What's Wrong with Rights?

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Abstract. We investigate a failure cost hypothesis of equity flotation mechanism choice, in which the expected failure cost of non-underwritten rights offerings influences the underwriting decision. Although issuers can, in theory, completely self-insure these offerings with a sufficiently low subscription price, we find evidence consistent with constraints in subscription price-setting—subscription price signals project quality, and the propensity to underwrite is decreasing in expected overall takeup. We also find that firm ownership concentration is inversely related to the likelihood of underwriting only because of its positive relation with subscription precommitment, a supplementary insurance mechanism. These results support the failure cost hypothesis as a potential factor in explaining the rights issue paradox.

1. Introduction

Equity rights offers have presented a major challenge to financial economists over the past three decades. Smith (1977) describes a rights issue paradox, where corporate managers prefer underwritten to non-underwritten equity offerings even though the former are more costly.[1] Specifically, direct flotation costs for firm commitment and non-underwritten rights offerings are estimated to be 6.17% and 2.45% of the proceeds respectively. Particularly disconcerting is the trend noted in Eckbo (2008) that the percentage of rights issues among U.S. seasoned equity offerings (SEOs henceforth) has shrunk from 50% during 1935–1955 to a dismal 2% during 1980–2008; given that $730 billion were raised during the latter period via firm commitment offerings, the direct cost differential implies $27 billion have potentially been incurred due to suboptimal choices by firms. Furthermore, the paradox has become more acute not only in the U.S., but also in other parts of the world, where a multitude of studies have documented an increasing reliance on underwriters in SEOs.[2]

Resolution of the paradox, unfortunately, remains elusive as it is challenging to show that omitted costs (benefits) associated with non-underwritten (underwritten) offers are sufficient to explain the direct cost differential, because doing so requires estimating the economic significance of counterfactual elements. Moreover, countries such as the U.S. for which the paradox is severe make undesirable test beds because of their poor sample sizes, necessitating research on other countries in seeking resolution. Ross et al. (2009) perhaps best summarize the current state of the rights issue paradox with the following excerpt from their best-selling corporate finance textbook:

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[1]The most common equity flotation mechanisms are the firm commitment offering and the standby rights offering, both of which are underwritten, and the uninsured rights offering, which is non-underwritten.

[2]For instance, the trend toward underwriter-intermediated equity issuances has been observed in Canada (Ursel and Trepanier, 2001), Hong Kong (Wu et al., 2005), Japan (Eckbo et al., 2007), France (Gajewski and Ginglinger, 2002), and Norway (Bøhren et al. 1997).

> "Rights offerings. . . appear to be cheaper for the issuing firm than cash offers. . . Despite this, rights offerings are fairly rare in the United States; however, in many other countries, they are more common than cash offers. Why this is true is a bit of a mystery and the source of much debate, but, to our knowledge, no definitive answer exists."

In this paper, we develop and test an explanation for the right issue paradox that is based on the indirect costs of an uninsured rights offering. A non-underwritten rights offering, in contrast to an offering with a standby guarantee imposes a cost due to a risk of failure. This cost derives from the project opportunity loss or delay that results from an inability to raise the requisite offering proceeds. Is the cost due to a risk of failure relevant or can the issuer mitigate these costs on its own? Conventional academic wisdom (e.g., Smith (1977)) suggests non-underwritten rights offerings can be effectively self-insured by the issuer through a sufficiently low subscription price, which implies an expected failure cost that is arbitrarily close to zero for such issues.

Contrary to the widely-held academic belief, corporate managers appear averse to setting low subscription prices, a peculiarity noted from our interviews with industry practitioners and in Bacon (1972), among others. Recent empirical evidence sheds some light on this puzzling behavior: Holderness and Pontiff (2012) documents that 36% of rights, on average, are not exercised and that a 95% average takeup is attributable to the oversubscription provision, which allows exercising rightsholders to purchase more than their pro rata share of offered shares to the extent that some rightsholders do not exercise their rights. For heavily-discounted rights offerings, this implies a substantial wealth transfer from the passive rightsholders, presumably largely composed of existing shareholders, to the rightsholders who exploit the oversubscription provision. Furthermore, litigation risk can increase with such wealth transfers—McLean et al. (2011) find that the probability of a rights offering decreases with investor protection—which suggests that managerial disinclination toward low subscription prices has an economically sound basis.

