system.

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Table 1: Descriptive statistics. Panel A shows the annual distribution of IPOs that survived and failed during 2000 through 2008 for the pooled sample of all 32 countries together, and separately for each of the four regions: North America, Europe, BRICS, and Asia-Pacific. Panel B shows survival rates of IPOs over three years and five years post listing estimated non-parametrically using the Kaplan-Meier method. Panel C shows the means for the surviving and delisted (failed) IPOs. The detailed definitions of the variables are in Appendix A1. We show t-tests to assess the significance of the differences in means between surviving and delisted IPOs. ***,**,* indicates significance at 1%, 5% and 10% levels, respectively.

Panel A	Pooled sample		North America		Europe		BRICS		Asia-Pacific	
IPO Years	Survived (#)	Delisted (#)	Survived (#)	Delisted (#)	Survived (#)	Delisted (#)	Survived (#)	Delisted (#)	Survived (#)	Delisted (#)
2000	662	295	93	21	191	169	109	11	269	94
2001	394	169	42	21	79	80	42	3	231	65
2002	394	143	44	26	49	38	59	6	242	73
2003	464	123	46	20	27	31	71	2	320	70
2004	766	248	106	49	110	77	125	7	425	115
2005	766	236	110	55	121	71	105	11	430	99
2006	945	223	127	36	200	101	223	13	395	73
2007	1116	194	181	32	225	73	299	34	411	55
2008	433	56	73	20	43	12	121	4	196	20
Total	5940	1687	822	280	1045	652	1154	91	2919	664

Panel B	Kaplan-Meier Survival rates									
	Pooled sample		North-America		Europe		BRICS		Asia-Pacific	
IPO Years	3-Years	5-Years	3-Years	5-Years	3-Years	5-Years	3-Years	5-Years	3-Years	5-Years
2000	0.8871	0.6917	0. 7937	0.6286	0.7944	0.5306	0.9146	0.7410	0.9917	0.9083
2001	0.9076	0.6998	0.8889	0.6667	0.8302	0.4969	0.9358	0.7804	0.9556	0.9333
2002	0.9065	0.7364	0.8714	0.6970	0.8118	0.5765	0.9206	0.7683	0.9846	0.9077
2003	0.9097	0.7905	0.8788	0.8158	0.7069	0.4655	0.9282	0.8205	0.9863	0.9726
2004	0.8724	0.7577	0.8117	0.6883	0.7043	0.5914	0.9184	0.7885	0.9924	0.9470
2005	0.8743	0.7645	0.8121	0.6667	0.7813	0.6302	0.9168	0.8129	0.9224	0.9052
2006	0.8767	0.8091	0.8282	0.7791	0.7973	0.6645	0.9060	0.8440	0.9534	0.9449
2007	0.9019	0.8525	0.8945	0.8532	0.8389	0.7550	0.9206	0.8820	0.9369	0.8979
2008	0.8978	0.8855	0.8280	0.7849	0.8000	0.7818	0.9120	0.9074	0.9920	0.9680
Total	0.8927	0.7764	0.8653	0.7311	0.7850	0.6103	0.9192	0.8161	0.9684	0.9317

