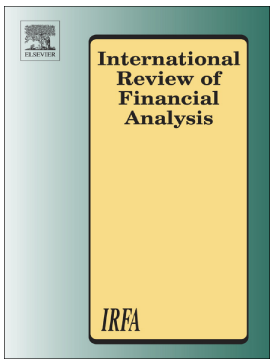

Do seasoned offerings improve the performance of issuing firms? Evidence from China

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Do seasoned offerings improve the performance of issuing firms? Evidence from China

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ABSTRACT

This study provides new evidence that the performance of issuing firms varies by issue type, based on survival analysis methods. Our non-parametric results show that firms raising capital through rights issues, and notably through cash offers, experience a greater risk of delisting following issuance, as compared to those issuing convertible bonds. Our Cox model analyses demonstrate that plain equity issues, in contrast to convertible issues, are subject to different degrees of regulatory discipline, obligations and incentives in shaping survival trajectory. Further, high ownership concentration, agency issues intrinsic to equity offerings, weak shareholders' protection, and corporate ownership and governance and corporate control development at the time of an offer markedly influence post–issue survival. Plain equity issues, notably cash offers, are strongly linked with the agency costs of free cash flows. A large and truly independent board, allied to a separation of CEO and chairman powers, acts as a primary restraint on managers' self-interested behaviour. Such a cohesive governance mechanism can restrain rent–seeking in the firm's fundraising initiative. These observations hold when we take into account information available before an issue, at the time of an issue, and after an issue, demonstrating the robustness of our findings.

JEL Classifications: C24; D82; G3; G32

Keywords: seasoned issues; agency costs; corporate ownership and governance; firm viability; survival analysis.

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1. Introduction

Why do firms perform poorly after seasoned equity offerings? Since the seminal work of Loughran and Ritter (1995) and Speiss and Affleck–Graves (1995) on underperformance following such offerings, many researchers have tried to explain this puzzle. Some find that managers issue equity at a point in time when investors are over-optimistic, leading to poor long-run performance (Alti, 2006; Cready and Gurun, 2010). Others argue that the agency costs of free cash flows associated with new issues create conflicts of interest between managers and shareholders (Johnson et al., 2000; La Porta et al., 1999) and controlling and minority shareholders, undermining market value creation (Firth et al., 2010; Slovin et al., 2000).

However, while acknowledging the value of past research, we contend that shortcomings remain. First, previous studies confine themselves to a single type of seasoned issuance without exploring a range of issue methods and their associated problems. However, seasoned issues are not homogeneous. In respect of cash offers, managers manipulate earnings eagerly and issue shares when they reach an artificially inflated price (Alti, 2006), diluting shareholders' holdings, creating conflicts between managers and investors, and constraining firm value (Ginglinger et al., 2012). Rights issues, conversely, prevent ownership dilution or wealth transfer to new shareholders; while convertible bonds impose contractual disciplines, which have the potential to prevent the misappropriation of funds associated with plain equity issues (Myers and Majluf, 1984). These distinctive costs, opportunities and moral hazards associated with each security can potentially influence the *ex–ante* behaviour of issuers and their companies' *ex–post* performance and survival trajectory.

Second, previous studies examine firm performance following equity offerings using selected time intervals (Gibson, Safieddine and Sonti 2004 Cai and Loughran, 1998; Fama and French, 2004; Patel et al., 2004). These studies focus on discrete periods of from 1–3 and 3–5 years for short–run performance, and from 5–10 years for long–run performance, rather than analyzing what is, in reality, a protracted process of corporate development, comprising growth, decline and demise. Such approaches have no power to correct for the dynamic evolution of firms over time. An alternative is to use survival time, employing survival analysis methods, to assess the prospects of a firm's continuing to operate as well as trade in the stock market following issuance. This approach, rather than analyzing the dichotomous results of failure or success, extrapolates issuing firms' survival profiles on the basis of post-issue operational performance, and assesses the latter over their subsequent life-course. Prior literature has proposed firm survival as a measure of firm performance (Welbourne and

Andrews 1996, Caves, 1998). Audretsch and Lehmann (2005) suggest that an appropriate measure of performance is the firm's ability to survive over time.

Third, earlier studies predominantly examine operational performance from the issuer's perspective of their own financial characteristics and corporate history. Other factors, such as the issue itself, investors, and aspects of corporate ownership, control and governance that contribute to the evolution of a firm, have not previously been fully explored. We submit that some of these neglected perspectives have the power to identify important determinants of the outcome of a seasoned issue.

Fourth, most studies draw conclusions based on the US and other mature markets, while emerging economies such as China's receive much less attention. It is arguable, however, that the information asymmetries and agency problems of security issuance are much greater in emerging markets than in countries where traditional financial hypotheses and theories have been well-applied. Research to address this issue will give us a better understanding of this phenomenon.

Thus, we seek to illuminate such problems and overcome the limitations of earlier research by examining post–issue firm performance following a range of issue methods, using survival times as a measure of post-issue operation performance and selecting China's stock market as the basis of our study. We investigate how far distinct features of individual types of issuance determine firms' post-issue survival times in China's emerging market. We evaluate our sample of firms by considering profitable firms as well as under-performing firms, defining the latter as those sustaining losses over three consecutive accounting years following a seasoned issue. We incorporate pre–issue, issue and post–issue information, as well as the nature of corporate control, ownership and governance prevailing at the time of issuance. In our investigation of the survival times of 2,253 seasoned issues between 1992 through 2017, we seek to address two research questions: i) Does issuers' performance, as measured by survival times, differ in the case of rights issue, cash offers and convertible bond issues following the issuance? ii) What is the degree of relative influence of *ex–ante* issue, issue and *ex–post* issue characteristics, as well as corporate control development, and corporate ownership and governance, on issuers' performance following the issuance?

We base these investigations on China's equity market because of its characteristic institutional structure, which renders it a worthy surrogate for emerging markets, or markets under development, where similar problems of weak governance and regulation abound, enlightening both policy and practice. Second, China's spectacularly growing stock market, with a market capitalization of $7.3 trillion in 2016, which surpassed that of the UK and Japan,

has been stimulated by the rapid growth of the national economy. Chinese companies raised $20 billions of equity capital in 2016, more than the combined total raised in the US and Europe over the same period (HSBC, 2017). This has given China the potential to contribute to the world's economic development and financial stability. Paradoxically, given the rapid increase in inward investment, there are high informational asymmetries between firms and investors, weak corporate governance, and incomplete legal protection of shareholders (Haw et al., 2010; Liu and Lu, 2007). Indeed, firms operate in a transitional environment in which both market and corporate governance systems differ significantly from those of mature markets. Since these institutional factors can combine to impair the long-term performance of the corporate sector, which has the potential to undermine global financial stability, they should be pre-eminent in any analysis of stock market development. Not least, if the structure of China's swiftly growing economy has global implications, we should be cognizant that other powerfully emerging economies, such as India's and Brazil's, are likely to present us with similar challenges in the not-too-distant future. China thus provides us with a unique setting in which to examine such issues outside the US and other advanced markets, offering opportunities to scholars, policy-makers and practitioners to develop our understanding of significantly different institutional and market systems.

Our study derives several significant findings. First, firms' post-issue performance, measured by survival times, varies with respect to type of issuance. Convertible bonds increase issuers' survival times compared to plain equity issue methods because they are credible instruments, and the China Securities Regulatory Commission (CSRC) imposes tougher requirements to mitigate agency problems. Conversely, plain equity offerings weaken post-issue operational performance due to their close association with agency issues. Second, our study identifies clear determinants of post-issue trajectory following seasoned issues. Growth opportunities and managerial and institutional ownership increase survival times significantly. Third, corporate ownership, control and governance are decisive in a firm's post-issue performance trajectory. Survival times increase when the board of directors exercise their independence, and there is robust evidence to support this argument, irrespective of the method of issue. Board independence plays a greater part in constraining the agency issues associated with plain equity issues.

Specifically and conceptually, our contribution to the debate consists in presenting and examining new evidence on seasoned issues. We show the impact of different issuing methods on the issuer's performance outside the US and other developed markets, in the context of an imperfect market such as China's. Our study provides a more refined perception of the

distinctive characteristics, costs, opportunities and moral hazard associated with the range of security issuance. As China's economy is similar in many respects to those of emerging markets, such insights into this developing phenomenon suggest generalizable solutions. Second, we demonstrate the importance of corporate ownership, control and governance in shaping a firm's long-term performance following security issuance - which are issues that have not been explored in previous studies. We contribute new evidence of how informational asymmetries and free cash flow problems associated with equity issuance induce managerial rent–seeking behavior and demonstrate how this can be controlled by explicit and implicit disciplines. In contrast to most existing studies that consider board structure and the two–tier board separately, we demonstrate that an integrated mechanism of corporate governance and process performs robustly by virtue of the interaction and co–ordination of the entire system of governance.

Further, our study provides practical insights into the agency costs and moral hazards intrinsic to the range of security issuance. Identifying factors crucial to company longevity empowers them to reduce the risk of failure. The market's well–founded recognition of managerial self–interest and corporate financing misbehaviour, allied to the market's relative inefficiency and opacity, are indicators that should warn of likely outcomes, enabling early intervention to mitigate the risk of delisting in the interest of shareholders. Moreover, our findings will enable potential international investors to manage risk more effectively and optimize their international portfolios.

In respect of policy, our findings will inform decisions relating to institutional infrastructure and functions and suggest how financing behaviour, underpinned by corporate control, ownership and governance decisions shape a firm's post–SEO outcome. Our study has also revealed some abnormalities in China's issuing market, and the findings carry policy implications for turning the market into a fair venue for capital allocation and an effective institution to protect investors.

The rest of the paper is organized as follows: Section 2 discusses the seasoned equity and institutional set up in China; Section 3 discusses methodological issues; and Section 4 discusses the empirical results. A summary and conclusion are provided in section 5.

2. Institutional set up for seasoned issues in China

The China Securities Regulatory Commission adopted a piecemeal approach in introducing seasoned financing facilities. In 1992, rights offers were sanctioned by the CSRC. Issues are mainly offered to state-owned firms to raise equity capital without causing dilution to state

ownership. Issues peaked in the period of 1997–2000 (Table A1) at the height of the so-called 'issuance craze.' To curb this situation, between 1994 and 2001, the CSRC introduced a series of restrictive regulations[1]. The firms quickly moved away from rights issues in favour of cash offerings.

Cash offerings, initiated in 1998 on an experimental basis, operated under less strict criteria[2] and soon became the most favoured financing vehicle, averaging about three times those of rights issues (Table A1). Concerned that firms were 'grabbing' money, in 2001 the CSRC imposed regulations requiring an issuer to demonstrate how effectively they used capital raised. In 2002, it raised issuance thresholds and imposed restrictions on the amount of funds to be raised. Nevertheless, the maximum issue size remained less restrictive compared to rights issues. Their use gathered momentum up to 2005, when the government initiated the stock–split structural reform, halting all issuances to smooth conduct of the reform. With the reforms complete in 2006, cash offers resumed and quickly became the dominant method of issues by Chinese issuers. By contrast, rights issues' downward trend did not reverse even after 2006, when issuance returned to normal (Table A2).

By whichever means, issuing firms use the equity market to collect cash with scant consideration of optimal capital structure or their accountability to shareholders. They abuse the market by frequently misapplying the funds raised, failing to honour guarantees made in the prospectus (Liu et al., 2013). Although some firms have grown considerably post-issue, the opposite often occurred. Table A2 illustrates that frequency and size of issues between the periods closely shadowed the relaxing or tightening of issuance criteria by the CSRC. All evidence indicates that the issuing market depends largely on regulatory policy, rather than being subject to market mechanisms. These distinct features will be seen to shape the post–issue survival of issuing firms.

Convertible bonds were introduced in 1998 and were also subject to a series of restrictions to protect investors and prevent misapplication of funds. The CSRC stipulated that issues be

1. In 1994, the CSRC limited the time between offerings to at least 12 months (Table A1). In 1995, the State Asset Administration Bureau urged state shareholders to propose rights issues only when they had enough capital to subscribe. In 1996, the CSRC curbed excessive issuance by requiring a 10% return on equity (ROE) in each of the three years preceding an issuance. In 1999, the CSRC required firms to be independent of their parent companies in personnel, finance and assets to protect shareholders from management expropriation. In 2001, the CSRC set standards for governance structure, liquidity and repayment capacity.
2. According to the *Interim Measures for Public Cash Offerings by Listed Companies* promulgated in 2000, a company needs to meet the following criteria to be qualified for issuance: it must have been profitable in the recent three accounting years; the weighted averaged ROE in the issuing year should not be lower than the bank savings rates in the same period; and the estimated weighted averaged ROE should not be less than the average ROE required for rights issues in the issuing year, or at least be maintained at the pre-offer level.

confined to issuers meeting criteria in terms of the minimum issue amount, firm size, capital structure, ROE, and profitability. Issuers must also have a guarantor with the capacity to make repayment. In 2003, the CSRC issued requirements on capital adequacy, stating that each issue must be guaranteed by joint and several responsibility, mortgage, or pledge [3]. Additionally, the CSRC required issuers to have their bond rated and to arrange follow–up ratings to account for any changes in outlook. In addition, convertible bonds also impose hard constraints on issuers by means of contractual arrangements. Hence, the issuers' post–issue performance is under a tighter, debt–binding constraint. It is logical to argue that convertible bonds can reduce agency problems to the extent that contractual obligations are effective in curbing managers' discretionary behaviour.

Investigating seasoned equity issuances in China is clearly important for investors who are willing to commit to such offerings. This unique setting allows us to make a comparison between out-performing issuing firms and those that are likely to do worse in the aftermarket.