We argue that even though lowering subscription price reduces the cost due to risk of failure, it instead imposes a significant cost due to wealth transfer on non-participating shareholders. A firm that undertakes an uninsured rights offering at a discounted subscription price is trading off the cost of failure against the cost that arises from price discounting. All else equal, corporate managers should choose equity flotation methods with the lowest expected cost. In the case of an uninsured rights offering the cost comprises small direct costs, potential failure costs and cost of wealth transfer due to low subscription prices. In the case of an underwritten rights offering the expected cost of failure is non-existent. Hence, the cost largely comprises direct costs and the cost of discounting imposed by the underwriter.

We develop and test hypotheses that are based on a firm's choice of whether to self-insure a rights offering or to completely eliminate the failure cost by obtaining underwriting. Given that reducing potential failure costs is the prime driver for choosing underwritten offers, we label our hypotheses collectively as failure cost hypotheses (FCH). The possibility of failure of a rights issue has been discussed in the literature, yet its potential to explain the rights issue paradox has largely been overlooked. For the FCH to be a viable explanation for the rights issue paradox, the expected

failure and wealth transfer costs for a non-underwritten offering must be smaller than all direct and indirect costs if the firm had instead chosen to undertake an underwritten offering. As it is unfeasible to observe the counterfactual costs we instead test the implications of the FCH on a set of firms that undertake rights offerings.

We test implications of the FCH using a hand-collected sample of non-underwritten and underwritten rights offerings made in Singapore, a country with significant rights-issuing activity. In addition to its decent size, our sample is characterized by balanced representation from a spectrum of industries. This compares favorably to U.S.-based samples, which heavily comprise either utilities or financials.[3] Singapore also provides a unique confluence of institutional features desirable for our study. First, as there are virtually no firm commitment offerings, the ability to effect changes in a firm's control structure is relatively homogeneous across the considered offering types, which effectively allows us to place less emphasis on determinants of the underwriting decision that relate to shareholder control considerations.[4] Second, the absence of capital gains taxes enables us to rule out tax-based alternative hypotheses of our empirical findings. Finally, the prevalence of subscription precommitments in our rights offering sample facilitates a study of this potential substitute insurance mechanism.

The four key results of this study are consistent with the FCH. First, abnormal announcement return for uninsured rights offerings is positively related with subscription price discount, with no corresponding relation for standby rights offerings.[5] Firms with projects that are more valuable are likely to set larger subscription price discounts to insure against offering failure and the larger abnormal announcement return reflects the information content inherent in the subscription price discount for uninsured offerings. For standby offerings, no relation between abnormal announcement return and subscription price discount is expected since the underwriter fee and subscription price are likely to be determined jointly in the standby agreement.

Second, an increase in firm ownership concentration increases subscription precommitment. Corporate managers of firms with higher ownership concentration find it less costly to solicit and procure subscription precommitments. As ownership concentration decreases, a trend observed among firms in many countries and articulated in Eckbo (2008), it becomes prohibitively expensive to orchestrate a successful uninsured rights issue through precommitments. The resultant increase over time in the expected failure cost of uninsured rights offerings can explain the proliferation of underwritten offerings, which makes the FCH an appealing explanation for the rights issue paradox.

Third, an increase in expected overall takeup decreases the likelihood that a rights issue will be underwritten, with this result robust even after controlling for expected existing shareholder takeup. Corporate managers enlist underwriters to guarantee the proceeds of an issue when the probability,

[3]Eckbo and Masulis (1992) report 63 percent of rights issuers are utilities for the 1963 to 1981 period, while Eckbo (2008) documents 61 percent of rights offerings are by financial firms for the 1980 to 2008 period.