Table 1 continues

Panel C	Pooled sample			North-America			Europe			BRICS			Asia-Pacific		
Variables	Survived	Delisted	Diff.	Survived	Delisted	Diff.	Survived	Delisted	Diff.	Survived	Delisted	Diff.	Survived	Delisted	Diff.
Legal system															
Legality index	19.58	18.25	1.33**	21.02	20.95	0.06	20.08	19.53	0.54**	14.61	14.22	0.39**	19.16	18.61	0.54**
Common law	0.62	0.47	0.15**	1.00	1.00	-	0.56	0.31	0.24**	0.28	0.11	0.17*	0.61	0.46	0.15*
Market conditions															
Hot issue market	26.83	34.88	-8.05**	16.94	20.12	-3.18**	12.68	17.01	-4.33*	63.87	62.86	1.01	35.54	35.69	-0.15*
Market_return	0.71	0.42	0.29	0.41	0.73	-0.32	0.29	0.13	0.16	1.83	2.13	-0.31	0.50	0.33	0.18
Certification															
VC Back	0.25	0.20	0.04**	0.26	0.20	0.06**	0.34	0.30	0.05**	0.49	0.41	0.08**	0.14	0.08	0.06**
Underwriter Rep	0.35	0.26	0.09**	0.30	0.24	0.06**	0.45	0.38	0.06**	0.47	0.40	0.07**	0.21	0.12	0.09**
Auditor Rep	0.39	0.30	0.09**	0.38	0.33	0.05**	0.45	0.48	-0.03	0.25	0.30	-0.05	0.15	0.23	-0.08
Firm specific, control variables															
Day one ret.	34.96	26.53	8.43**	21.56	12.68	8.89**	10.98	19.73	-8.75	64.46	55.35	9.11**	35.68	35.10	0.58
Mkt Cap.	648.39	460.96	187.42**	841.16	451.94	389.21**	742.17	396.13	346.04**	1546.48	1175.02	371.46**	430.56	205.14	225.42**
Total Assets	983.10	403.25	579.85**	1296.99	638.58	658.41**	1864.40	311.41	1552.99**	1705.41	675.92	1029.49**	356.82	293.10	63.72*
EBIT to TA	6.06	2.10	3.96**	5.62	0.6	-5.00**	1.78	-2.71	4.49**	13.56	12.54	1.02*	8.34	6.40	1.94**
Sales to TA	90.73	79.68	11.05**	54.36	45.15	9.21**	87.46	80.72	6.74*	88.89	84.61	4.28	102.93	92.54	10.39*
MTB	3.42	3.76	-0.34*	4.14	3.25	0.88*	4.30	4.32	-0.02	3.13	3.97	-0.84**	3.02	3.41	-0.39*
Debt to TA	22.96	25.67	-2.71*	23.31	19.55	3.76*	25.28	30.79	-5.51**	26.12	24.00	2.12	20.77	23.44	-2.68*
Growth_TA	48.68	41.95	6.72*	61.76	50.85	10.91*	53.10	58.02	-4.93	43.30	40.41	2.89	31.82	39.72	-7.89
Age	14.05	10.75	3.29**	10.07	8.23	1.84**	14.37	10.53	3.85**	13.88	9.48	4.41**	15.23	12.18	3.05**
Insider own	54.71	50.41	4.30**	46.17	40.14	6.03**	53.04	48.96	4.08**	62.33	60.10	2.23*	55.53	55.81	-0.28
Cash to TA	40.00	41.80	-1.79*	57.69	47.34	10.34**	38.42	40.27	-1.85	36.33	29.44	6.89**	40.10	41.87	-1.77**
Foreign List	0.17	0.16	0.00	0.11	0.04	0.08**	0.23	0.18	0.04	0.20	0.13	0.06*	0.15	0.19	-0.05

Table 2: Results for the AFT model using the logarithm of the survival time as a dependent variable and set of IPO characteristics, quality of the legal system and market conditions as explanatory and control variables. IPO firms are classified as survivors if they continue to trade on the stock market or move to a different market. M&A delistings of well-performing companies are classified as censored survivors if they rank above median based on all of the following three company performance measures in the year prior to the M&A delisting: cash to total assets, total liability to total asset and operating income to total asset. The results are reported for the pooled sample of all 32 countries together, and separately for each of the four regions: North America, Europe, BRICS, and Asia-Pacific. We control for year and industry fixed effects, and robust standard errors are clustered by country. For the detailed definition and construction of the variables, please refer to the Appendix A1. We report the coefficients and the time ratios (TR). ***,**,* indicate significance at 1%, 5% and 10%, respectively.

	Expected	Pooled sample		North-America		Europe		BRICS		Asia-Pacific	
Variables	Sign	Coeff.	TR.	Coeff.	TR.	Coeff.	TR.	Coeff.	TR.	Coeff.	TR.
Legal system											
Legality Index	(+/-)	0.1580**	1.1712	0.0459**	1.0470	0.0722**	1.0749	0.0946**	1.0992	0.11758**	1.1248
Common Law	(+/-)	0.3306**	1.3918	—	—	0.6111**	1.8425	1.0860**	2.9624	0.6518***	1.9190
Market conditions											
Hot issue markets	(-)	-0.0257**	0.9746	-0.0301**	0.9703	-0.0409**	0.9599	-0.0065**	0.9935	-0.0498**	0.9514
Market_returns	(+)	0.0059	1.0059	0.0517	1.0531	0.0082	1.0082	0.0143	1.0144	0.0248*	1.0251
Firm specific control variables											
Day one ret.	(+/-)	0.0016**	1.0016	0.0031*	1.0031	0.0010	1.0010	0.0033**	1.0033	0.0013	1.0013
Ln_Mkt Cap.	(+)	0.0277**	1.0281	0.1390**	1.1491	0.0868***	1.0907	0.0253*	1.0256	0.0731**	1.0758
EBIT to TA	(+)	0.0012**	1.0012	0.0091**	1.0091	0.0027**	1.0027	0.0066**	1.0066	0.0040**	1.0040
Sales to TA	(+)	0.0008	1.0008	0.0009	1.0009	0.0002	1.0002	0.0012	1.0012	0.0006	1.0006
MTB	(+/-)	-0.0081*	0.9919	-0.0201	0.9801	0.0031	1.0031	-0.0469	0.9542	-0.0002	0.9998
Debt to TA	(-)	-0.0007**	0.9993	-0.0008	0.9992	-0.0002	0.9998	-0.0008	0.9992	-0.0037**	0.9963
Growth_TA	(+/-)	0.0005	1.0005	0.0003	1.0003	0.0003	1.0003	0.0009	1.0009	0.0006	1.0006
Constant		6.7029***		1.4640***		4.3259**		6.1548***		6.0355**	
Year		Included		Included		Included		Included		Included	
Industry		Included		Included		Included		Included		Included	
Pseudo R-square		0.155		0.112		0.122		0.091		0.141	
No of Obs.		7627		1102		1697		1245		3583	