3. Methodological issues

3.1. Data and sample

Our initial sample comprises 4145 seasoned issues by rights offers, cash offers, and convertible bond issues on the Shanghai Stock Exchange and Shenzhen Stock Exchange between 1992 and 2017. We collect data on financial aspects, seasoned offerings, corporate ownership and governance from the CMAR database[4], and information on parent company control from the Wind Financial Terminal. We extract data on intended usage of gross proceeds at the time of an announcement from the Wind Financial Terminal, cross checking against the *China Securities Times*. The National Bureau of Statistics provides annual price indices and the annual industry–specific GDP growth rate**.**

We define i) rights issues (RIs) as offerings of new ordinary shares to existing shareholders

3. According to the *Measures for the Administration of Issuance of Securities by Listed Companies* promulgated in 2006, the issuer should provide a guarantee unless its unaudited net assets at the end of the latest period amount to 1.5 billion RMB yuan: 1) where a guarantee is required, a full amount of the guarantee should be provided. The scope of the guarantee should include the principal and interest, penalty for breach of contract, compensation for damages and expenses for the realization of creditor's rights; 2) where a guarantee is provided by way of promise, it should be a guarantee of joint and several liability. The amount of the unaudited net assets of the guarantor at the end of the latest period should not be less than the cumulative sum of the guarantees provided by the guarantor; and 3) when a guarantee is provided by way of mortgage or pledge, the estimated value of the mortgaged or pledged property should not be lower than the guarantee amount.

4. We employ the Initial Public Offerings Database, Seasoned Equity Offerings Database, China's Bond Market Database, China's Stock Market Database, and the Corporate Governance Database and Accounting Research Database developed by the Centre for China Financial Research of the University of Hong Kong and Guo Tai An Information Technology Company Ltd.

holding pre-emptive rights, before public allocation; ii) cash offers (COs) as new ordinary shares offered to the public and institutions; and iii) convertible bond issues (CBs) as negotiable securities issued to the public that require repayment of principal and interest within a given time limit and give the option to convert to shares at certain points in their life. To be included in the sample, issuing firms or seasoned issues must meet the following criteria.

i) In all issues, the firm offers new securities by means of cash subscription.

ii) If a firm conducts multiple issues of the same type in the sample period, we allow a 4–year interval between any two consecutive issues; namely, 1 year prior to, and 3 years after, the issue, to reduce problems of cross–sectional dependence.

iii) Firms must operate in a non–financial industry, and issuance companies.

These criteria reduced our final sample to 2,253, comprising 326 rights issues, 1,789 cash offers, and 138 convertible bonds. Firms of various sizes are distributed across 12 industry types. We include delisted companies to avoid survivorship bias. The final sample comprises 2,469 companies**,** including issuing and non-issuing firms.

3.2. Grouping

We evaluate and compare the survival profiles of issuing firms by the type of seasoned issuance. Firms are broadly grouped into issuing and non-issuing firms. Non-issuing firms are those that have never implemented a seasoned issue. Issuing firms are those that have issued any of the three types of seasoned issuance after an IPO. We group firms on the basis of the type of seasoned issuance, namely: (i) rights issue firms (RI–firms), (ii) cash offer firms (CO–firms), and (iii) convertible bond firms (CB–firms). We refer to rights offers and cash offers as plain equity issues, as distinct from convertible bond issues, which are a hybrid security with both debt– and equity–like features.

3.3. Definition of variables and hypothesis development

To address our research questions, we examine how different types of seasoned issuance shape the firm's survival trajectory following issuance.

3.3.1. Seasoned offerings

Research suggests that equity issues presage the issuer's sustainability and growth. Larger issues are associated with larger projects and higher investment returns and are typically subject to more stringent monitoring, signalling market confidence (Liu et al., 2013). They

are often made by larger issuers with prospects in the public domain (Jain and Kini, 1999), and hence predict positive returns. However, larger issues may exacerbate agency costs of free cash flow if funds are invested in a security whose residual claim cannot be legally enforced (Bates et al., 2009). The agency cost hypothesis argues that issue proceeds can be diverted to non–maximizing activities at management's discretion, reducing the firm's survival prospects. The capital structure hypothesis holds that conflicts between management and shareholders are sometimes best mitigated by debt instruments (Myers and Majluf, 1984). Convertible bonds have embedded options for conversion into stock, imposing binding obligations on management. It thus follows that issuing convertible bonds transmits a signal that management are confident that they can meet the debt's contractual obligations (Rajan and Zingales, 1995).

Agency problems of free cash flows are known to be substantial in fundraising in China. Unlike western companies, Chinese firms do not follow the equilibrium choice of financing (Grossman and Hart, 1979). Operations of seasoned issuance have been largely designed, regulated and conducted rather than being aligned with the market mechanism. *Ex–ante* issue motives constantly attract critical scrutiny, because issue proceeds are vulnerable to sub–optimal investment by self-interested management, even to the extent of threatening corporate survival. Equity owners find it hard to monitor management *ex–post* allocation and utilization of proceeds as systems of disclosure and shareholders' protection are neither inefficient nor transparent. The likely consequence is that management misappropriate valuable resources for non–maximizing investments and tunneling (Liu et al., 2013). Such agency issues are strongly in evidence in the case of plain issues, and especially with cash offers. However, the link may not be so strong for convertible bond issues, since the embedded debt element imposes binding obligations on issuers.

Our hypotheses follow from the nature of seasoned issuances and issuing market operations in China. We, thus, hypothesize that rights issues and cash offers are negatively associated with the firm's post–issue survival. Since convertible issues are subject to contractual discipline, and to stringent regulatory requirements, we hypothesize that such issues are positively associated with the firm's post–issue survival.

3.3.2. Control variables

We control for a range of covariates. Our first set of variables relates to pre–issue characteristics; the second to the issue itself, in terms of offering size, management retention,

and firm and industry features at the time of issuance; the third to post–issue characteristics, in terms of corporate control development, capital investment and equity risk; the fourth to corporate ownership structure; while the fifth concentrates on corporate governance. Finally, we explore interactions between seasoned issuance with managerial retention, ownership concentration, or corporate governance measures.

Pre–issue firm characteristics Research suggests that an issuer's reported growth prospects may predict its ability to survive following issuance (Loughran and Ritter, 2004). We accordingly consider pre–issue growth prospects and price run–up preceding seasoned issuance.

Growth prospects. Agarwal (1997) argues that the "superior endowments of a firm, reflected in its ability to grow, increase the probability of survival". Firms with greater growth opportunities have a performance superior to the market and stronger competitiveness to survive. A high market–to–book ratio signals that investors place a high valuation on the firm's growth potential (Fama and French, 1992; Hertzel and Li, 2010), which presages the prospects of future survival not least through creating long–run value for investors. We hypothesize a positive relationship between industry–adjusted market–to–book ratio, (MTB) and post–issue survival.

Price run–up. The market timing hypothesis proposes that equity issuers post a significant run–up in stock prices prior to an issue, taking advantage of optimistic overvaluation, whereas after an issue market returns significantly decline (Loughran and Ritter, 1997). Similarly, among others, Hertzel and Li (2010) and McLaughlin et al. (1996) identify an improvement in operating performance, which returns to pre–issue levels after the issue, suggesting management opportunism in making an offer of sale. Based on these arguments, we hypothesize a negative relationship between price run–up and post–issue survival.

Issue characteristics Issue characteristics at the time of security issuance convey information about the quality of the new issue and managerial expectations of the firm's post-issue prospects. We control for managerial ownership retention at the time of issuance, and also corporate identity in terms of size, age and industry features.

Managerial ownership retention. The level of ownership retained by management at the time of issuance conveys information about the quality of the new issue and their expectations of post–issue prospects. Jain and Kini (1994) note that firms whose management retain a higher level of ownership exhibit stronger operating performance after

the IPO. In a seasoned issue, managerial retention at issuance arguably gives a strong incentive to managers to utilize proceeds to enhance firm value *ex post*. We, thus, hypothesize that an increase in managerial retention at issuance leads to a greater likelihood of post–issue survival. Previous studies document a concave, nonlinear relation between managerial ownership and firm performance (e.g., Hu and Zhou, 2008). To test for this relationship, we include the squared term of managerial ownership retention in the estimation. Further, we expect that the effect of managerial ownership retention differs by type of issuance, given that plain equity issues are more prone to agency problems. To test the significance and direction of the interactions, we include the interaction terms between Manager and $Issue_{RI}$, $Issue_{CO}$ and $Issue_{CB}$ in the estimation.

Firm age. Firm age represents the degree riskiness, so has significance for the firm's post–issue survival. Younger firms typically have weaker fundamentals and are thought speculative and more likely to fail (Campell et al., 2008). However, the majority of listed firms in China incorporated after 1998, especially blue chips and those in strategic sectors. By comparison, the earlier–incorporated firms are generally middle–sized, state–owned enterprises, which tend to operate in traditional industries (Liu et al., 2013). Given the age spectrum specific to Chinese listed firms, we hypothesize that younger firms have better survival prospects than older firms.

Firm size. Smaller firms have fewer finance, technology and personnel resources, but a higher degree of information asymmetries between insiders and outsiders, due to poorer quality information and a relative dearth of external share analysis (McLaughlin et al., 1996; Jegadeesh, 2000; Demiralp et al. 2011). They often face higher issuing costs, more costly information dissemination and greater equity risk, weakening their position in the market in comparison to larger firms (Liu, 2009). Other things being equal, we hypothesize that firm size is positively related to the firm's post–issue survival.

Policy–favored industry. Firm survival varies with business type. Survival duration depends upon industry characteristics and a company's asset structure (Myers and Majluf, 1984). China's industrial sector has long been directed by government policy, which targets strategic development in heavy industries such as energy, infrastructure and chemicals. The CSRC issuance criteria appear to favour such firms[5]. When these firms are verging on failure,

5. Various guidelines and regulations promulgated by the CSRC in 1994 and revised in 1996, 1999 and 2001 specify that the average ROE of firms operating in energy, raw materials, infrastructure, chemicals, and high-tech industries can be lower than 10 percent; and the key state construction projects can be exempted from 30 percent restriction on the size of a new issue.

the government will provide financial support, or sometimes change senior management to protect them from imminent trouble (Liu et al., 2013). We therefore hypothesize that firms in policy–favored industries have higher post–issue survival than those in non–policy–favored industries.

Post–issue issuer's characteristics Corporate control development, fund utilization, and market fluctuations may significantly presage how firms evolve in the aftermath of a seasoned issuance.

Corporate control development. Corporate control development at the time of issuance may significantly influence the firm's subsequent continuity and sustainability. In a firm where the controlling shareholders ultimately control corporate resources, issue proceeds give controllers an additional incentive to tunnel (Johnson et al., 2000; Scharfstein and Stein, 2002). Parent company control is a distinctive feature of Chinese listed firms. The majority of firms are spin–offs from large state–owned enterprises and remain parent–controlled in terms of personnel, capital and assets (Liu and Lu, 2007). They are therefore subject to exploitation by their parent company, and hence corporate tunneling. We consequently hypothesize that control by a parent-company has an adverse impact on the post–issue survival.

Project–specific capital expenditure. Post–issue usage of raised proceeds incorporate information that best signals how well the proceeds are utilized (Walker and Yost, 2008). The free cash flow hypothesis posits that issue proceeds are a readily available source of financial slack, which may be subject to non–optimal expenditures (Jensen, 1986) and tunnelling (Johnson et al., 2000). The agency cost hypothesis further argues that the *ex–post* increase in capital expenditures can limit management's discretion over deploying issue proceeds non–productively. General fixed investment increases the real asset base of the firm, which creates a positive potential for firm competitiveness and prospects. Therefore, capital expenditure has the power to contain rent–seeking behaviour on management's part. Accordingly, we hypothesise a positive relationship between project–specific capital expenditure and firm survival, and that this effect is stronger in plain equity issues than convertible bond issues.

We define project-specific capital expenditures as the amount of cash acquired for investment programmes, which fundamentally differ from the concept of investment expenditures in the literature. Almost all, if not all, previous studies measure the change in fixed tangible assets in the form of property, plant and equipment between two consecutive years, i.e., $year_{t+1}$ and $year_t$ (e.g., Bond et al., 2003). In our study, investment expenditures are a direct measurement of equity raised for the purpose of funding fixed investments. Several

recent studies use the total amount of equity capital raised at the aggregated market level (e.g., Brown and Petersen, 2009; Moyen, 2005) or at the firm level (Gatchev et al., 2010) as a proxy measure for the amount of equity raised for investment purposes. These measures, however, skew the true effect of equity capital acquired for fixed investment purposes at the firm level. Firms raise equity capital for corporate operations and investment, increasing liquidity and working capital, or improving debt capacity by retiring existing debt (Liu, 2013). Only 42% of equity offerings made by Compustat companies between 1997–2000 were for fixed investments (Walker and Yost, 2008).

The CSRC requires issuers to publish a statement specifying how acquired proceeds are to be allocated among projects. Issuers are given five broad categories of investment classification. The majority of firms specify multiple intended usages. In such cases, we use the primary stated usage as measured by the largest investment amount. We then allocate each case across five categories[6]. For the purpose of this study, we divide the invested proceeds into two categories, specified as capital expenditures for: i) innovation and high–tech projects, and ii) general fixed investment projects, including the acquisition of other companies.

Equity risk. Firms with high equity risk are more likely to fail (Jain and Kini, 1999, New). A high risk level indicates increased uncertainty in projected investment returns. Firms with higher uncertainty following listing are more likely to be acquired (Jain and Kini, 1994; Liu et al., 2013) or delisted (Chi et al., 2010). Hence, we predict an inverse relation between equity risk and post-issue survival. We adopt the proxy measurement for equity risk introduced by Ritter (1984) and Carter and Manaster (1990) as our measure of equity risk.