[4]Also, for tests of implications of the FCH, standby rights are equivalent to firm commitment offerings in the sense that offering proceeds are guaranteed by the underwriters with both flotation methods.

[5]In Singapore, the subscription price and underwriter involvement, if any, are almost always disclosed at the rights offering announcement.

and thus expected cost, of failure for an uninsured issue is high. Of note, in terms of the implications for takeup, there is a subtle but important difference between that of the FCH and that of the adverse selection cost hypothesis of Eckbo and Masulis (1992)—the former implies the decision to underwrite hinges on the perceived success of the issue regardless of the type of shareholder (existing or prospective) that exercises the right, whereas the latter implies the underwriting decision is dependent only on takeup by existing shareholders due to wealth transfer considerations.[6]

Fourth, significant subscription precommitments decrease the propensity to underwrite a rights offering. If subscription price discount cannot completely insure an offering, subscription precommitments serve as an important supplementary tool to improve the odds of a successful equity issue, reducing the expected failure cost in the process.[7] Additionally, firm ownership concentration, which is inversely related to the probability of underwriting, becomes insignificant after we control for subscription precommitment, which implies ownership concentration per se is irrelevant to the underwriting decision but rather derives its perceived explanatory power through its correlation with subscription precommitment.

In essence, this study underscores offering failure as a potential explanation for the rights issue paradox, an explanation that has not been empirically studied in the literature, to the best of our knowledge. Our results lend credence to the FCH—it appears issuers actively manage expected failure costs in ways that entail more than just subscription price-setting; in particular, we find evidence consistent with corporate managers choosing to underwrite their offerings when the expected failure cost of an uninsured rights issue is high, which occurs when subscription precommitments cannot be easily procured or when overall takeup is expected to be low. While establishing sufficiency remains a challenge, the FCH has the potential to explain the time trend toward a greater propensity to underwrite offerings. These findings should contribute in a meaningful way to resolution of the rights issue paradox and, in a broader sense, enrich understanding of what drives equity flotation mechanism choice.

Several theories have been proposed to reconcile the rights issue paradox. It has been argued that a rights issue forces some shareholders to incur a capital gains tax. A reduction in capital gains tax should imply increased usage of rights, which is counterfactual [also see Smith (1977)]. Others have argued that underwriting is driven by agency considerations (benefits derived by managers or costs of monitoring managers). Hansen and Pinkerton (1982) cast doubt on the monitoring cost hypothesis and instead put forward a merchandising cost argument that is challenged by Smith and Dhatt (1984).

Of the prevailing theories on equity flotation mechanism choice, the adverse selection hypothesis advocated in Eckbo and Masulis (1992) is perhaps the most relevant. They hypothesize that the relative scarcity of rights offerings is attributable to their greater adverse selection costs, which take the form of potential wealth transfers between existing shareholders that do not participate in the

[6]The wealth transfer in Eckbo and Masulis (1992) occurs between existing and prospective shareholders and stems from an equity mispricing assumption.

[7]Although it is possible that subscription precommitments are used primarily as a signaling as opposed to an insurance mechanism, we find no relation between subscription precommitment and abnormal announcement return.

offering and prospective shareholders that do. Eckbo and Masulis (1992) reason that firms with lower expected existing shareholder takeup are more susceptible to these transfers. They argue that undervalued firms prefer not to issue while overvalued ones choose underwritten offerings to exploit the noisy certification process. The key implications are that underwritten offerings will be characterized by negative announcement day returns and the proportion of underwritten offerings increases as underwriter signal precision decreases. Various follow on studies have documented support for adverse selection as a potential driver of equity issuance decisions.[8]

While the international evidence is generally consistent with adverse selection in equity flotation mechanism choice, it cannot explain the cross-sectional observation that large subscription price discounts are accompanied by higher announcement day returns. Furthermore, the theory suggests that the observed decrease in the proportion of rights offerings over time should correspond with either an increase in the proportion of firms with low expected existing shareholder takeup, a decrease in expected existing shareholder takeup, or a decrease in the effectiveness of underwriter certification, none of which has been empirically demonstrated.