Table 3: Results of the AFT model using the subsample of IPO firms with data available for the certification measures (VC backing, underwriter and auditor reputation). IPO firms are classified as survivors if they continue to trade on stock market or moved to a different market. M&A delistings of well-performing companies are classified as censored survivors if they rank above median based on all of the following three company performance measures in the year prior to the M&A delisting: cash to total assets, total liability to total asset and operating income to total asset. The results are reported for all the pooled sample (of all 32 countries together), and separately for North America, Europe, BRICS and Asia-Pacific. We control for year and industry fixed effects, and robust standard errors are clustered by country. For the detailed definition and construction of the variables, please refer to Appendix A1. We report the coefficients and the time ratios (TR). ***,**,* indicate significance at 1%, 5% and 10%, respectively.

Variables	Expected Sign	Pooled sample		North-America		Europe		BRICS		Asia-Pacific	
		Coeff.	TR.	Coeff.	TR.	Coeff.	TR.	Coeff.	TR.	Coeff.	TR.
Legal system											
Legality Index	(+/-)	0.1866**	1.2051	0.0476**	1.0488	0.0854**	1.0892	0.1065**	1.1124	0.2768**	1.3189
Common Law	(+/-)	0.1568	1.1698	—	—	0.6083**	1.8373	0.6100**	1.8404	0.5174**	1.6777
Market condition											
Hot issue Markets	(-)	-0.0462***	0.9549	-0.1260**	0.8816	-0.0318**	0.9687	-0.0148*	0.9853	-0.0531**	0.9483
Market_returns	(+)	0.0165	1.0166	0.0263	1.0266	0.0212	1.0214	0.0168	1.0169	0.0485	1.0497
Certification											
VC Back	(+)	0.0378**	1.0385	0.7078**	2.0295	0.1254**	1.1336	0.3396**	1.4044	0.1082**	1.1143
Underwriter Rep	(+)	0.1482**	1.1597	0.2030**	1.2251	0.1676**	1.1825	0.1191**	1.1265	0.1052**	1.1109
Auditor Rep	(+)	0.0174	1.0176	0.0265*	1.0269	0.0333	1.0339	0.2464*	1.2794	0.0598	1.0616
Firm specific control variables											
Day one ret.	(+/-)	0.0017***	1.0017	0.0048**	1.0048	0.0004	1.0004	0.0010	1.0010	0.0008*	1.0008
Ln_Mkt Cap.	(+)	0.0895***	1.0936	0.0378**	1.0385	0.1273**	1.1358	0.0384**	1.0391	0.0253**	1.0256
EBIT to TA	(+)	0.0012**	1.0012	0.0032**	1.0032	0.0020**	1.0020	0.0179**	1.0181	0.0011**	1.0011
Sales to TA	(+)	0.0002	1.0002	0.0006	1.0006	0.0002	1.0002	0.0003	1.0003	0.0007	1.0007
MTB	(+/-)	-0.0038	0.9962	0.0126	1.0127	0.0098	1.0098	-0.0685**	0.9338	0.0040	1.0040
Debt to TA	(-)	-0.0001	0.9999	-0.0066*	0.9934	0.0011	1.0011	-0.0034	0.9966	-0.0039*	0.9961
Growth_TA	(+/-)	0.0006	1.0006	-0.0005	0.9995	0.0004	1.0004	0.0003	1.0003	0.0001	1.0001
Ln_Age	(+)	0.2280***	1.2561	0.1779***	1.1947	0.0739**	1.0767	0.4111**	1.5085	0.1551**	1.1678
Insider own	(+/-)	0.0016*	1.0016	0.0008*	1.0008	0.0026*	1.0026	0.0106**	1.0107	0.0027*	1.0027
Cash to TA	(+/-)	0.0043**	1.0043	0.0077**	1.0077	0.0024*	1.0024	0.0004	1.0004	0.0018	1.0018
Foreign List	(+)	0.0444	1.0454	1.1985**	3.3151	0.0256	1.0259	1.5124*	4.5376	0.0903	1.0945
Constant		6.1687**		2.6561**		4.0593**		7.8086**		6.0481**	
Year		Included		Included		Included		Included		Included	
Industry		Included		Included		Included		Included		Included	
Pseudo R-square		0.141		0.117		0.121		0.098		0.131	
No of Obs.		4755		711		1016		784		2244	

Table 4: Results of AFT model using the interaction terms between legality and the certification measures (VC backing, and underwriter and auditor reputation). IPO firms are classified as survivors if they continue to trade on the stock market or move to a different market. M&A delistings of well-performing companies are classified as censored survivors if they rank above median based on all of the following three company performance measures in the year prior to the M&A delisting: cash to total assets, total liability to total asset and operating income to total asset. The results are reported for all 32 countries together. We control for year, industry and regional dummies, and robust standard errors are clustered by country. For the detailed definition and construction of the variables, please refer to Appendix A1. We report the coefficients and the time ratios (TR). ***,**,* indicate significance at 1%, 5% and 10%, respectively.