Ownership structure Theoretical models and empirical evidence demonstrate that corporate ownership structure is fundamental to corporate evolution in relation to survival, growth and demise (Gul et al., 2010; La Porta et al., 2000). We examine ownership structure in respect of the level of ownership, comprising state, institutional and public ownership, and ownership concentration.

Ownership structure. Ownership structure of Chinese firms is different from that of firms in mature markets. Typically, most shares are ultimately held by the state, in spite of the progress made in transforming state ownership in the recently completed stock–split structural reform. In a state–owned firm, control rights are shared between government bureaucrats and

6. The five broad categories, by the ESRC regulations, include innovation and high–tech projects, general fixed investment including the acquisition of other companies, intra–firm investment, repayment of debt, and financing working capital.

senior management. Government bureaucrats have ultimate control over the selection and dismissal of senior management, while management control operations, assets and cash flows (Liu and Pang, 2009). This shifts managerial incentives away from optimizing issue proceeds to enhance firm value towards maximizing their private benefits and political objectives.

Different from state ownership, institutional shareholders retain their relative independence when devising and implementing corporate strategies. They put forth significant efforts into planning for seasoned issues and ensuring efficient and equitable allocation of issue proceeds in pursuit of value creation.

Unlike institutional shareholders, the vast majority of individual shareholders hold a negligible proportion of tradable A–shares. Almost no individual shareholders sit on the board of directors or the supervisory board (Xu and Wang, 1999; Berkman et al. 2010). In addition to inadequate monitoring powers, individual shareholders have little incentive to engage in decision–making with respect to equity issuance or lack the capability to monitor allocation and utilization of raised funds, leaving their interests unprotected. We therefore hypothesize that state ownership and public A–share ownership have a negative relationship with the firm's post–issue survival, while institutional ownership has a positive relationship.

Ownership concentration. Ownership concentration bears directly on agency conflicts pertaining to the firm's security issuance decisions. Widely dispersed ownership encourages average shareholders to take a free ride on corporate decisions and operations (Margaritis and Psillaki, 2010). By contrast, shareholders with substantial stakes have an incentive to monitor management and protect their interests (Bai et al., 2004). In the case of shareholdings that exceed a certain threshold, the holders are motivated to engage in self–serving expropriation procedures, disregarding the minority interest (Holderness, 2009). Expropriation incentives can be strong in Chinese firms. Our dataset shows that the largest shareholders control more than 60% of ownership; hence, cash and control rights are heavily concentrated in the controllers' hands. Such an ownership regime creates conditions for controlling shareholders to exercise supreme control power to seize cash in large amounts at their disposal. Decisions on seasoned issues are usually made in the interests of the controllers and not those of minority shareholders. We, accordingly, hypothesize that ownership concentration is negatively associated with post–issue survival.

Further, the strength of such a relationship may vary by type of issue method. We interact ownership concentration by way of the top–1, top–5, and top–10 largest shareholder(s), with $Issue_{RI}$, $Issue_{CO}$, and $Issue_{CB}$, respectively.

Corporate governance Corporate governance is instrumental in monitoring managerial behaviour, driving performance, and creating trust amongst stakeholders. Sound corporate governance is essential in ensuring effective monitoring over strategic planning for security issuance and reducing the incidence of agency spending and rent–seeking behaviour. We use two broad governance measures, namely board of directors and supervisory board. The perspectives of the board of directors consist of board composition (board independence and separation of CEO's and chairman's powers), and board size.

Board independence. Board independence is grounded in agency theory. A board with a significant proportion of independent directors can limit managerial discretion through exercising their monitoring rights and protecting their reputations as effective and independent decision–makers (Baranchuk and Dybvig, 2009; Rosenstein and Wyatt, 1990). In China, independent directors play a largely symbolic role, exerting an ineffective influence (Bai et al., 2004). Under such a regime, a higher proportion of independent directors may not encourage the exercise of board monitoring more effectively. Despite these shortcomings, recent efforts of the Chinese government towards strengthening board independence by way of a series of mandatory regulations are expected to facilitate the role of board independence in corporate affairs (Liu et al., 2013). We thus hypothesize that board independence increases the prospects of firm survival.

Separation of CEO and chairman powers. Separating the roles of CEO and chairman ensures more effective monitoring and control of senior management and better represents shareholders' interests (Kroll et al., 2008). A resultant reduction in agency conflicts improves asset utilization and enhances firm value (Jensen, 1986). However, the stewardship hypothesis contends that the combined role advocates a clear and stronger leadership, avoiding conflicts at the top and ensuring more timely and effective decision–making (e.g., Bozec and Dia, 2007; Davis et al., 1997). In the context of China, corporate governance is directed by boards of directors, under the strong influence of the largest shareholders. Widespread state–dominated ownership further complicates the case. The prime function of the board is often compromised by a strong chairman, normally appointed by the government (Liu, 2005). Such a board has a direct bearing on the post–issue outcome, hence the logic of arguing that the separation of CEO's and chairman's powers leads to a greater likelihood of post–issue survival.

Board size. The resource dependence hypothesis posits that large boards are usually more powerful, accountable and effective than small boards (Ahn et al., 2010; Liang et al. 2013). Diversification associated with a greater range of skills and experience can broaden

and strengthen connections between firms and their external environments, increasing the ability to optimise their strategic options (Pearce and Zahra, 1992). Organization theorists contend that large boards make coordination and communication more cumbersome and impede decision–making and responsiveness (Beiner et al., 2006). Agency theory argues that smaller boards can limit shirking and free–riding among board members and effectively engage members in strategic decisions and direct strategic change (Judge and Zeithaml, 1992). In China, ownership is highly concentrated, so smaller boards can be easily controlled by dominant CEOs, which gives them more latitude to pursue personal goals. We accordingly hypothesize that survival rate decreases with board size.

To test these hypotheses, we define three governance variables relating to the board: i) size of the board (boardsize); ii) separation of the CEO's and chairman's powers (Non–dual); and iii) board independence (Independence)[7]. We construct a finer measure than the traditional insider–outsider distinction by adapting the independent-interdependent director distinction introduced by Boeker (1992), Wade et al. (1990) and Masulis et al. (2007) (See Table 1).

Supervisory board. China's corporate governance system requires a two–tier board, comprising a board of directors and a supervisory board. Although supervisory boards are mandatory under *Company Law*, no regulatory body is committed to setting monitoring standards. Supervisory boards have only a loosely prescribed oversight function over directors and managers (Firth et al., 2010). Many supervisory directors have strong affiliations to the state, and others are friends and associates of managers. By law, there should be no less than one third of labour representation on the supervisory board. Labour representatives, however, are employees, reporting to senior management who conduct staff appraisals and make promotion and remuneration decisions. Therefore, they may find it hard to perform effectively when personal interests are involved (Dahya et al., 2002). Furthermore, supervisory directors do not take part in management selection, weakening their disciplinary role. Our corresponding hypothesis is that supervisory duties have minimal or little impact on the firm's post–issue survival.

Insert Table 1 here.

3.4. Survival analysis methods

To examine the process of the dynamic evolution of firm performance following a seasoned

7. The *Guidelines for Introducing Independent Directors to the Board of Directors of Listed Companies*, issued by the CSRC in August 2001, require that listed companies should have a board comprised of at least one third of independent directors by 2003. The independent director system was later included within the jurisdiction of *Company Law*, which was revised in 2005.

issue, we employ non-parametric and parametric survival analyses. The non-parametric method requires us to estimate survival rates using the Kaplan-Meier methods, while the parametric approach examines the degree of relative influence of the three different forms of seasoned issuance and control variables on survival rates in such a process, using the Cox proportional hazard model or Accelerated Failure Time model (AFT). When we model the duration of time that it takes to reach an outcome, it is possible that we may not observe the final outcome for all the firms in our sample. For instance, we may observe the outcome of delisting, but not for the listed firms beyond the sample period. This problem is known as a censored observation. Survival models such as the Cox regression correct for censored and uncensored observations to provide consistent estimates (Allison, 2000). In contrast, logistic regression models, which have been widely applied to existing studies of company failures, do not have such a power. In addition, logistic regression models assume that the underlying failure process remains fixed over time. By contrast, the Cox model considers how long issuing firms survive after making an issuance, by estimating the probability of survival, and tracks down the effects of time–varying explanatory variables on the predicted duration of survival over the entire time profile of issuing firms. Further, unlike logistic regression, where odds ratio is used as an approximate measure of a potential factor of interest in relation to an outcome, the hazard ratio is used in Cox regression as an exact measure of such an association and assesses the relative importance of these variables in shaping corporate evolution following the issuance.

3.4.1. Kaplan–Meier estimator

We use the Kaplan and Meier (KM) method to estimate the survival rates non-parametrically. The KM estimator is a univariate survival analysis method, providing a descriptive view of the overall survival rate of issuing firms by measuring the time–to–outcome. The method measures the duration between the time of issuance and an outcome occurrence.

In our study, the outcome is defined as sustaining losses over three consecutive accounting years following a seasoned issue, or, alternatively, as being at–risk of delisting. In 1998, the CSRC stipulated that firms should be suspended from trading if they sustained losses over three consecutive years, and delisted if they continued to sustain losses for a further six months. Therefore, if a firm sustains losses for three consecutive years following a seasoned issue, it is at risk of delisting. We track each company from the issuing date to the point when losses have occurred for three consecutive years, or until the end of 2017, when data are censored.

In fact, some firms may have experienced recurrent loss–making, because those that have made their first loss are believed to be at a greater risk of experiencing further losses. Peña et al. (2001) develop an extension of the KM method to take recurrent outcomes into account and allow for multiple recurrences of an outcome for each firm. In the extended method, the recurrent KM procedure generates step–function estimates of survival at each point in time where an outcome occurs or recurs, by calculating the proportion of firms that survive in each successive time period.

Let $0 < t_1 < \Lambda < t_T < \infty$ be the observed, ordered eventual outcome times. The estimator of the survival function, $\hat{V}(t)$, measures the probability of survival beyond time (year) t_j conditional on a firm being listed until time t_j and is expressed as follows.

$$\hat{V}(t) = \prod_{j|t_j<t} \left(1 - \frac{E_j}{N_j}\right) \tag{1}$$

where E_j represents the number of outcome occurrence or recurrence at time t_j, and N_j represents the total number of firms that are listed at time t_j, $j = 1, \mathrm{K}, T$, and have a potential risk of experiencing such an outcome in future prior to the censoring time.

Equation (1) estimates the firm's likelihood of survival subsequent to a seasoned issue. We apply Equation (1) to estimate the survival rate and compare survival rates between the three groups of issuing firms. The Breslow test of homogeneity is used to determine whether survival rates are statistically different between each pair of comparison groups by comparing observed outcomes with the expected outcomes.

3.4.2. Cox hazards regression model

Unlike the Kaplan–Meier estimator, the Cox regression is a multivariate regression method, which allows us simultaneously to examine the type of issue methods and the multiple factors that may account for differences in outcome among issuing firms. Andersen and Gill (1982) extend the Cox regression to allow firms to experience multiple occurrences of the outcome by entering and leaving the risk set. The risk set is defined as a collection of firms that are at risk of sustaining losses over three consecutive years following an issue until the firm is delisted, or until 2017, when data are censored, while allowing for the explanatory variables to change over time. The hazard, namely the conditional probability of the (repeated) outcome, is estimated below.

$$H_i(t, X_t) = H_0(t) e^{(\beta_0' X_i(t))} Y_i(t), \quad i = 1, ..., N, \tag{2}$$

where $H_0(t)$ is the baseline hazard for the respective firm; $H_i(t, X_t)$ denotes the resultant hazard of firm *i* with the time interval $[0, t]$, given the values of the covariates in the respective case in *X*; $Y_i(t) = (Y_{i,1}, ..., Y_{i,T})$ is the multivariate indicator, with $Y_i(t) = 1$ if the *i*th firm experiences an occurrence or a recurrence of sustaining losses for three consecutive years at time *t* since it implements the first seasoned issue, or $Y_i(t) = 0$ otherwise.

Hazard ratio (*HR*) measures the association between an explanatory variable and the outcome. For a binary explanatory variable, *HR* can be expressed as

$$HR = \frac{H(t, X = 1)}{H(t, X = 0)} = e^{\beta} \tag{3}$$

where *HR* is estimated to be e^{β}, where β is the regression coefficient of an explanatory variable. *HR* is the measure of the greater risk of a predicted outcome in firms with a factor present ($H(t, X = 1)$) as opposed to the risk in firms with the factor absent ($H(t, X = 0)$), holding other variables constant.

For a continuous explanatory variable, *HR* can be expressed as

$$HR = \frac{H(t, X + 1)}{H(t, X)} = e^{\beta} \tag{4}$$

HR is the relative risk measuring an increase or a decrease in the predicted risk associated with a one–unit increase in $X(t)$, holding other variables constant.

If $HR = e^{\beta} > 1$ (< 1), i.e., $\beta > 0$ ($\beta < 0$), it indicates that the explanatory variable accelerates (decelerates) the time–to–occurrence, or the time–to–recurrence, of sustaining losses for three consecutive accounting years and hence increases (decreases) the risk of delisting following a seasoned issue. If $HR = 1$, i.e., $\beta = 0$, the post–issue survival is unresponsive to the explanatory variable. Take the following as an example. For a binary explanatory variable, if *HR*=0.65, firms with the factor of interest have a 35% reduced risk of delisting, compared to those without. For a continuous explanatory variable, if *HR*=0.65, a one–unit increase in the explanatory variable is associated with a 35% reduced risk of delisting. If *HR*>1, the opposite interpretations hold. For a binary explanatory variable, if *HR*=2, firms with the factor of interest have a two–fold increased risk of delisting, compared to those without. For a continuous explanatory variable, if *HR*=1.65, a one–unit increase in the explanatory variable is associated with a 65% increased risk of delisting.