The remainder of this paper is organized as follows: In the next section, we survey global trends in the use of rights issues. Section III develops implications of the FCH that shed light on the rights issue paradox, while Section IV presents descriptive statistics for our sample. We test the implications of the FCH and discuss key results in Section V, before providing concluding remarks in Section VI.

2. Country differences and time trends in the use of rights issues

In this section, we document and compare the extent to which rights issues are employed in various countries as well as examine global trends in the relative use of rights issues over the past decade, using SEO data from SDC Platinum.

Table I panel A contains the annual number of rights issues and dollar proceeds, as well as the respective rankings, for countries that exhibit consistent rights-issuing activity over the 1999 to 2009 period.[9] Several observations are noteworthy: First, Australia indisputably accounts for the largest number of rights offerings over the past decade whereas, by dollar proceeds, France typically raises the most capital via rights issues. Existing studies based on these countries include, respectively, Balachandran et al. (2008) and Gajewski and Ginglinger (2002).

Second, the U.S., despite being unparalleled in SEO proceeds raised, accounts for only a relatively small proportion of global rights issues, both in number and dollar proceeds. Hence, the rights issue paradox is especially pronounced in the U.S., given that Smith (1977) documents firm commitment offerings compared with rights offerings in the U.S. have significantly larger direct flotation costs.

[8]See Bøhren et al. (1997) for evidence using Norwegian rights issues, Slovin et al. (2000) for evidence in the United Kingdom and Balachandran et al. (2008) for evidence in the Australian market.

[9]Our procedure for explicit identification of a country in Table I panel A is as follows: Each year, countries are ranked by their contribution to global rights issue proceeds. Countries are explicitly identified if, for at least 9 of the 11 years, they are not among the countries that account for the last one percent of global proceeds. Singapore remains explicitly identified even if we require the criterion to be satisfied for all years. Also, figures for 2009 are for the first three quarters of that year.

Although Heron and Lie (2004) report rights issues resurfaced in the 1990s, a trend that we find extends to 2003, the figures for the U.S. in the more recent years are rather lackluster.

Lastly, Singapore has gained greater worldwide prominence in recent years for its rights-issuing activity, ranking third in 2009 based on the number of rights offerings made. In terms of proceeds, $8.8 billion were raised by Singaporean firms through rights issues in 2009, which compares favorably to the $9.4 billion raised by French firms in the same year. Accessibility to quality data on a large sample of rights offerings is a key reason we make Singapore our country of choice for this study.

Table I panel B summarizes information on proceeds for rights and non-rights SEOs by year. From the panel, it appears the total amount of capital raised through SEOs has generally been increasing over time, yet deal sizes have become smaller. For instance, the aggregate proceeds raised through SEOs more than doubled from $273 billion in 1999 to $625 billion in 2009, yet the median deal size shrunk significantly over the same period, from $53.4 million to $8.3 million for non-rights offerings and $33.2 million to $18.3 million for rights offerings.

More importantly, contrasting total dollar proceeds with U.S. contribution to that without, we observe that although the U.S. accounts for 22.97% of all SEO proceeds, it is only responsible for 1.63% of all rights offering proceeds.[10] Yet, it is evident the proportion of global SEO proceeds attributable to rights issues has increased steadily over the period from 10.21% in 1999 to 19.43% by 2009. In fact, outside of the U.S., 25 cents of every dollar raised is effected through a rights offering. The juxtaposition of the relative scarcity of rights in the U.S. and an increasing reliance on rights in the rest of the world further accentuates the U.S. rights issue paradox.