Variables	Expected Sign	Pooled sample		Pooled sample		Pooled sample	
		Coeff.	TR.	Coeff.	TR.	Coeff.	TR.
Legal system							
High legality x VC back	(+/-)	0.1520*	1.1641				
High legality x Underwriter Rep	(+/-)			0.0911**	1.0953		
High legality x Audit Rep	(+/-)					0.3292**	1.3899
High Legality	(+/-)	0.7048**	2.0234	0.7317**	2.0786	0.9413**	2.5632
Common Law	(+/-)	0.1898	1.2090	0.1820	1.1996	0.1941	1.2142
Market condition							
Hot issue Market	(-)	-0.0355**	0.9652	-0.0351**	0.9655	-0.0354**	0.9653
Market_returns	(+)	0.0229	1.0231	0.0226	1.0229	0.0235	1.0238
Certification							
VC Back	(+)	0.1367**	1.1465	0.0396**	1.0404	0.0411**	1.0419
Underwriter Rep	(+)	0.0134**	1.0135	0.0467**	1.0478	0.0082**	1.0083
Auditor Rep	(+)	0.1610*	1.1747	0.1609*	1.1746	0.0491*	1.0504
Firm-specific							
Day one ret.	(+/-)	0.0015**	1.0015	0.0015**	1.0015	0.0015**	1.0015
Ln_Mkt Cap.	(+)	0.1093**	1.1155	0.1103**	1.1166	0.1064**	1.1123
EBIT to TA	(+)	0.0005**	1.0005	0.0005**	1.0005	0.0004**	1.0004
Sales to TA	(+)	0.0008	1.0008	0.0007	1.0007	0.0005	1.0005
MTB	(+/-)	-0.0015	0.9985	-0.0015	0.9985	-0.0012	0.9988
Debt to TA	(-)	-0.0006	0.9994	-0.0007	0.9993	-0.0003	0.9997
Growth_TA	(+/-)	0.0003	1.0003	0.0003	1.0003	0.0003	1.0003
Ln_Age	(+)	0.2331**	1.2625	0.2331**	1.2625	0.2315**	1.2605
Insider own	(+/-)	0.0039*	1.0039	0.0035*	1.0035	0.0037*	1.0037
Cash to TA	(+/-)	0.0039**	1.0039	0.0038**	1.0038	0.0039**	1.0039
Foreign List	(+)	0.0168	1.0169	0.0186	1.0188	0.0119	1.0119
Constant		2.8811**		2.9020**		3.0429**	
Year		Included		Included		Included	
Industry		Included		Included		Included	
Region		Included		Included		Included	
Pseudo R-square		0.154		0.151		0.138	
No of Obs.		4755		4755		4755	