Firms may vary because of the influence of some variables that we cannot observe or measure. Such unobservable effects may be firm–specific, which potentially leads to biased

estimation of hazard ratios. Furthermore, the observations are assumed to be independent in the estimation of regression coefficients. It is likely, however, that the probability of sustaining 3–year consecutive losses is dependent on any earlier losses that have occurred in the same firm, especially in a multiple–episode case. Hence, robust standard errors will be estimated to account for the dependence of observations within the firm over time and firm–specific effects (Arellano, 1987; White, 1980).

4. Empirical results and discussions

4.1. Summary of basic statistics

Table 2 reports medians and standard deviations of the variables used in the survival analyses. CB–firms appear to be the largest issuers, while RI–firms are smallest by issue size. However, when issue size is scaled down by market capitalization, there is little difference between CO issues (0.19) and CB issues (0.20). These figures are consistent with Table A1, which shows that convertible issues are the largest in size are of the greatest magnitude because they are confined to large issuers with sound financial standing, engaging in national strategic projects. Cash offerings became increasingly popular from 2006, which coincides with the relaxation of issuance regulations formerly restricting such issuances. By contrast, rights issues have been declining since 2002, largely due to the CSRC restriction on issue size, as discussed in Section 2.

Prior to the issuance, RI–firms have higher a higher median MTB ratio (1.69) compared to CO–firms (1.52) and CB–firms (1.44). RUNUP is lowest in RI–firms (3.94) but highest in CO–firms (12.37), with the latter pattern corresponding to the most significant deterioration in operational performance in the years following issuance in CO–firms, as displayed in Figure 2.

As for issue characteristics, it appears that managerial ownership retention is significantly lower at 0.06%, 0.05%, and 0.09% for RI–firms, CO–firms and CB firms, respectively, compared to 17% for the UK and 21% for the US, as reported by Holderness and Sheehan (1988). All the groups are relatively young due to the short history of Chinese listed firms. CB–firms tend to be larger in size compared to plain equity firms, consistent with the claim that convertible issues target large firms[8]. More CB–firms (39%) operate in policy–favoured

8. According to the *Interim Measures for the Administration of Issuance of Convertible Bonds by Listed Companies* promulgated in 1997 and revised in 2001 and 2006, a company needs to meet the following requirements to qualify for a convertible issue: 1) the minimum issue amount should not be less than 100 million yuan; 2) net assets should not be less than 2.5 billion yuan; 3) the company must have been continuously profitable and the weighted averaged ROE should not be less than 10 percent in the last three accounting years.

industries than the other two groups (28%, 23%, respectively), while the majority of issuing firms operate in un–favoured industries.

Post–issue characteristics show that CO–firms have the lowest project–specific capital expenditures (5%), while the reverse holds for CB–firms (13%). A greater number of seasoned issues but fewer capital investments suggest that CO–firms might engage in agency spending. RI–firms have a higher equity risk (61%) compared to CO–firms (59%) and CB–firms (51%). Further, more CB–firms (74%) are parent–controlled, compared to 63% of CO–firms and 49% of RI–firms.

CB–firms have higher state ownership (39%) and institutional ownership (30%) than the other two groups. Public A–shareholdings account for more of the ownership of CO–firms (40%) than that of RI-firms and CB–firms (36%, 31%, respectively). Both RI–firms and CO–firms have lower ownership concentrations (13%, 19%, respectively), compared to CB firms, whose ownership is highly concentrated by the Herfindahl index for the top–1 shareholder (25%). These figures are consistent when the threshold values change to the top–5 and top–10 shareholders (not reported).

In respect of corporate governance attributes, CB–firms have more independence of board composition, less duality in CEO/chairman roles, a larger board of directors, and a larger supervisory board, compared to RI–firms and CO–firms. Specifically, board independence is 25% for CB–firms, 20% for RI–firms and 19% for CO–firms[9]. According to the OECD (1999), the average percentage of independent directors is 62% in the US, 34% in the UK, and 29% in France. In addition, 44% of CB–firms have separated CEO and chairman powers, compared to 41% in CO–firms and 36% in RI–firms. Conyon (1997) reports that 77% of firms have separated chairman and CEO roles in the UK. The board size is 12 for CB–firms, 10 for CO–firms and 9 for RI–firms. By comparison, the average board size is 13 for US companies (Core et al., 1999) and 9 for UK companies (Ezzamel and Watson, 1997). Board size is, therefore, consistent with the numbers of directors observed on boards in mature markets. The size of the supervisory board is 5 for CB-firms and 4 for both CO-firms and RI-firms.

In summary, CB–firms are characterised by a greater issue size, *ex–post* capital expenditures, managerial retention and institutional shareholdings, and, most notably, by better corporate governance mechanisms, while their equity risk and growth opportunities are relatively lower. Plain equity issuers, in general, show a contrary pattern, except that CO–

9. By the traditional definition of an independent director, our sample shows that the proportion of independent directors is 43.85% for CB-firms, 40.99% for CO-firms and 36.50% for RI-firms. The board composition meets the requirement of *Company Law* that independent directors should account for at least one-third of the board of a listed company.

firms implement seasoned issues on a larger scale. These statistics demonstrate distinctive features of security issuance, which lead us to the expectation that funds acquired through issuing equity, especially cash offers, are most likely to exacerbate conflicts between management and residual risk bearers.

Insert Table 2 here.

4.2. Empirical analyses of post–issue firm survival: *Kaplan–Meier estimation*

Figure 1 provides an overview of the survival profiles of issuing firms as compared to those of non-issuing firms since listing. The survival profiles of the two groups diverge progressively from the beginning to the end of the observed period. During the first 5 years following listing, the estimated survival rates of issuing firms remain at almost 100%. By contrast, the survival rate of non-issuing declines from the outset, and reduces to 80% in year 5, indicating a failure rate of 20%. Survival rates of issuing firms do not decline until year six onwards. After 10 years, the survival rate is 80% in issuing firms and 40% in non-issuing firms, indicating that at–risk delisting accelerates in non-issuing firms. After 20 years, the survival rate falls to 15% in non-issuing firms, compared to 30% in issuing firms. In sum, the survival rates of issuing firms are consistently above those of non-issuing firms throughout the study period, and the divergence in survival rates increases progressively over time.

The Breslow log–rank test shows that survival rates between the two groups are statistically different ($\chi_1^2 = 32.57$, $p<0.01$). Overall, our results show that issuing firms have higher survival rates since listing than non-issuing firms, especially in the long run. This result is accounted for by the effect of regulatory requirements, which stipulate that a firm must be profitable and of good quality to qualify for a new issue.

Insert Figure 1 here.

Figure 2 depicts the survival profiles of three types of seasoned issues both prior to and following the issuance. Pre–issue survival rates are reported in the top panel, while post–issue survival rates are reported in the bottom panel.

Prior to issuance, it appears that survival rates of RI–firms almost never fall. This survival patterns should not be taken at face value, but instead need to be assessed by considering the frequencies and durations of rights issuance, as displayed in Table A1. The upper panel of Table A1 shows that 75% of RI–firms implemented their first issue within 3 years of listing, and the lower panel shows that 63–80% of RI–firms made repeated issues within 3–5 years.

These statistics suggests that issuers employ earnings management to manipulate profits, satisfying the critical thresholds of a minimum of three consecutive years of profitability, qualifying them to make repeated rights issues. Liu and Lu (2007) and Qiao et al. (2006) analyse rights offerings made by Chinese firms and find a similar result. In the case of CO-firms, the survival curve follows traditional, step–wise patterns. The survival of CO–firms declines steadily to 85% until one year prior to issuance, adding to the evidence that CO–firms manage earnings to meet the one–year threshold for cash offers. Further, CB–firms experience a slight deterioration in performance, which then levels off, with no further decline during the seven years prior to issuance. This accords with our expectation that convertible bonds are credible instruments.

The lower panel in Figure 2 shows that post–issue survival rates differ distinctly from prior-issue survival rates. The pre–issue survival rates of RI–firms decline steadily after issuance; whereas, the post–issue survival of COs–firms diverges swiftly and acutely from their pre–issue survival rates. Clearly, the decline of survival curves shows that firms making plain equity issues significantly underperform relative to the pre–issue period, and this underperformance is more significant in CO–firms. By contrast, the survival rates of CB–firms do not begin to decline until eight years after an issuance, reaching a plateau after 12 years of 55%, demonstrating that a convertible issue is a financing vehicle that sustains the firm's viability in the market. This holds with our contention that convertibles impose effective contractual constraints on self-interested management, guarding against agency risk, hence significantly reducing dysfunctional behaviours associated with plain equity sales.

Our overall results do not support the earnings downturn hypothesis suggested by Hansen and Crutchley (1990) that post–issue earnings should systematically decline in all issuing firms, because the systematic deterioration in firm survival occurs only in plain equity issues. The Breslow log–rank tests show that survival rates are statistically different between the pre- and post-issue periods. In summary, our non-parametric KM method shows marked differences among three groups of firms by type of issuance, as well as between pre- and post-issue survivals of different types of issuers. To analyse the impact of covariates on survival times, we conduct the hazard analysis by using the Cox proportional hazard model.

Insert Figure 2 here.

4.3. Empirical analyses of post–issue firm survival: *Cox regression*

In advance of conducting the regression, we assessed statistical validity of our sample to determine if it is of sufficient sample size, based on its statistical power, to enable us to detect a given size of effect during the study period. Our study of 2,253 seasoned issues allows us to detect a two-fold increased, or 50% decreased risk of delisting due to poor performance of the following statistical power: 99% in rights issues (56% of proportion); 99% in cash offers (68% of proportion); and 95% in convertible issues (53% of proportion). These results indicate that our approach has sufficient power to detect the size of the effect of a seasoned issue on firms' post–issue survival.

Table 3 shows the Cox regression results of the baseline models. Table 4 shows the results of the interactions between issuers, managerial retention and ownership concentration. Table 5 shows the interaction between issuers and corporate governance variables.

4.3.1. Baseline Cox regression: seasoned issues and firm survival

Model 1 in Table 3 reports the results for all issues; Model 2 presents the results by issue types: (i) rights issues, (ii) cash offers and (iii) convertible bond issues.

Insert Table 3 here.

Main variables: Aggregated seasoned issues and three types of seasoned issues

Model 1 shows that total issue proceeds acquired through all seasoned issues combined, $Issue_{ALL}$, causes a minimal effect on the firm's post–issue survival, with a borderline significance (HR=0.96, $p<0.10$). Clearly there is a lack of economic and statistical significance between $Issue_{ALL}$ and the firm's survival when we combine the three types of issue. This suggests that the potential effect of seasoned issues of different types may be masked. To address this concern, we perform an individual analysis of each type of seasoned issue to distinguish between the heterogeneous effects that might influence the trajectory of a firm's post–issue survival.

Model 2 shows that the three types of seasoned issues exert distinctive impacts on the firm's post–issue survival. Plain equity issues appear to increase the risk of delisting. There is a 1.81–fold increase in the risk of delisting with every unit increase in rights issues (HR=1.81) and a two–fold increase in cash offers (HR=2.02). These clearly indicate that larger equity issues reduce the prospects of post-issue firm survival. Plain equity issues, in which numerous small shareholders take up cash offers and, to a less degree, rights issues,

increase ownership dilution. This weakens existing shareholders' incentive to monitor, undermining the firm's prospects of post–issue survivorship. More intuitively, plain equity issues of either form create no commitments to the payment of future liabilities. Issue proceeds are vulnerable to being sub–optimally invested by management, reducing corporate value. This adverse effect appears to be more pronounced in cash offers. CO–firms have a lower level of pre–issue MTB ratio and post–issue capital expenditures but implement seasoned issues on a much larger scale than RI–firms (Table 2). In firms with fewer growth opportunities but a higher level of disposable cash, managers have an additional incentive for misappropriation, for instance, by siphoning off funds (Walker and Yost, 2008).

On the whole, these results align with our hypotheses that rights offers, and notably cash offers, are not driven by firm value maximization, but by agent opportunism, which is detrimental to viability.

In contrast, convertible issues, $Issue_{CB}$, carry the lowest hazard ratio of the three types of issuance (HR=0.54). This indicates that CB–firms are most likely to survive, with a 46% reduced risk of delisting, corroborating our proposition that convertible issues encourage incumbent managers to enhance value. On the one hand, funds raised by convertible issues afford firms a vital source of finance for operational activities and capital investment to drive growth. On the other hand, the options and legally binding forces in the terms of hybrid security contracts reduce managers' discretion to take suboptimal decisions, promising increased value through equitable deployment of acquired funds. Additionally, CB issues approved by the CSRC are generally launched on a large scale, with issue proceeds heavily invested in key infrastructure and strategic programmes (see Table 2). The approval and implementation of such programs are subject to additional/strict scrutiny and monitoring. Together with the survival profile in Figure 2, this leads us to conclude that convertible bonds are financing vehicles that mitigate agency risks and sustain the firm's post–issue survival, as compared to plain equity issues.

Control variables: Pre–issue characteristics

Model 2 shows that firm growth prospects, measured by the industry–adjusted MTB ratio, exert a significant, positive impact on firm survival (HR=0.70). Issuing firms experience a 30% reduced risk of delisting with every unit increase in MTB. This indicates that the pre–issue growth opportunity is, by itself, a strong indicator of the firm's capability to operate successfully post-issuance by creating long–run value for investors. However, a unit increase in pre-issue RUNUP increases the risk of delisting by 92% (HR=1.92). Notably, these results

correspond to the pre–issue run–up and the post–issue run–down in performance observed in Figure 2. This evidence supports the notion that a transitory increase in operating performance in the period preceding issuance does not create future organic growth, and issuing firms subsequently experience a significant decline in performance following the issuance. Overall, our findings are consistent with the market timing hypothesis.