3. Hypotheses development

In this section, we propose testable hypotheses that help further our understanding of the rights issue paradox. To facilitate exposition, consider the following simple setting: A firm needs to raise equity capital for a project whose NPV is not known to the market. Offering failure leads either to loss of project opportunity or project delay, both of which are costly to the firm. The issuing firm can either have the offering underwritten and incur higher direct costs, or attempt to self-insure the offering through a subscription price discount or precommitments and incur lower direct costs.

From an insurance perspective, both methods appear at first blush to be equivalent—underwriting obviates the risk of offering failure, as does self-insuring through a sufficiently large subscription price discount. This equivalence and a comparison of direct costs suggest self-insuring is superior to underwriting, which does not accord with what is observed in practice, as U.S. issuers increasingly shun self-insured offerings in favor of underwritten offerings. However, a critical assumption underlying the rights issue paradox is that self-insurance via subscription price discount is costless.

Is self-insurance costless? Bacon (1972), among others, argues that corporate managers are reluctant to set low subscription prices, and from interviews with industry practitioners we note corroborating views. Recent studies provide an economic rationale for such behavior: Holderness

[10]These percentages, while not explicitly reported in Table 1 panel B, can be derived from the total rights and non-rights SEO proceeds for the entire period that are reported in the table.

and Pontiff (2012) document that, on average, 36% of rights are not exercised but only 5% of the issue is not taken up because exercising rightsholders are able to purchase more than their pro-rata share of offered shares through the oversubscription provision. For heavily-discounted offerings, the lack of participation implies a substantial wealth transfer from the passive rightsholders, presumably composed largely of existing shareholders, to the rightsholders who exploit the oversubscription provision.[11] Corporate managers, who are cognizant of their fiduciary responsibility to shareholders, should be averse to taking actions that lead to material wealth transfers and, consequently, increased litigation risk. Indeed, McLean et al. (2011) find that the probability of a rights offering decreases with investor protection.

If self-insurance is costly, the issuing firm optimally accepts a non-zero probability of offering failure and trades off the cost of offering failure against the cost of mitigating the risk of such failure, the sum total to which we refer as failure costs henceforth for brevity. We hypothesize that failure costs of self-insured offerings are non-zero and that, ceteris paribus, issuers prefer equity flotation methods with the lowest failure costs (the failure cost hypothesis). This means the issuing firm's decision boils down to choosing between an underwritten offering with higher direct costs but zero failure costs and a non-underwritten offering with lower direct costs but non-zero failure costs. As such, we believe the indirect costs borne by issuers that choose to self-insure is critical to a deeper understanding of the rights issue paradox.

We develop three implications of the FCH, all of which follow from costly self-insurance.

First, in the presence of costly discounting, we consider what the market can learn from an issuer's choice of subscription price for each rights offering method.

For uninsured offerings, firms with projects that are more valuable will incur higher costs due to delayed or missed opportunities if they fail to raise the requisite proceeds. Thus, on the margin, firms with higher-NPV projects are willing to bear a higher cost due to subscription price discounting than firms with lower-NPV projects. Given asymmetric information between managers and investors, the market infers higher project NPVs for firms that set larger subscription price discounts leading to larger abnormal announcement returns.[12]

For standby offerings, we conjecture that the subscription price discount is determined in conjunction with underwriter fees. Given that the discount is not chosen to minimize the cost of delayed or missed opportunity, which in turn depends on the project NPV, the discount should contain no information on project value. Hence, the market cannot learn about the project NPV from the discount for such offerings.

[11]In the appendix (see Lemma 1) we show that the wealth transfer from passive shareholders to active shareholders is increasing in the subscription price discount.

[12]In the Appendix, we present a simple illustrative model that analyzes the trade-off between the cost of delayed or missed opportunity and the cost of discounting. We show that if the former is higher for firms with higher-NPV projects, then issuers optimally choose a larger discount. In our setting, the firm's manager is value maximizing or, equivalently, cost minimizing, and the market learns from this behavior. It can be shown the results of the model generalize to the case in which the manager's objective function has a sufficiently small weight on stock price and the rest on long-term shareholder value; in that case, the benefit of mimicking by firms with low-NPV projects will be small enough that it does not overwhelm the cost of mimicking.