Appendix A1: Variable definitions and sources

Variables / acronym	Definition
Legality Index	The index of the quality of the legal system in the country of origin of the IPO firm (Berkowitz et al., 2003) in the calendar year of listing; the index is constructed as the weighted average of separate indicators, used in LaPorta et al. (1998), of the efficiency of the company's judicial system, the rule of law, corruption, the risk of expropriation, and the risk of contract repudiation. The Legality index = 0.381*(Efficiency of Judiciary) + 0.5778*(Rule of Law) + 0.5031*(Corruption) + 0.3468*(Risk of Expropriation) + 0.3842*(Risk of Contract Repudiation).
High legality	A dummy variable equal to one if the legality index is above median and zero otherwise.
Common Law	A dummy variable, which indicates whether a company originates from a common law country; Common = 1, otherwise zero. *Source: LaPorta et al. (1998).*
Hot issue market	Country-specific average initial returns of IPOs issued during the three months prior to the month of the IPO (similar to a measure used by Demers and Joos, 2007).
Market_return	Country-specific monthly average returns of the benchmark index during the three months prior to the month of the IPO issuance. *Source: Datastream*
Venture Capital Backing – VC Back	A dummy variable, which indicates whether the IPO was backed by the Venture Capital and / or Private Equity, VC Back = 1; otherwise zero. *Source: SDC Platinum Database*
Underwriter Reputation – Underwriter Rep	A dummy variable, which equals to 1 if the IPO Underwriter is in the top quartile of the underwriter ranking. Ranking is assigned based on the number of deals and total proceeds by an investment bank in a specific year and market.
Auditor – Auditor Rep	A dummy variable, which is equal to 1 if the auditor of the IPO firm is one of the Big 4 Accounting and Auditing Firms, and zero otherwise.
Initial return – Day one ret.	Logarithmic return of first – day secondary market closing price divided by the offer price, in percentage. *Source: SDC Platinum Database, Datastream / Worldscope.*
Market capitalization – Mkt. Cap	Listing-time market capitalization *i.e.* the offer size of the IPO firm, in million US$. In AFT model we use the natural logarithm of the market cap. *Source: Datastream / Worldscope.*
Total assets – TA	Listing-time total assets of the firm, in million US$. *Source: Datastream / Worldscope.*
Earnings ratio – EBIT to TA	Earnings before interest but after tax divided by total assets for the financial year when the IPO firm is listed, in percentage. *Source: Datastream / Worldscope.*
Sales ratio – Sales to TA	Total sales divided by total assets for the financial year when the IPO firm is listed, in percentage. *Source: Datastream / Worldscope.*
Market to book – MTB	Market value of equity divided by the book value of equity at the time of the IPO firm listing. *Source: SDC Platinum Database, Datastream / Worldscope.*
Leverage ratio – Debt to TA	The sum of short-term and long-term debt divided by the total assets for the financial year when the IPO firm is listed, in percentage. *Source: Datastream / Worldscope.*
Total assets growth – Growth_TA	The relative change / growth in total assets for the financial year when the IPO firm is listed compared to financial year prior listing, in percentage. *Source: Datastream / Worldscope.*
Firm age - Age	Age of the firm, in years, at the time of listing since it was founded / incorporated. In AFT model we use the natural logarithm of age. *Source: SDC Platinum Database / Worldscope / Amadeus Osiris.*
Insider ownership – Insider own	The number of shares held by the insiders (shareholders who hold 5% or more of the outstanding shares, such as managers, officers, directors, immediate families, other firms or individuals) as a percentage of the total number of outstanding common shares, at the time of listing of the IPO firm, which is (1 – public float). *Source: SDC Platinum Database / Worldscope.*
Cash holding – Cash to TA	The sum of cash and short-term investments divided by the total assets for the financial year when the IPO firm is listed, in percentage. *Source: Datastream / Worldscope.*
Foreign Listing – Foreign List	A dummy variable, which indicates whether the IPO firm was also cross-listed in foreign market, or had an ADR at the time of listing, Foreign List = 1; otherwise zero. *Source: SDC Platinum Database, Worldscope*
North-America	Canada, The U.S.
Europe	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, The U.K.,
BRICS	Brazil, China, India, Russian Federation, South Africa
Asia-Pacific	Australia, Hong Kong, Japan, Malaysia, New Zealand, Singapore, South Korea, Taiwan, Thailand

Appendix A2: Descriptive statistics by country. For each of the 32 sample countries, the table reports descriptive statistics by sample country for selected variables: the numbers of IPOs, surviving and delisted (failed) IPOs (tracked from Jan. 2000 to March 2015); origin of legal system (= 1 if common law, zero for civil law); average value of legality index during our sample period (2000-2008).

Countries	N	Survive #	Delisted #	Common law	Legality index
Australia	697	499	198	1	20.436
Austria	26	15	11	0	20.758
Belgium	40	28	12	0	20.817
Brazil	98	82	16	0	14.085
Canada	470	303	167	1	21.129
China	769	711	58	0	14.698
Denmark	27	18	9	0	21.549
Finland	13	11	2	0	21.488
France	269	198	71	0	19.667
Germany	198	135	63	0	20.442
Greece	94	69	25	0	14.908
Hong Kong	240	197	43	1	19.110
India	321	313	8	1	12.797
Italy	101	73	28	0	17.235
Japan	1006	805	201	0	20.362
Korea South	356	317	39	0	14.226
Malaysia	344	279	65	1	16.671
Netherlands	33	17	16	0	21.672
New Zealand	38	20	18	1	14.507
Norway	49	30	19	0	21.776
Portugal	8	7	1	0	17.203
Russia	45	38	7	0	17.130
Singapore	255	204	51	1	19.526
South Africa	12	10	2	1	14.507
Spain	26	16	10	0	17.130
Sweden	50	36	14	0	21.560
Switzerland	42	33	9	0	21.914
Taiwan	477	455	22	0	17.623
Thailand	170	143	22	1	17.623
Turkey	33	33	5	0	11.617
United Kingdom	688	326	362	1	20.407
United States	632	519	113	1	20.849
Total	7627	5940	1687	0.507	18.539