Control variables: Issue characteristics

Managerial ownership retention contributes positively to firm viability, reducing the risk of delisting by 31% (HR=0.69). This confirms the assertion that when management retains a high stake at the time of issuance they are discouraged from agency spending and encouraged to create value. However, we find little evidence to support a curvilinear relationship between managerial retention and firm survival as suggested by Gul et al. (2010).

Firm size and industry specifics have an impact on the firm's post–issue performance. Firm size is positively associated with firm survival (HR=0.58). This is consistent with most theoretical and empirical literature on firm dynamics. Firms operating in policy–favoured industries display greater prospects for post–issue survival (HR=0.65), compared to those that do not. We consider two contributing factors. First, issuance policies favouring such firms are important in facilitating and stimulating capital investments driving their performance. Second, firms operating in policy–favoured industries tend to dominate their sector and invest heavily in large–scale projects, thereby achieving a minimum efficient scale of output as in Audretsch (1991). Both perspectives can make a substantial contribution towards the prospects of post–issue survival. However, there is no evidence that firm age has a statistically significant impact on post–issue survival.

Control variables: Post–issue characteristics

Corporate control development following issuance is a significant predictor of the firm's post–issue survival. Parent control subsequent to issuance has a large, negative impact on survival (HR=3.50, $p<0.01$). Issuing firms controlled by their parent company carry a more than three–fold increased risk of delisting, compared to those that are not. Most notably, this adverse effect is the strongest of all the variables, demonstrating that if the firm is controlled by its parent company following the issuance, the latter retains *de facto* control over issue proceeds. To the extent that independence of financial affairs and integrity of assets are undefended, expropriation of issue proceeds by sub-optimal investment and notably by tunneling and embezzlement can cause significant damage to the firm's prospects of survival

in the short run and its ability to create value in the long run.

Importantly, project–specific capital expenditure significantly presages firms' post-issue viability. Capital expenditure generates the largest positive impact of any variable with an 80% reduced risk of delisting (HR=0.20, p<0.01). Such a strong relation is consistent with a lower level of mistrust when usage is more visible and to a lesser degree of management discretion. In a recent work, Walker and Yost (2008) report that the market reacts positively to the announcement of seasoned offerings intended to increase a firm's asset base, which agrees with our findings.

Equity risk has a significant, negative impact on firm survival. A unit increase in equity risk leads to more than a two–fold increased risk of delisting (HR=2.41). This result is consistent with Ritter (1991) and Jain and Kini (1999), who suggest that IPO risk accounts for poor long-run performance. Both the statistical and economic significance of equity risk emphasises the high uncertainty and information asymmetries in China's capital market. The market is highly volatile and opaque and is plagued by irregular trading due to the underdeveloped legal framework and poor corporate governance. Large fluctuations at the time of the issuance signal investors' doubts about the issuer's asset quality and market value, threatening the prospects of the issuer's post–issue continuity and viability.

Control variables: Ownership structure

State ownership exerts a negative influence on the firm's post–issue survival with a 32% increased risk of delisting (HR=1.32). This is, in general, consistent with the existing literature in respect of defects of state ownership. As expected, an increase in public ownership increases delisting risk by 26% per unit increase in public ownership (HR=1.26). This is in line with the notion that dispersed public ownership alone is insufficient to counter the agency costs of seasoned issues. By contrast, institutional ownership exerts a positive influence on firm survival with a 66% reduced risk of non–survival (HR=0.34), showing that institutional shareholder influence has motivated management to seek long–run value creation. These results are consistent with recent evidence on institutional shareholdings, both for China's (e.g., Ye et al., 2018; Liu et al., 2013; Firth et al. 2010) and other markets (e.g., Andriosopoulos and Yang, 2015; Elyasiani and Jia, 2010; Cremers and Nair, 2005; Masulis et al., 2007).

Ownership concentration has a significant, negative impact on firm survival, carrying an almost two–fold increased risk of delisting (HR=1.91). Ownership is highly concentrated in powerful controlling shareholders' hands in China. Given the inefficient mechanism of

shareholder meetings, monitoring by investors is rather weak and their opinions largely ignored on fundraising and allocation (Liu et al., 2013). Valuable resources are thus likely to be misappropriated by senior management, who are nominated and appointed by powerful shareholders to represent their self-serving interests. Our results hold when the threshold value changes from Herfindahl index for top–1 to top–5 or top–10 shareholder(s) (unreported).

Control variables: Corporate governance

Board independence appears to exert a significant, positive impact on firm survival (HR=0.57), reducing the risk of delisting by 43%. Based on our more finely grained measure of board independence, we find strong evidence that independent directors face the fewest conflicts of interests and of interlocking with senior management and the firm. This can be taken as significant evidence that genuine board independence empowers the board in formulating and implementing financing decisions, which enhances the prospects of post–issue survival and value creation, even in an emerging economy where corporate governance is weak and powerful agency problems infest an informationally opaque market. Our study is not subject to mis-specification due to the definition of independent directors that we adopt. It is evident that our refined measure based on the seven criteria to identify independent directors is a more effective method than using a simple measure, as in earlier studies. The failure of some of early studies to identify the role of independent directors in either direction may have been caused, in part, by the specification problem (e.g., Ben-Amar and André, 2006; Byrd and Hickman, 1992; Lin et al., 2009; Rosenstein and Wyatt, 1990). In these studies, although defined as independent, directors remain connected to the firm not least in the form of personal, economic or professional affiliations. Hence these studies may not have captured the true effect of board independence.

Compared to firms with a unified board, firms with a separate board structure experience a 9% reduced risk of delisting, although the effect is marginally significant (HR=0.91, $p<0.10$). This modest association does not provide strong support for the substantive role expected of separation of CEO and chairman powers in reducing agency costs predicted by Jensen (1986). This suggests that a problem exists in the governance structure, giving the appearance that the roles are separate although, in truth, there is dysfunctional collusion in fundraising programs that weakens value–maximization.

Contrary to expectations, board size negatively influences firm survival with a borderline significance (HR=1.41). An increase in board size creates a 41% increased risk of delisting.

This supports the argument that a larger board encourages the pursuit of contrary objectives among senior members, leading to conflicting financing decisions and, therefore, managerial shirking when they seek to contain opportunistic fundraising behaviour. However, there is scant evidence to suggest that Supervisor has an association with post–issue survival, although the sign is expected.

4.3.2. Seasoned issues and firm survival in the presence of managerial retention and ownership concentration

We conduct separate analyses of interactions between issuers, managerial retentions and ownership concentration. The results, including the synergistic effect and antagonistic effect[10], are reported in Table 4. Model 1 focuses on the interaction between management retention and issuers, while Model 2 focuses the interactions of ownership concentration and issuers.

Insert Table 4 here.

Model 1 of Table 4 shows that the main effects hold for the three types of seasoned issuance (HR: 1.78, 1.96, 0.56, all Ps<0.05) and for most of the control variables in terms of direction and significance, except for A–share ownership. It is evident that the interaction terms between plain equity issues and managerial retention are positively associated with post–issue survival. Specifically, in the presence of managers' retention, a unit increase in cash offers ($Issue_{CO}$×Manager) and right issues ($Issue_{RI}$×Manager) reduces the risk of delisting by 56% and 47%, respectively. These results indicate that managerial retention runs counter to the adverse effect of plain equity issues on firm survival – an antagonistic effect. By comparison, the interaction effect of managerial retention with convertible issues, $Issue_{CB}$×Manager, is less strong (HR=0.86) at the 10% level. Therefore, in firms where agency spending is more likely, such as in CO-firms, higher management retention creates stronger motivation and commitment to utilise acquired funds equitably. These results support our expectation that managerial retention is a significant moderator in the conflict between personal wealth and firm value.

Model 2 of Table 4 shows that the interaction terms are highly significantly, negatively associated with firm survival in rights issues, $Issue_{RI}$×Herf–1 (HR=2.04), and cash offers, $Issue_{CO}$×Herf–1 (HR=2.88), at the 1% level. However, there is no statistical significance in

10. A synergistic effect is defined as the combination of two or more factors which are greater than sum of their individual effects, e.g. 2+2=5. An antagonistic effect occurs when the combined effect of two or more factors is less than the sum of their individual effects, e.g. 2+2=3.

convertible issues. These results demonstrate that an increase in ownership concentration exacerbates the adverse effects of plain equity issues, increasing the risk of delisting two–fold in rights issues and nearly three–fold in cash offers. Based on our dataset, the largest shareholders of an average firm hold more than 60% of ownership; hence, ownership dilution is less important in China than elsewhere. This control gives overwhelming power to such shareholders and they seek any opportunity to raise money, later expropriating surplus funds against the interests of minority investors, posing a major threat to the firm's post–issue survival. The results for Herf–5 and Herf–10 display similar patterns (not reported). Overall, these consistent results support our expectations that corporate ownership structure is not yet constituted in such a way as to mitigate agency problems effectively and maximize firm value.

4.3.3. Seasoned issues and firm survival in the presence of corporate governance mechanism

In the above analyses, we have identified the adverse role of rights issues and cash offers in sustaining the firm's post–issue survival and attributed those adverse effects to their association with agency costs of free cash flow. In this section, we examine whether such relations would be modified by the corporate governance mechanism. We perform the analyses in two steps: we interact the three types of seasoned issuance with the corporate governance measures by means of 2–way and 3–way interactions. The results are presented in Table 5.

Insert Table 5 here.

Model 1 of Table 5 reports the results of the interactions between the type of seasoned issues and Independence. Clearly, the interaction terms are positively associated with firm survival, and the effect is stronger in $Issue_{CO}$×Independence (HR=0.37, p<0.01) than in $Issue_{RI}$×Independence (HR=0.51). Specifically, in the presence of board independence, there is a 28% decreased risk with every unit increase in cash offers [HR of cash offers: 0.72 (=1.95×0.37)][11], demonstrating that the antagonistic effect of cash offers is attenuated in the presence of board independence. Similarly, the reduction in the antagonistic effect is also identified in rights issues, with a 10% reduced risk of delisting with every unit increase in rights issues (HR of rights issues: 0.90 (=1.76×0.51)). However, Independence marginally modifies the effect of convertible issues on firm survival, with an 8% reduced risk (HR=0.92,

11. Hazard ratio for X: $HR = HR_{main} \times HR_{interaction}$, where HR_{main} is hazard ratio for the main effect; $HR_{interaction}$ is hazard ratio for the interaction effect.

p<0.10). These findings are consistent with our expectations that board independence safeguards the firm's assets and financial resources, reducing agency spending. Such an initiative generates a stronger protection in plain equity offerings, and notably in cash offers, where agency problems are most prevalent.

In contrast to board independence, the adverse effects of plain equity issues grow much stronger with an increase in board size, compared to their individual impact as shown in Table 3-4. Specifically, the interaction terms, $Issue_{RI}$×Boardsize (HR=2.14) and $Issue_{CO}$×Boardsize (HR=2.32), contribute a more than two–fold additional risk of delisting, respectively. These results suggest that a greater number of directors impairs the board's ability to take decisive actions when facing issue decisions that potentially militate against corporate value, intensifying the adverse effects of plain equity issues on firm survival. By comparison, board size has a much smaller, modified effect on the relationship between convertible bond issues and firm survival, with a borderline significance (HR=0.95, p<0.10).

Further, the interaction effects between seasoned issues and Non–dual is statistically insignificant, suggesting that separation of CEO and chairman powers is not a significant moderator of the effects of seasoned issuance on firm survival. This reaffirms that the separation of CEO and chairman roles intended for improved monitoring, as predicted by Jensen (1986), is not supported by our results.

Our further results show that, regardless of the presence of a supervisory board, the relation between seasoned issues and firm survival remains insignificant, providing supportive evidence for the ineffectiveness and incompetence of the supervisory board in challenging management actions that lead to non–value maximization.

On the whole, the results of the 2–way interaction analyses are consistent with our earlier findings that a larger board of directors, the separation of CEO and chairman powers, and a supervisory board are not yet effective mechanisms for mitigating the risk of delisting.

Next, we introduce board independence into the 2–way interactions between the type of issuance and separation of CEO and chairman powers, board size, or supervisory board, so as to assess the extent of its influence. The results are reported in Model 2 of Table 5. Significant patterns emerge. The 3–way interactions among Independence, seasoned issues and Non–dual are significantly positively associated with post–issue survival. This positive effect is stronger in the $Issue_{CO}$×Non–dual×Independence (HR=0.41, p<0.01), compared to $Issue_{RI}$×Non–dual×Independence (HR=0.53, p<0.05) and $Issue_{CB}$×Non–dual×Independence (HR=0.90, p<0.10). The effects of the interactions with board independence translate into a

reduced risk of delisting by 59%, 47% and 10% per unit increase in the interaction terms, respectively. Overall, the consistency of our results adds credence to our hypothesis that board independence reinforces the watchdog role expected of a board, enabling CEOs and chairmen to maintain their own independence and hence fulfil their obligations.

Notably, the 3–way interaction terms, $Issue_{RI}$×Boardsize×Independence (HR=0.87) and $Issue_{CO}$×Boardsize×Independence (HR=0.70), significantly reduce the risk of delisting by 13% in RI–firms and 30% in CO–firms, in contrast to our earlier results of the 2–way interactions in the absence of board independence (Table 4). These are a clear indication that board independence leads to an additional reduction in the risk of delisting in plain equity issues. By comparison, the modifying effect of board independence on convertible issues is less strong, with a 6% reduced risk of non–survival (*HR*=0.94, p<0.10). These results support our expectations that a large board that maintains independence can subject managerial decision–making to closer monitoring. The consistent results of the interaction analyses lead us to conclude that separating the powers of CEO and chairman and reconstituting a large board with truly independent directors can effectively constrain managers' in the mis-appropriation subscribed funds and encourage them better to exercise their control function in fundraising.