Thus, the choice of subscription price discount gives rise to the following hypothesis:

FCH-1: The abnormal announcement return for uninsured rights issues is increasing in the subscription price discount, with no such relation for standby rights issues.

Note that FCH-1 depends on the existence of managerial constraints in subscription price-setting, which can be due to wealth transfer considerations. If existing shareholders fully participate, either by exercising or selling their rights, discounting will not induce wealth transfers. Consequently, firms with low-quality projects and those with high-quality projects would both choose discounts large enough to eliminate the probability of offering failure, leading to no market learning for uninsured offerings as well.

While the argument and prediction for standby offerings are similar to those of Heinkel and Schwartz (1986), our predictions are diametrically opposed for uninsured offerings. Heinkel and Schwartz (1986) predict abnormal announcement return for uninsured offerings is negatively related to subscription price discount. A key difference is that Heinkel and Schwartz (1986) assume the probability of offering failure is a function of firm type (higher-value firms have a lower probability of offering failure) whereas we do not; in our setting, firms with good projects have a higher cost of delayed or lost opportunity for the same probability of offering failure, making this cost the key distinction between firm types.

Second, we consider the cost of using subscription precommitments to mitigate the risk of offering failure.

Given the cost of subscription price discounting, obtaining precommitments to subscribe from block shareholders is an alternative self-insurance mechanism. However, obtaining subscription precommitments is not costless, since corporate managers have to expend time and effort convincing substantial shareholders to maintain their pro-rata stake in the firm. We conjecture that the cost of using precommitments will be a function of a firm's ownership structure. Specifically, we suggest that it is easier to solicit and procure precommitments for closely-held firms than for widely-held firms. Managers of a closely-held firm need only approach fewer substantial shareholders, making it easier to coordinate and, thus, reduce the probability of failure through the use of precommitments. Equivalently, for closely-held firms, a greater proportion of offering proceeds are guaranteed via precommitments for a given number of substantial shareholders that managers successfully get to precommit to subscribe, leading to the following hypothesis:

FCH-2: The level of subscription precommitment is increasing in the degree of firm ownership concentration.

It follows from FCH-2 that ownership structure is a key firm characteristic that factors into the offering insurance decision. As firm ownership concentration becomes more diffuse, a trend observed in many countries with developed capital markets, procuring subscription precommitments becomes more costly. This translates into higher failure costs for uninsured rights offerings, all else equal, and a greater propensity to have offerings underwritten. Thus, the rationale behind FCH-2 has the potential to explain the observed increasing use of underwritten offerings over time.

Prior studies have examined possible relation between firm ownership concentration and equity flotation method choice. For instance, Cronqvist and Nilsson (2005) find closely-held firms tend to employ rights issues, in line with their hypothesis that such firms choose flotation methods that preserve possible private benefits of control. Although Cronqvist and Nilsson (2005) do not study the rights issue paradox, they present an alternative hypothesis to the FCH as far as the relation between ownership concentration and flotation method choice is concerned, which we subsequently address. Further, Hansen and Pinkerton (1982) suggest widely-held firms would incur higher merchandising costs in rights offerings and thus prefer firm commitment offerings instead. As their hypothesis also predicts an inverse relation between firm ownership concentration and the likelihood of underwriting, we later seek to distinguish between their hypothesis and the FCH. In particular, we propose ownership concentration is relevant to the underwriting decision only because it proxies for subscription precommitment, a substitute insurance mechanism.

Finally, we consider the role of expected subscription in the underwriting decision of rights offerings in the face of costly self-insurance.