Appendix A3: **Correlation matrix**

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Survival	1																		
2	Day one ret.	0.0509	1																	
3	Ln_Mkt Cap.	0.0526	0.044	1																
4	EBIT to TA	0.0836	0.0985	0.1671	1															
5	Sales to TA	0.053	0.0672	0.0111	0.397	1														
6	MTB	-0.0313	0.1399	0.1804	-0.0143	0.0963	1													
7	Debt to TA	-0.0225	-0.0186	0.0694	-0.0746	0.0361	0.0265	1												
8	Growth_TA	-0.0343	0.0191	0.0124	-0.078	-0.0459	0.0596	0.0822	1											
9	Ln_Age	0.158	0.0087	0.161	0.2083	0.3176	-0.0058	0.0621	-0.1517	1										
10	Insider own	0.0769	0.0107	0.0891	0.1568	0.1562	0.0748	0.0011	-0.0222	0.1319	1									
11	Cash to TA	-0.0221	-0.0082	-0.1358	-0.3277	-0.4148	0.0304	-0.1561	0.1223	-0.3306	-0.1249	1								
12	VC Back	0.0176	0.0426	-0.0247	-0.0418	-0.1007	-0.0114	-0.0287	0.0386	-0.1143	-0.0205	0.1048	1							
13	Underwriter Rep	0.083	0.008	-0.017	-0.087	-0.1072	0.0324	-0.0212	0.0575	-0.1461	-0.0753	0.1044	0.2365	1						
14	Auditor Rep	0.0794	-0.002	-0.0047	0.0817	0.0924	0.0205	-0.0222	0.0312	-0.152	-0.0442	0.0914	0.1801	0.1907	1					
15	Foreign List	0.0106	-0.0738	0.2065	0.0349	-0.057	-0.0182	-0.0203	0.0076	0.0175	0.1277	0.0046	0.0288	-0.0156	0.016	1				
16	Legality Index	0.2058	0.1281	0.1244	0.2708	0.0661	0.1084	-0.0026	0.0547	-0.1579	0.1714	0.2809	0.0428	0.0438	0.0476	0.08	1			
17	Common Law	0.1251	-0.1583	-0.2065	-0.2051	-0.2084	0.0034	-0.0096	0.0687	-0.3293	-0.12	0.1904	-0.1182	0.0271	0.0413	0.0301	0.2776	1		
18	Hot Issue	-0.0773	-0.6358	-0.0856	-0.1071	-0.0738	-0.0465	0.0047	-0.0256	0.0597	0.0614	-0.0199	0.0689	0.0279	-0.009	-0.0736	-0.1985	-0.2454	1	
19	Market_returns	0.0322	0.1016	0.0986	0.0138	-0.0138	0.0143	0.0058	0.018	0.0197	0.0124	-0.0225	-0.0011	0.0249	-0.0175	0.0079	-0.1266	0.0184	0.1625	1

Appendix A4: Descriptive statistics for the variables used in the analysis across 32 countries for IPOs listed between 2000 and 2008. Panel A shows the results for the larger sample of 7,627 observations, while Panel B shows the results of the smaller sample with 4,755 observations (reduced due to missing observations for several variables). Non-parametric Kolmogorov-Smirnov test of equality of distribution do not reject the null hypothesis that the pooled sample (panel A) and reduced sample (panel B) are statistically different.

Panel A: Pooled sample		Mean	Std. dev.	5%	Q1	Median	Q3	95%
Legal system								
Legality index		18.54	2.68	14.09	16.67	20.36	20.44	21.13
Common law (Dummy)		0.51	0.50	-	-	1.00	-	-
Market conditions								
Hot issue market (%)		29.10	44.36	-12.64	6.28	19.79	46.33	127.14
Market_return (%)		0.65	3.73	-5.72	-1.10	0.72	2.55	6.44
Firm specific control variables								
Sales to TA (%)		88.29	86.52	0.00	16.69	70.60	127.89	262.57
MTB		3.50	4.54	0.64	1.26	2.19	3.85	10.39
Debt to TA (%)		23.55	50.02	0.00	0.26	14.63	35.59	67.51
Growth_TA (%)		43.44	81.44	-24.62	5.77	24.60	56.91	176.11
Day one ret. (%)		33.10	68.75	-26.04	0.22	12.20	41.76	165.60
Mkt Cap. (US$ Mil.)		606.96	4449.34	5.14	23.57	71.52	259.06	1857.17
Total Assets (US$ Mil.)		854.93	12555.52	0.84	9.31	30.88	102.48	1147.03
EBIT to TA (%)		5.18	19.65	-40.00	-0.28	6.63	13.53	33.09
No of Obs.	7,627							