It is encouraging to see the significant, positive interaction effects of seasoned issues and a supervisory board on firm survival in the presence of board independence. The three–way interactions, $Issue_{RI}$×Supervisor×Independence (HR=0.88), $Issue_{CO}$×Supervisor×Independence (HR=0.81), and $Issue_{CB}$×Supervisor×Independence (HR=0.91, p<0.10), reduce the risk of delisting in rights issues, cash offers and convertible issue by 12%, 19% and 9%, respectively. These results show that when a board is independent, the supervisory board is able to reduce the adverse effects of plain equity issues significantly, while also increasing the protective effect intrinsic to convertible issues. The results support our view that board independence contributes to reducing the interlocking relationships often found between supervisors and insider managers, permitting the supervisory board to establish independent processes that ensure management accountability for efficiency and transparency in fundraising and fund allocation. These findings emphasize that, although the two boards are nominally independent bodies, they are able to work with one another to gain cooperation and monitor management more closely, as long as the directors remain truly independent. Such cooperation ensures that they carry out their duties responsibly, disciplining any reckless or self-serving financing behaviour. In this regard, our study, using Chinese data, is consistent with the theoretical work of Adams and Ferreira (2007), that increasing the independence of supervisory boards entails intensive monitoring of the executive board, which reduces risk–

taking on the part of management and "unambiguously increases shareholder value". The results continue to hold if we set the threshold level for board independence at 40% and 50% instead of 33%.

5. Conclusion

This paper provides new evidence that the firm's survival trajectory following seasoned issuance differs by the type of issue, based on survival analysis methods. Using a sample of 2,253 seasoned issues in China's stock market, we examine how plain equity issuance by means of rights issues and cash offers, as opposed to the hybrid case of convertible bond issues, shape the firm's post–issue survival profile. Using the non-parametric Kaplan–Meier method, we find that firms raising equity through rights issues and, notably, cash offers have lower survival rates than those issuing convertible bonds. We employ the Cox proportional hazard model to examine how the type of issue method determines the survival trajectory of firms that make an offer and evaluate the impacts on survival rates of a broader spectrum of control variables, incorporating pre–issue, issue and post–issue characteristics, as well as corporate control, ownership and governance. We find that convertible bond issues significantly presage favourable prospects for post–issue survival. However, in contrast, plain equity offers by means of rights issues, and especially cash offers, increase the future risk of delisting; and such an adverse effect can be mitigated by sound corporate ownership, control and governance mechanisms. Further, our analysis shows that pre-issue, at-issue and post-issue perspectives in relation to issuers and the issues themselves determine issuing firms' post-issue survival rates. We draw two conclusions.

First, discipline, obligations and incentives impact forcefully on how each type of issuance shapes the firm's post–issue survival trajectory. Agency issues persist in the case of plain equity issues, since the latter carry no contractual obligations in the form of future equity claims and can therefore be driven by short–termism and perverse incentives. This is further complicated by a significant absence of effective monitoring devices for equity issuance, increasing informational asymmetries and aggravating moral hazard. The stronger adverse influence concomitant to cash offers clearly indicates that security issue arrangements provide managers with implicit powers to manipulate the environment and derive economic rent, rendering acquired funds more prone to exploitation by means of abuse and misappropriation. However, such problems prevail least in the case of convertible bond issues, due to their credible controls and mandatory financial disciplines. The debt element of convertible bonds imposes the binding power to align management incentives with the interests of shareholders,

as in Myers and Majluf (1984). This acts as a hard constraint against dysfunctional, value–destroying conspiracies on issuance *ex ante* and drives equitable allocation of acquired funds *ex post*, promising value and sustainability.

Second, perspectives in relation to an issuer and issuance, that markedly shape the firm's evolutionary survival trajectory, comprise control, governance and politics. Our results consistently demonstrate the absence, inadequacy or failure of investor–relevant market mechanisms to help reduce informational asymmetries. When voting power is concentrated in a few hands, management have strong incentives to expropriate resources by tunnelling and entrenchment. This applies all the more in the case of plain equity issues, where exploitable discretionary funds all too often precipitate moral hazard, leading managers to pursue personal interests at the expense of external investors. Further, excessive control at the time of issue gives a parent company power over corporate affairs, threatening value creation and firm survival. When a parent company has a powerful presence in a firm, the latter's asset integrity and financial independence can hardly be maintained and protected. In the absence of mandatory disciplines – as in the case of plain equity issues – cash acquired becomes a vehicle for tunnelling. However, institutional shareholders can effectively act as a monitoring device in promoting firm value, as they tend to voice their discontent with ineffective governance systems (e.g., Brennan, 2006; Cheng et al., 2010) and flawed seasoned issues (Liu et al., 2013). Ultimately, the agency costs of free cash flows concomitant to seasoned issues can be mitigated by a large and truly independent board, allied to a separation of CEO and chairman powers. Such a cohesive governance mechanism can restrain rent–seeking in the firm's fundraising initiative.

Overall, we find clear determinants of post-issue firm survival following the seasoned issues that we have examined in the context of China. We conclude that the post–issue outcome embodies mixed consequences of market selection, state control and influential market monitors, with the latter exercising a considerable influence.

What we find during the course of this research is both instructive and discomfiting for policy-makers and investors. Controlling shareholders can reap private benefits by maintaining their power in the firm, but at the expense of individual investors and, ultimately, the development of the Chinese stock market itself. Such malpractice has already precipitated stock market crashes in 2007 and 2015. Effective systems of corporate control and governance must be developed to protect investors and the market from such instability. The 'Credit Crunch' of 2008 engulfed all nations in a malign economic embrace, and the crisis that originated in the US warns us of the dangers of poorly regulated financial systems running out

of control. The massive expansion of China's market economy, coupled with an inefficient stock market and an imperfect system of corporate governance, should alert us to the possibility of similar crises originating in Asia in the future. With a capitalization of $7.3 trillion in 2016, China's stock market surpassed those of the UK and Japan, standing second only to the US market. Chinese companies raised $20 billions of equity capital in the same year, which was more than in the US and Europe combined (HSBC, 2017). Given this phenomenal growth, Chinese companies are likely to utilise stock issues to raise capital at an intensified rate in the future, making it vital that controls be introduced to eliminate the agency problems that this activity will create. Our work, therefore, calls for the introduction of institutional arrangements that facilitate efficient contracts in the interests of investors, which emerging economies particularly lack, and to stabilise a market whose powerful presence may soon affect us all.

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Table 1. Definitions of the variables in the estimation

Measure	Variable	Description
Dependent variable		
At-risk of delisting		The outcome is defined as sustaining losses over three consecutive accounting years following a seasoned issue.
Risk set of firms used in Cox hazards regression model		The risk set is defined as a collection of firms that are at risk of sustaining losses over three consecutive accounting years, following implementation of an issue, until the firm is delisted or until 2017, at which point in time data are censored.
Testable variables		
Seasoned offerings		
Seasoned issues	$Issue_{ALL}$	$Issue_{ALL}$, $Issue_{RI}$, $Issue_{CO}$, and $Issue_{CB}$ measured as the natural logarithm of gross proceeds raised through all issues combined, rights issues, cash offers, and convertible bonds, respectively
Rights issues	$Issue_{RI}$	
Cash offers	$Issue_{CO}$	
Convertible bond issues	$Issue_{CB}$	
Control variables		
Pre–issue characteristics		
Industry–adjusted growth opportunity	MTB	Ratio of the current share price to the book value per share prior to the issuance, adjusted by the industry–specific GDP growth rate. To control for the effects of macroeconomic fluctuations and industrial variations, the industry–adjusted market–to–book ratio, MTB, is measured as the ratio of the current share price to the book value per share prior to the issuance, adjusted by the industry–specific GDP growth rate.
Run–up in stock prices	RUNUP	Residuals estimated from a standard market model for 90 trading days from day −91 to −2, when day 0 is the announcement date.
Issue characteristics		
Managerial ownership retention	Manager	Percentage of ownership retained by managers at the time of the issuance over the total shares outstanding in the year prior to the issuance.
Firm age	Age	Years since the firm was incorporated.
Firm size	Size	Natural logarithm of total assets.
Issuance policy–favored industries	Favored–ind	A dummy variable takes the value of 1 if the firm operates in strategic industrial sectors favoured by the CSRC issuance policies, and 0 otherwise. According to the 2–digit CSRC Industrial Classification, firms operating in the industry sector with section B (Mining), D (Utilities), F (Construction), G (Transport), and C (Manufacturing) with division C41 (oil and coal refinement), C43 (chemical raw materials), C47 (chemical fibre), C48 (rubber), C61 (non–metal ore), C65 (black metal smelting), C67 (colour metal smelting), C81 (pharmaceuticals), and C85 (biotechnology) are classified as issuance policy–favoured, and 0 otherwise.
Post–issue characteristics		
Corporate control	Control	A dummy variable takes the value of 1 if the parent company holds no less than 51 percent of the issuing firm following an issue, and 0 otherwise.
Project–specific capital expenditure	Invest	Natural logarithm of the proceeds that are invested into (1) innovation and high–tech projects and/or (2) general fixed investment, including the acquisition of other companies.
Equity risk	Risk	Averaged standard deviation of daily returns for 30 trading days after the first day of public trading of a new issue.

Ownership structure		
State ownership	State	Percentage of total shares outstanding within a firm consisting of state shares, institutional shares and tradable A–shares.
Institutional ownership	Institution	Percentage of total shares outstanding within a firm consisting of state shares, institutional shares and tradable A–shares.
A–share ownership	A–share	Percentage of total shares outstanding within a firm consisting of state shares, institutional shares and tradable A–shares.
Ownership concentration	Herf–1 Herf–5 Her–10	Sum of squared number of shares held by the top–1, top–5, and top–10 largest stockholder(s), measured as the Herfindahl index.
Corporate governance		
Board independence	Independence	An outside director is defined as independent if s/he meets all seven criteria: i) s/he does not hold other posts within the company; ii) s/he receives no compensation from the company. (Paid directors in Chinese firms are often linked with the management team that is delegated by the controlling shareholders, compromising their ability to act); iii) s/he is appointed to the board prior to the current CEO's appointment. (In Chinese firms, affiliations may exist between the CEO, the board, and the appointed independent directors (Kakabadse et al., 2010)); iv) s/he is not located in the company to which s/he is appointed; v) s/he does not hold more than one percent of shares of the company to which s/he is appointed; vi) s/he does not hold a position in other companies in which the company to which s/he is appointed has a stake; and vii) s/he sits on no more than three corporate boards, making them too busy to act. Both insider managers and outside directors who fail to meet any of these criteria are classified as dependent.
Separation of CEO and chairman powers	Non–dual	A dummy variable takes the value of 1 if the CEO and the chairman are not the same person, and 0 otherwise.
Size of board of directors	Boardsize	The number of directors, including chairman, sitting on the board.
Size of supervisory board	Supervisor	The number of supervisors, including chairman, serving on the supervisory board.

Table 2. Summary statistics of variables in the Cox regression

Variables	Seasoned issues	Pre–issue characteristics		Issue characteristics				Post–issue characteristics			Ownership structure				Corporate governance			
	Issue size[a, b]	MTB[c]	RUNUP (%)	Manager (%)	Firm age (yrs)	Firm size[c]	Favaored –ind[d] (%)	Corp. control (%)	Invest	Equity Risk (%)	State (%)	Institution (%)	A–share (%)	Herf–1 (%)	Inde–pendence %	Non–dual %	Boardsize n	Supervisor n
Non–issuing firms	–	1.49	–	0.04	6	20.70	25.07	–	–	–	36.03	21.51	31.44	19.41	24.54	44.53	10	4
	–	(3.63)	–	(0.02)	(4)	(0.67)	–	–	–	–	(28.37)	(20.27)	(30.13)	(16.16)	–	–	(9)	(4)
All issuing firms	0.17	1.99	10.75	0.07	8	21.22	25.81	58.94	12.24	53.21	29.91	22.24	36.23	15.90	20.23	37.04	10	4
	(0.19)	(2.92)	(11.70)	(0.03)	(5)	(0.97)	–	(54.19)	10.04	(45.06)	(25.11)	(25.18)	(32.14)	(10.15)	–	–	(8)	(4)
RI–firms	0.10	1.69	3.94	0.06	9	17.31	23.12	48.62	7.18	60.79	29.61	21.72	35.90	12.52	20.05	36.09	9	4
	(0.07)	(3.67)	(3.32)	(0.04)	(5)	(0.96)	–	(43.18)	(8.51)	(50.51)	(27.43)	(18.26)	(29.14)	(11.15)	–	–	(6)	(3)
CO–firms	0.19	1.52	12.37	0.05	8	18.47	27.61	62.99	4.76	58.75	34.22	16.13	40.24	18.67	19.08	41.32	10	4
	(0.32)	(3.75)	(13.76)	(0.03)	(4)	(0.83)	–	(50.21)	(5.31)	(46.32)	(30.27)	(14.24)	(41.15)	(17.16)	–	–	(5)	(4)
CB–firms	0.20	1.44	10.15	0.09	8	21.14	39.29	73.72	13.20	51.14	38.63	30.10	30.51	25.19	25.03	44.10	12	5
	(0.14)	(2.40)	(5.68)	(0.06)	(4)	(1.00)	–	(42.30)	(9.73)	(38.27)	(34.12)	(20.31)	(26.35)	(19.18)	–	–	(7)	(3)

The sample consists of 2,253 successful seasoned offerings by means of rights issues, cash offers, and convertible bond issues on the Shanghai Stock Exchange and the Shenzhen Stock Exchange in the period 1992–2017.

The reported figures are median values. Standard deviations are presented in parentheses.

a. Issue size refers to the variables, $Issue_{ALL}$, $Issue_{RI}$, $Issue_{CO}$, and $Issue_{CB}$, respectively.

b. The variables are expressed in their natural logarithmic forms.

c. The variables are expressed as ratios.

d. The percentage is based on the number of firms operating in the issuance policy–favoured industries over the total number of issuing firms.

The following variables are treated as time-dependent variables in Cox regression: Manager, Firm size, Firm age, Favoured–ind, Corporate control, Project-specific capital expenditure, Equity risk, State, Institution, A–share, Herf–1, Independence, Non-dual, Boardsize, and Supervisor.

Detailed definitions of the variables are given in Table 1.

Table 3. Adjusted hazard ratios of aggregated seasoned issues, three types of seasoned issues and controlled variables, estimated by means of Cox regression

	Model 1		Model 2	
Seasoned issues				
$Issue_{ALL}$	0.9613*	(0.0197)		
$Issue_{RI}$			1.8092**	(0.5061)
$Issue_{CO}$			2.0156**	(0.6913)
$Issue_{CB}$			0.5431**	(0.1526)
Pre–issue characteristics				
MTB	0.6942**	(0.1125)	0.7011**	(0.1214)
RUNUP	1.8539**	(0.5042)	1.9176**	(0.5128)
Issue characteristics				
Manager	0.6257**	(0.1372)	0.6874**	(0.1308)
$Manager^2$	0.3685	(0.2353)	0.4013	(0.2750)
Firm age	0.9074	(0.0959)	1.1085	(0.1139)
Firm size	0.5743*	(0.1641)	0.5832**	(0.1467)
Favored–ind	0.7395**	(0.1023)	0.6469**	(0.1375)
Post–issue characteristics				
Corporate control	3.5891**	(1.7853)	3.4988***	(1.6220)
Project–specific capital expenditure	0.2540***	(0.1264)	0.2045***	(0.1058)
Equity risk	2.2364**	(0.8175)	2.4146**	(1.0235)
Ownership structure				
State	1.1758*	(0.1095)	1.3215**	(0.1563)
Institution	0.4047**	(0.1721)	0.3405*	(0.2051)
A–share	1.2251**	(0.1093)	1.2634**	(0.1475)
Herf–1	1.8253*	(0.6074)	1.9082**	(0.6259)
Corporate governance				
Independence	0.5396**	(0.1638)	0.5719**	(0.1614)
Non–dual	0.9401*	(0.0327)	0.9126*	(0.0381)
Boardsize	1.3528*	(0.2091)	1.4137*	(0.2813)
Supervisor	0.9373	(0.1224)	0.9435	(0.1867)
Firm–years at risk	24769		23871	
Wald test	$\chi^2_{18} = 1873.31$		$\chi^2_{20} = 1967.64$	

The sample consists of 2,253 successful seasoned offerings by means of rights issues, cash offers, and convertible bond issues on the Shanghai Stock Exchange and the Shenzhen Stock Exchange in the period 1992–2017.

Model 1 reports results of the baseline model regressed on issue proceeds acquired through all seasoned issues combined and also controlled variables. Model 2 reports results of the baseline model regressed on issue proceeds acquired through rights issues, cash offers and convertible bond issues separately and also controlled variables.

Adjusted hazard ratios (HR) are reported, and robust standard errors of hazard ratios are in parentheses. Adjusted hazard ratios are derived by counting for issue characteristics and firm characteristics as defined in Table 1.

If HR > 1 (< 1), i.e., $\beta > 0$ (< 0), it indicates that the explanatory variable accelerates (decelerates) the time–to–occurrence or the time–to–recurrence of sustaining losses for three consecutive accounting years and hence increases (decreases) the risk of delisting following a seasoned issue. If HR = 1, i.e., $\beta = 0$, the post–issue survival is unresponsive to the explanatory variable.

*(**, ***) denotes rejection of the hypothesis at the 10% (5%, 1%) significance level.

The following variables are treated as time-dependent variables in Cox regression: Manager, Firm size, Firm age, Favoured-ind, Corporate control, Project-specific capital expenditure, Equity risk, State, Institution, A–share, Herf-1, Independence, Non-dual, Boardsize, and Supervisor.

Detailed definitions of the variables are given in Table 1.

Table 4. Adjusted hazard ratios of three types of seasoned issues and their interactions with managerial retention and ownership concentration, estimated by means of Cox regression

	Model 1		Model 2	
Seasoned issues				
$Issue_{RI}$	1.7814**	(0.4833)	1.7249**	(0.4163)
$Issue_{CO}$	1.9612**	(0.6397)	1.8137**	(0.4028)
$Issue_{CB}$	0.5603**	(0.1281)	0.5235**	(0.1392)
Pre–issue characteristics				
MTB	0.7397**	(0.1104)	0.7741*	(0.1153)
RUNUP	1.8245**	(0.4952)	2.1076***	(0.6025)
Issue characteristics				
Manager	0.6345**	(0.1237)	0.6593*	(0.1632)
$Manager^2$	0.3464	(0.2828)	0.3486	(0.2507)
$Issue_{RI}$ × Manager	0.5318**	(0.1554)		
$Issue_{CO}$ × Manager	0.4352**	(0.1659)		
$Issue_{CB}$ × Manager	0.8621*	(0.0713)		
Firm age	1.0347	(0.1065)	1.0654	(0.1029)
Firm size	0.6514**	(0.1268)	0.5652**	(0.1548)
Favored–ind	0.7016**	(0.1092)	0.7563*	(0.1235)
Post–issue characteristics				
Corporate control	3.4267***	(1.6342)	3.5347**	(1.8153)
Project–specific capital expenditure	0.2739**	(0.1595)	0.2514***	(0.1076)
Equity risk	2.4251**	(0.9758)	2.3385**	(1.0094)
Ownership structure				
State	1.2916**	(0.1643)	0.8273	(0.1601)
Institution	0.4639*	(0.1970)	0.4876*	(0.1914)
A–share	1.2015	(0.2586)	1.1923*	(0.1239)
Herf–1	1.8372**	(0.5418)	1.8902**	(0.5246)
$Issue_{RI}$ × Herf–1			2.0435***	(0.5203)
$Issue_{CO}$ × Herf–1			2.8826***	(0.6037)
$Issue_{CB}$ × Herf–1			1.2621	(0.1974)
Corporate governance				
Independence	0.5847**	(0.1542)	0.6045**	(0.1328)
Non–dual	0.9243*	(0.0411)	0.9026*	(0.0531)
Boardsize	1.4218*	(0.2635)	1.3357	(0.4219)
Supervisor	0.9396	(0.1238)	0.9182	(0.1063)
Firm–years at risk	21547		22873	
Wald test	$\chi^2_{23} = 2075.16$		$\chi^2_{23} = 5857.53$	

The sample consists of 2,253 successful seasoned offerings by means of rights issues, cash offers, and convertible bond issues on the Shanghai Stock Exchange and the Shenzhen Stock Exchange in the period 1992–2017.

Model 1 focuses on results of the 2–way interactions between each type of seasoned issuance and managerial ownership retention. Model 2 focuses on results of the 2–way interactions between each type of seasoned issuance and ownership concentration, Herf–1. Adjusted hazard ratios (HR) are reported, and robust standard errors of hazard ratios are in parentheses. Adjusted hazard ratios are derived by counting for issue characteristics and firm characteristics as defined in Table 1.

If HR > 1 (< 1), i.e., $\beta > 0$ (< 0), it indicates that the explanatory variable accelerates (decelerates) the time–to–occurrence or the time–to–recurrence of sustaining losses for three consecutive accounting years and hence increases (decreases) the risk of delisting following a seasoned issue. If HR = 1, i.e., $\beta = 0$, the post–issue survival is unresponsive to the explanatory variable.

*(**, ***) denotes rejection of the hypothesis at the 10% (5%, 1%) significance level.

The following variables are treated as time-dependent variables in Cox regression: Manager, Firm size, Firm age, Favored-ind, Corporate control, Project-specific capital expenditure, Equity risk, State, Institution, A–share, Herf-1, Independence, Non-dual, Boardsize, and Supervisor.

Detailed definitions of the variables are given in Table 1.

Table 5. Adjusted hazard ratios of three types of seasoned issues and their interactions with corporate governance mechanism, estimated by means of Cox regression

	Model 1		Model 2	
Seasoned issues				
$Issue_{RI}$	1.7621**	(0.4137)	1.7528**	(0.4062)
$Issue_{CO}$	1.9539**	(0.6012)	1.9203**	(0.6145)
$Issue_{CB}$	0.5813**	(0.1524)	0.6217**	(0.1506)
Pre–issue characteristics				
MTB	0.7418*	(0.1205)	0.6213**	(0.1471)
RUNUP	1.8374*	(0.6712)	1.7291**	(0.4032)
Issue characteristics				
Manager	0.6411**	(0.1230)	0.7092**	(0.1098)
$Manager^2$	0.3936	(0.2745)	0.3633	(0.2674)
Firm age	0.9897	(0.0123)	1.0225	(0.0158)
Firm size	0.5421*	(0.1768)	0.6349*	(0.1593)
Favored–ind	0.7213**	(0.1075)	0.7645*	(0.1091)
Post–issue characteristics				
Corporate control	3.4159***	(1.6037)	3.4326**	(1.8029)
Project–specific capital expenditure	0.2173***	(0.1244)	0.2439***	(0.1185)
Equity risk	2.4072**	(0.9017)	2.3031*	(1.0346)
Ownership structure				
State	0.9037	(0.2596)	0.9384	(0.4032)
Institution	0.4694**	(0.1677)	0.4318*	(0.2095)
A–share	1.2371*	(0.1404)	1.1964	(0.2608)
Herf–1	1.8613**	(0.5012)	1.8461**	(0.5307)
Corporate governance				
Independence	0.6238**	(0.1267)	0.5131**	(0.1392)
Non–dual	0.9127*	(0.0463)	0.9432*	(0.0325)
Boardsize	1.4235*	(0.2796)	1.3739*	(0.2547)
Supervisor	0.9476	(0.1084)	0.9552	(0.2985)
$Issue_{RI}$ × Independence	0.5103**	(0.1515)		
$Issue_{CO}$ × Independence	0.3726***	(0.1208)		
$Issue_{CB}$ × Independence	0.9213*	(0.0417)		
$Issue_{RI}$ × Non–dual	0.7952	(0.1421)		
$Issue_{CO}$ × Non–dual	0.7085	(0.1506)		
$Issue_{CB}$ × Non–dual	0.8724	(0.1247)		
$Issue_{RI}$ × Boardsize	2.1408**	(0.6973)		
$Issue_{CO}$ × Boardsize	2.3155**	(0.8261)		
$Issue_{CB}$ × Boardsize	0.9504*	(0.0283)		
$Issue_{RI}$ × Supervisor	0.9251	(0.2306)		
$Issue_{CO}$ × Supervisor	0.9124	(0.0813)		
$Issue_{CB}$ × Supervisor	0.9467	(0.1218)		
$Issue_{RI}$ × Non–dual × Independence			0.5257**	(0.1473)
$Issue_{CO}$ × Non–dual × Independence			0.4082***	(0.1063)
$Issue_{CB}$ × Non–dual × Independence			0.9038*	(0.0490)
$Issue_{RI}$ × Boardsize × Independence			0.8703**	(0.0521)
$Issue_{CO}$ × Boardsize × Independence			0.7018**	(0.1226)
$Issue_{CB}$ × Boardsize × Independence			0.9425*	(0.0297)
$Issue_{RI}$ × Supervisor × Independence			0.8814**	(0.0532)

$Issue_{CO}$ × Supervisor × Independence	0.8105^{**}	(0.0726)
$Issue_{CB}$ × Supervisor × Independence	0.9073^{*}	(0.0511)
Firm–years at risk	20795	21633
Wald test	$\chi^2_{32} = 5880.00$	$\chi^2_{29} = 5620.12$

The sample consists of 2,253 successful seasoned offerings by means of rights issues, cash offers, and convertible bond issues on the Shanghai Stock Exchange and the Shenzhen Stock Exchange in the period 1992–2017.

Model 1 focuses on results of the 2–way interactions between each type of seasoned issuance and each of the four governance measures. Model 2 focuses on results of the 3–way interactions which combine Independence with the 2–way interactions between each type of seasoned issuance and Boardsize, Non–dual, and Supervisor, respectively.

Adjusted hazard ratios (HR) are reported, and robust standard errors of hazard ratios are in parentheses. Adjusted hazard ratios are derived by counting for issue characteristics and firm characteristics as defined in Table 1.