Panel B: reduced sample		Mean	Std. dev.	5%	Q1	Median	Q3	95%
Legal system								
Legality index		18.78	2.63	14.09	16.67	20.41	20.44	21.13
Common law (Dummy)		0.60	0.49	-	-	1.00	-	-
Market conditions								
Hot issue market (%)		29.83	42.98	-16.86	5.95	18.17	42.15	111.46
Market_return (%)		0.77	3.48	-4.69	-0.90	0.62	2.34	5.96
Certification								
VC Back (Dummy)		0.33	0.47	-	-	0.00	-	-
Underwriter Rep (Dummy)		0.37	0.48	-	-	0.00	-	-
Auditor Rep (Dummy)		0.42	0.49	-	-	0.00	-	-
Firm specific control variables								
Day one ret. (%)		34.82	65.98	-24.24	0.26	11.95	41.29	159.41
Mkt Cap. (US$ Mil.)		599.15	4381.06	5.12	23.13	69.61	258.21	1821.62
Total Assets (US$ Mil.)		848.12	12552.38	0.76	8.16	29.11	101.37	1127.02
EBIT to TA (%)		4.95	20.64	-40.00	-0.25	6.31	13.31	32.22
Sales to TA (%)		87.87	85.81	0.00	15.04	69.89	126.69	261.75
MTB		4.04	4.68	0.71	1.33	2.17	4.08	11.69
Debt to TA (%)		23.25	49.01	0.00	0.21	13.03	33.78	65.98
Growth_TA (%)		45.99	83.51	-28.54	5.82	26.23	61.28	180.51
Age (Years)		12.09	17.54	0.00	1.00	6.00	14.00	50.20
Insider own (%)		53.74	24.05	7.78	36.31	58.29	71.43	88.75
Cash to TA (%)		43.70	33.67	1.22	13.14	35.66	74.14	99.07
Foreign List (Dummy)		0.24	0.43	-	-	0.00	-	-
No of Obs.	4,755							

Appendix A5: Results of a Cox (1972) model using the smaller sample of IPO firms with available data on age, insider ownership (*i.e.*, 1 - public float), cash to total asset, VC backing, underwriter and auditor reputation. IPO firms are classified as censored if they continue to trade on stock market or moved to a different market. M&A delistings of well-performing companies are classified as censored if they rank above median based on all of the following three company performance measures in the year prior to the M&A delisting: cash to total assets, total liability to total asset and operating income to total asset. The results are reported for the pooled sample, followed by North America, Europe, BRICS and Asia-Pacific. We control for year and industry fixed effects, and robust standard errors are clustered by country. For the detailed definition and construction of the variables, please refer to Appendix A1. We report coefficients and hazard ratios (HR). ***,**,* indicate significance at 1%, 5% and 10%, respectively.

	Expected	Pooled sample		North-America		Europe		BRICS		Asia-Pacific	
Variables	Sign	Coeff.	HR.	Coeff.	HR.	Coeff.	HR.	Coeff.	HR.	Coeff.	HR.
Legal system											
Legality index	(+/-)	-0.2192**	0.8032	-0.0421**	0.9588	-0.1000**	0.9048	-0.3832**	0.6817	-0.1513**	0.8596
Common Law	(+/-)	-0.1874	0.8291	—	—	-0.6434**	0.5255	-0.9966**	0.3691	-0.5923**	0.5531
Market conditions											
Hot issue	(+)	0.0542**	1.0557	0.1184**	1.1257	0.0385**	1.0393	0.0306**	1.0311	0.0623**	1.0643
Market_returns	(-)	-0.0238	0.9765	0.0232	1.0235	-0.0333	0.9672	0.0111	1.0112	-0.0618	0.9401
Certification											
VC Back	(-)	-0.0416**	0.9593	-0.6925**	0.5003	-0.1715**	0.8424	-0.0733**	0.9293	-0.1033**	0.9019
Underwriter Rep	(-)	-0.0135**	0.9866	-0.0023**	0.9977	-0.1928**	0.8246	-0.0390**	0.9618	-0.1553**	0.8562
Auditor Rep	(-)	-0.1537	0.8575	-0.1199*	0.8870	-0.0852	0.9183	-0.5055*	0.6032	-0.0504	0.9508
Firm specific control variables											
Day one ret.	(-/+)	-0.0018***	0.9982	-0.0043**	0.9957	-0.0010	0.9990	-0.0012	0.9988	-0.0007*	0.9993
Ln_Mkt Cap.	(-)	-0.1210***	0.8860	-0.0032**	0.9968	-0.1603**	0.8519	-0.0458**	0.9552	-0.0076**	0.9924
EBIT to TA	(-)	-0.0011**	0.9989	0.0010**	1.0010	-0.0014**	0.9986	0.0197**	1.0199	-0.0003**	0.9997
Sales to TA	(-)	-0.0003	0.9997	-0.0007	0.9993	0.0001	1.0001	-0.0001	0.9999	-0.0012	0.9988
MTB	(+/-)	0.0046	1.0046	-0.0069	0.9931	-0.0098	0.9902	0.0935**	1.0980	-0.0052	0.9948
Debt to TA	(+)	0.0001	1.0001	-0.0066*	0.9934	0.0011	1.0011	0.0054	1.0054	0.0034*	1.0034
Growth_TA	(+/-)	0.0005	1.0005	0.0004	1.0004	0.0003	1.0003	-0.0009	0.9991	-0.0002	0.9998
Ln_Age	(-)	-0.2595**	0.7714	-0.1921**	0.8252	-0.0911**	0.9129	-0.4963**	0.6088	-0.1869**	0.8295
Insider own	(+/-)	-0.0017**	0.9983	0.0014**	1.0014	-0.0028**	0.9972	-0.0110**	0.9891	-0.0031**	0.9969
Cash to TA	(+/-)	-0.0049**	0.9951	-0.0083**	0.9917	-0.0034**	0.9966	-0.0040	0.9960	-0.0025	0.9975
Foreign List	(-)	-0.0347	0.9659	-1.0929**	0.3352	-0.0589	0.9428	-1.5444**	0.2134	-0.0984	0.9063
Year		Included		Included		Included		Included		Included	
Industry		Included		Included		Included		Included		Included	
Pseudo R-square		0.111		0.105		0.117		0.088		0.120	
No of Obs.		4755		711		1016		784		2244	