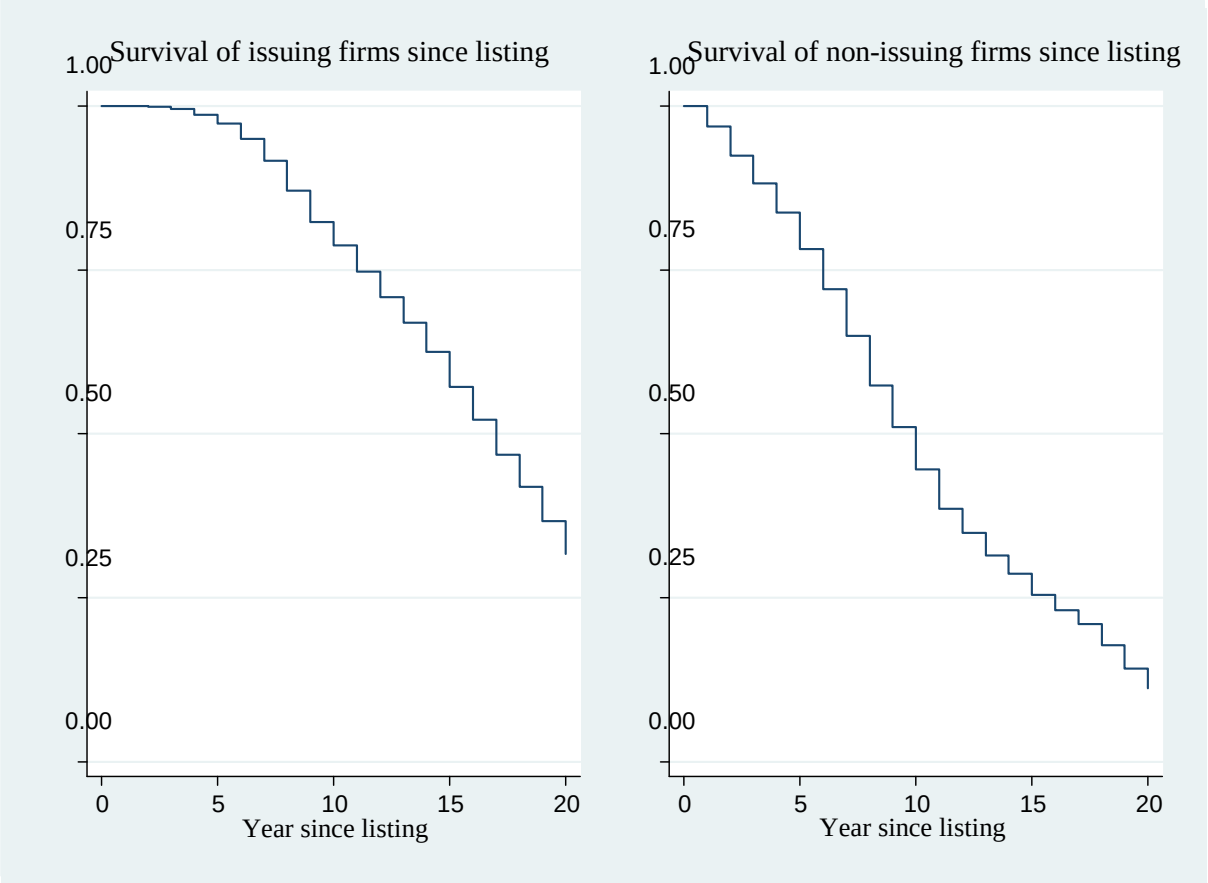
If HR > 1 (< 1), i.e., $\beta > 0$ (< 0), it indicates that the explanatory variable accelerates (decelerates) the time–to–occurrence or the time–to–recurrence of sustaining losses for three consecutive accounting years and hence increases (decreases) the risk of delisting following a seasoned issue. If HR = 1, i.e., $\beta = 0$, the post–issue survival is unresponsive to the explanatory variable.

*(**, ***) denotes rejection of the hypothesis at the 10% (5%, 1%) significance level.

The following variables are treated as time–dependent variables in Cox regression: Manager, Firm size, Firm age, Favoured-ind, Corporate control, Project-specific capital expenditure, Equity risk, State, Institution, A–share, Herf-1, Independence, Non-dual, Boardsize, and Supervisor.

Detailed definitions of the variables are given in Table 1.

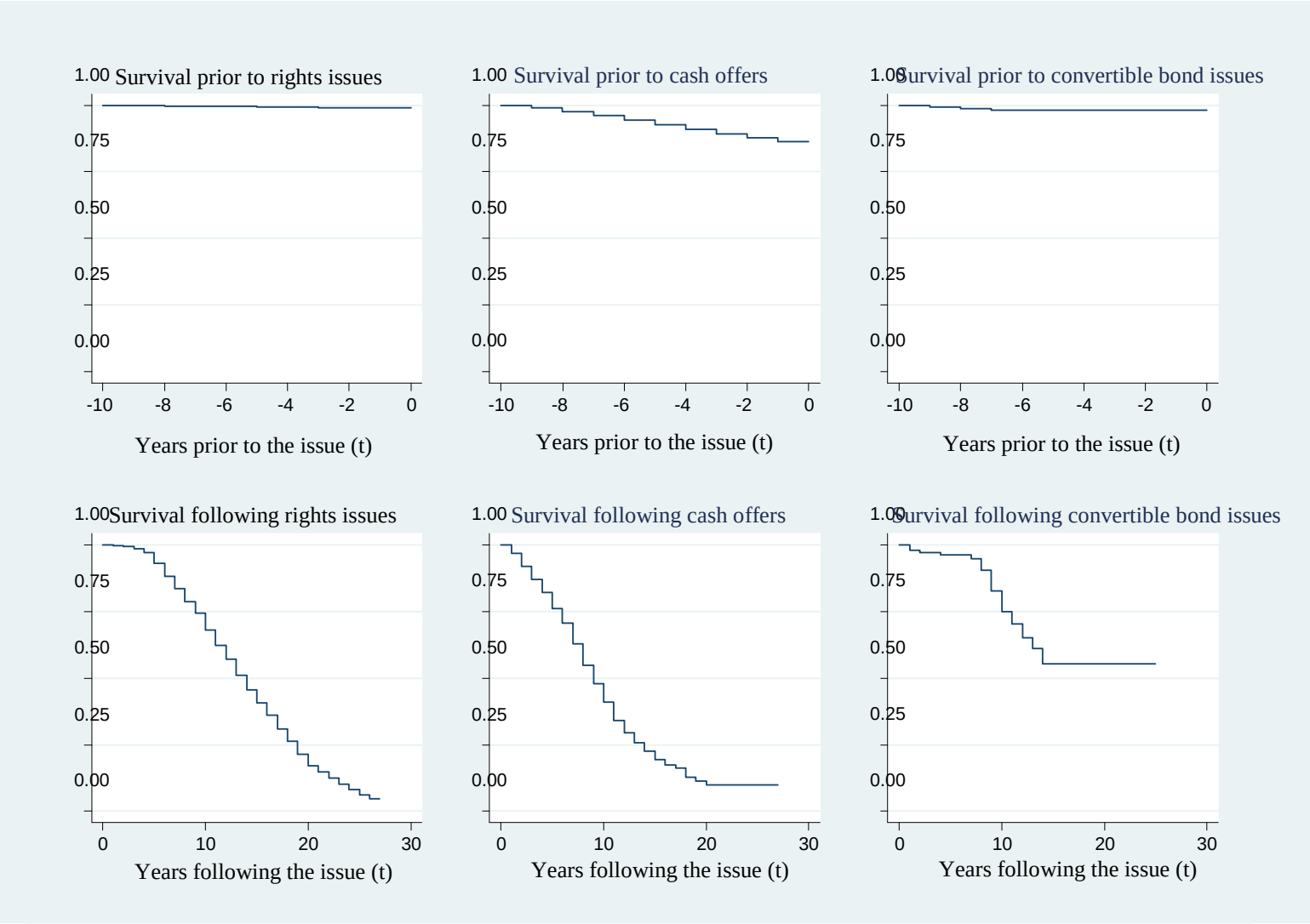
Figure 1. KM survival estimates for issuing firms versus non–issuing firms since listing



Issuing firms refers to firms that have ever implemented rights issues, cash offers or convertible bonds. Non–issuing firms refers to firms that have never implemented any type of seasoned issue.

The vertical axis represents the survival rates of firms. The horizontal axis denotes elapsed time in years after firms are listed on the stock exchange when t=0 until 2017, when the survival time is censored, or until the year when firms are delisted from the stock market.

Figure 2. KM survival estimates for rights issues, cash offers and convertible bond issues prior to and following issuance



The vertical axes represent the survival rates of issuing firms. The horizontal axes in the upper panel denote elapsed time in years before firms implement the issue when t=0; the horizontal axes in the lower panel denote elapsed time in years after firms implement the issue when t=0 till 2017 or till the year when firms are delisted.

Appendices

Table A1. Seasoned offering practice in the period 1992–2017 (CNY Chinese yuan, Million)

	Rights issues				Cash offers				Convertible bond issues			
Year	No. issues	Mean (CNY, M)	Median (CNY, M)	SD	No. issues	Mean (CNY, M)	Median (CNY, M)	SD	No. issues	Mean (CNY, M)	Median (CNY, M)	SD
1992	15	88.74	60.00	77.93	-	-	-	-	-	-	-	-
1993	49	127.40	76.13	132.32	-	-	-	-	1	500.00	500.00	0.00
1994	55	78.12	61.94	65.10	1	768.00	768.00	0.00	-	-	-	-
1995	63	92.28	60.00	85.56	-	-	-	-	-	-	-	-
1996	54	169.84	107.78	188.71	-	-	-	-	-	-	-	-
1997	147	207.79	136.32	258.46	-	-	-	-	-	-	-	-
1998	113	276.74	183.80	288.48	7	714.02	329.00	997.84	2	175.00	175.00	35.36
1999	131	228.02	176.55	215.09	8	954.51	1070.22	361.98	1	1500.00	1500.00	.
2000	186	335.42	247.94	369.11	34	884.50	751.44	455.45	2	1425.00	1425.00	106.07
2001	53	317.01	288.67	189.15	33	543.80	502.56	320.03	1	130.54	130.54	0.00
2002	35	266.87	215.65	158.28	3	332.38	329.13	66.75	5	830.00	800.00	426.26
2003	17	242.73	192.04	126.11	8	731.11	541.72	436.34	15	970.00	800.00	636.03
2004	6	876.64	158.48	1736.00	13	2590.28	755.47	6866.08	11	1309.36	1200.00	536.46
2005	-	-	-	-	2	876.67	876.67	782.56	-	-	-	-
2006	3	368.65	208.23	283.16	112	854.42	471.02	1066.60	7	626.71	430.00	456.30
2007	7	3298.45	1180.96	6052.80	132	1377.98	678.30	2190.60	10	794.80	460.00	634.90
2008	9	1568.12	1131.62	1372.71	60	1661.65	928.40	2168.21	5	1544.00	820.00	1133.79
2009	8	839.47	517.21	688.30	141	1682.90	760.00	2600.10	6	776.83	785.50	334.39
2010	14	978.42	648.77	788.93	153	1772.35	822.03	2944.91	6	2096.67	1365.00	2219.29
2011	12	2136.87	816.36	2678.30	110	1594.92	884.39	1782.10	9	4591.11	2100.00	7122.58
2012	7	982.32	610.22	713.12	213	1246.48	717.11	1597.75	5	3271.00	1205.00	3513.63
2013	10	1459.77	1387.62	849.47	290	1380.08	762.37	3255.62	6	1413.50	1300.00	989.65
2014	16	911.83	469.41	1015.83	472	1171.01	618.99	1645.26	12	2466.58	1470.00	2754.40
2015	4	859.44	777.03	539.18	751	1773.85	972.50	2651.17	3	3266.67	2400.00	2419.37
2016	8	1199.96	825.08	946.69	375	1497.75	728.10	3079.25	11	1932.00	1200.00	1509.73
2017	9	1686.36	1603.11	1312.63	38	1499.91	536.85	3918.37	40	1192.30	910.00	1072.52
TOTAL	1031				2956				158			

Table A1 reports seasoned offerings (total number of issues, and the mean, median and standard deviation of total issue proceeds) by rights issues, cash offers and convertible bond issues in the period 1992-2017.

Data source: GTA database, Guo Tai An Information Technology Company Ltd, 2018.

Table A2. Frequencies of seasoned offerings in the period 1992–2017

Rights issues			**Cash offers**			**Convertible bond issues**		
No. of years	No. of issues	Cumulative %	No. of years	No. of issues	Cumulative %	No. of years	No. of issues	Cumulative %
Duration between the first issue and the listing year								
			0	12	0.67			
1	29	8.90	1	136	8.27	1	5	3.62
2	151	55.21	2	d	17.10	2	10	10.87
3	65	75.15	3	222	29.51	3	17	23.19
4	19	80.98	4	226	42.15	4	10	30.43
5	8	83.44	5	179	52.15	5	17	42.75
6	13	87.42	6	119	58.80	6	19	56.52
7	10	90.49	7	85	63.56	7	13	65.94
8	7	92.64	8	62	67.02	8	5	69.57
9	9	95.40	9	66	70.71	9	4	72.46
10	5	96.93	10	78	75.07	10	4	75.36
11	3	97.85	11	49	77.81	11	4	78.26
12	2	98.47	12	57	80.99	12	3	80.43
13	1	98.77	13	42	83.34	13	6	84.78
14	1	99.08	14	55	86.42	14	2	86.23
15	1	99.39	15	39	88.60	15	6	90.58
17	1	99.69	16	46	91.17	16	2	92.03
19	1	100.00	17	44	93.63	17	2	93.48
			18	27	95.14	18	2	94.93
			19	31	96.87	19	3	97.10
			20	18	97.88	20	2	98.55
			21	19	98.94	23	2	100.00
			22	9	99.44			
			23	7	99.83			
			24	2	99.94			
			25	1	100.00			
Duration between two consecutive issues								
1	2	0.83	1	352	28.30	2	1	8.33
2	78	33.20	2	275	50.40	3	2	25.00
3	72	63.07	3	182	65.03	4	5	66.67
4	29	75.10	4	118	74.52	6	1	75.00
5	10	79.25	5	85	81.35	7	1	83.33
6	9	82.99	6	78	87.62	8	2	100.00
7	7	85.89	7	64	92.77			
8	6	88.38	8	29	95.10			
9	7	91.29	9	14	96.22			
10	4	92.95	10	13	97.27			
11	3	94.19	11	6	97.75			
12	6	96.68	12	11	98.63			
13	2	97.51	13	10	99.44			
14	1	97.93	14	2	99.60			
16	2	98.76	16	2	99.76			
18	2	99.59	18	1	99.84			
20	1	100.00	23	2	100.00			

The upper panel of Table A2 reports duration year of seasoned offerings (total number of issues and cumulative percentage) between the first issue and the listing. The lower of Table A2 reports seasoned offerings (total number of issues and cumulative percentage) between the two consecutive issues of the same type of issuance.

Data source: GTA database, Guo Tai An Information Technology Company Ltd, 2018.