Appendix A6: Results of AFT model using sample of IPOs with a*ll M&A classified as failures.* IPO firms are classified as survivors if they continue to trade on the stock market or are moved to a different market. Model uses reduced sample with available data on age, insider ownership (*i.e.*, 1 - public float), cash to total asset, VC backing, underwriter and auditor reputation. The results are reported for all 32 countries together, and separately for North America, Europe, BRICS, and Asia-Pacific. We control for year and industry fixed effects, and robust standard errors are clustered by country. For the detailed definition and construction of the variables, please refer to Appendix A1. We report coefficients and time ratios (TR). ***,**,* indicate significance at 1%, 5% and 10%, respectively.

	Expected	Pooled sample		North-America		Europe		BRICS		Asia-Pacific	
Variables	Sign	Coeff.	TR.	Coeff.	TR.	Coeff.	TR.	Coeff.	TR.	Coeff.	TR.
Legal system											
Legality index	(+/-)	0.1866**	1.2051	0.0648**	1.0669	0.0595**	1.0613	0.0214**	1.0216	0.2820**	1.3258
Common Law	(+/-)	0.1568	1.1698	—	—	1.0036**	2.7281	1.6019**	4.9625	0.5288**	1.6969
Market conditions											
Hot issue	(-)	-0.0462**	0.9549	-0.1466**	0.8636	-0.0499**	0.9513	-0.0888*	0.9150	-0.0505**	0.9508
Market_returns	(+)	0.0165	1.0166	0.0208	1.0210	0.0324	1.0329	-0.0369	0.9638	0.0499	1.0512
Certification											
VC Back	(+)	0.0378**	1.0385	0.5562**	1.7440	0.1764**	1.1929	0.1486**	1.1602	0.0198**	1.0200
Underwriter Rep	(+)	0.0174**	1.0176	0.0146**	1.0147	0.1954**	1.2158	0.0419**	1.0428	0.1203**	1.1278
Auditor Rep	(+)	0.1482	1.1597	0.1227*	1.1305	0.1010	1.1063	0.2814*	1.3250	0.1028	1.1083
Firm-specific control variables											
Day one ret.	(+/-)	0.0016***	1.0016	0.0042*	1.0042	0.0004	1.0004	0.0034	1.0034	0.0011	1.0011
Ln_Mkt Cap.	(+)	0.0895***	1.0936	0.0272**	1.0276	0.0336**	1.0342	0.2818**	1.3255	0.0237**	1.0240
EBIT to TA	(+)	0.0012**	1.0012	0.0014**	1.0014	0.0032**	1.0032	0.0145**	1.0146	0.0027**	1.0027
Sales to TA	(+)	0.0002	1.0002	0.0012	1.0012	0.0014	1.0014	0.0014	1.0014	0.0009	1.0009
MTB	(+/-)	-0.0038	0.9962	0.0142	1.0143	0.0087	1.0087	-0.0595**	0.9422	0.0048	1.0048
Debt to TA	(-)	-0.0001	0.9999	-0.0044	0.9956	0.0015	1.0015	-0.0069	0.9931	-0.0023	0.9977
Growth_TA	(+/-)	0.0006	1.0006	0.0016	1.0016	0.0009	1.0009	0.0024	1.0024	-0.0003	0.9997
Ln_Age	(+)	0.2280***	1.2561	0.0389**	1.0397	0.0429**	1.0438	0.2437**	1.2760	0.0742**	1.0770
Insider own	(+/-)	0.0016*	1.0016	0.0105*	1.0106	0.0032*	1.0032	0.0239**	1.0242	0.0001	1.0001
Cash to TA	(+/-)	0.0043**	1.0043	0.0101**	1.0102	0.0020*	1.0020	0.0080	1.0080	0.0002	1.0002
Foreign List	(+)	0.0444	1.0454	0.5192*	1.6807	1.0453	2.8443	0.8854*	2.4240	1.1542	3.1715
Constant		6.1687**		4.3967**		6.0024**		5.1526**		4.6827**	
Year		Included		Included		Included		Included		Included	
Industry		Included		Included		Included		Included		Included	
Pseudo R-square		0.139		0.109		0.119		0.088		0.122	
No of Obs.		4755		711		1016		784		2244	