As mentioned earlier, the key assumption behind the rights issue paradox is that the cost of self insurance via subscription price discounting or obtaining large precommitments is small when compared to the direct costs of obtaining underwriting. In this paper, we have proposed that self insurance is costly and the choice of obtaining insurance from an underwriter crucially depends on the tradeoff between self insurance costs and direct costs of underwriting. Hence we expect firms that choose to obtain insurance from underwriters would have a higher likelihood of failure at the terms of the offering. On the other hand, firms that choose to self insure would have a lower likelihood of failure. We proxy the likelihood of failure with expected total subscription.

If self insurance costs were, in fact, negligible we should expect that a firm's choice of whether to obtain a standby guarantee depends on other economic factors like adverse selection costs. For instance, Eckbo and Masulis (1992) argue that, due to adverse selection, an increase in expected takeup by existing shareholders decreases the probability of purchasing insurance from underwriters. Note that if failure costs drive the underwriting decision the identity of the shareholders is largely irrelevant.

The aforementioned rationale leads us to hypothesize the following:

FCH-3: The propensity to underwrite rights issues is decreasing in the expected subscription, regardless of whether the subscriber is an existing shareholder.

4. Data and sample description

We obtain an initial list of rights issues from the Singapore Exchange (SGX).[13] This list, which spans the 1997 to 2009 period, provides basic offering information such as the issuer, subscription price, type of security issued, and offer size. From this initial list of 340 issues, we exclude offerings by REITs and issues in which warrants with long maturities are offered.[14] Based on the refined list of 206 issues, we searched the SGX website and the SGX Archive Investment Resources for offering and results announcements, as well as offering prospectuses.[15] We use the offering announcements and prospectuses to verify the information acquired from the SGX, to obtain announcement dates and subscription precommitments, and to identify whether the issues are underwritten. We obtain subscription rates from the results announcements. We end up with a working sample of 196 observations after filtering out offerings whose associated filings are unavailable in the SGX depositories.

Market data such as daily price and number of shares outstanding, industry classification, and foreign exchange rates are sourced from Datastream, while incorporation year and financial data such as book values of debt and equity are extracted from OSIRIS. Shareholdings information on major shareholders are obtained from Thomson ONE Banker, and supplemented by data hand-collected from annual reports. We also collect for each issuer, where available, the most recent Governance and Transparency Index (GTI henceforth), which measures the quality of governance based on board, remuneration, accountability, and audit characteristics, and has been jointly published annually by The Business Times and the National University of Singapore since 2008.

Panels A and B of Table 2 present our sample distribution, respectively, by year and industry, both for the full sample and the uninsured and standby subsamples. From panel A, we observe the number of sample rights offerings has been increasing over time, a trend that corresponds with that for Singaporean rights issues documented in panel A of Table I, which suggests application of our filter rules does not result in disproportionate temporal sample attrition. Surprisingly, the increase is largely attributable to growth in the use of uninsured issues while the number of standby issues has remained relatively constant, bucking the trend pointed out in Eckbo et al. (2007) toward underwritten equity issuances. Also, uninsured issues account for a larger proportion of our sample—approximately 70 percent—a desirable feature given our intent to examine the subscription price discount's information content, which should be meaningful only for uninsured issues.[16]

[13]Rights issues are effectively the exclusive means of public SEO in Singapore. Firm commitment offerings are few and far between in Singapore. Although private equity placements are used, we limit our analyses to public offerings to maintain consistency with the general focus of the literature relating to the rights issue paradox. Moreover, since Cronqvist and Nilsson (2005) advocate that the difference between private placements and rights issues in the propensity to alter ownership structure has control implications, analyzing only rights issues means that, by design, such control considerations are less likely to account for the choice between uninsured and standby issues.

[14]For the latter offering type, the warrants are typically issued concurrently with the rights, often with a much later expiration date compared with that of the rights, and at an exercise price different from the rights subscription price.

[15]The SGX website has corporate announcements and prospectuses for the most recent 24 months while the SGX Archive Investment Resources, accessible via the Investment Resource and Information Service at the National Library, has coverage for earlier years, starting from 1997.

[16]Such an inquiry would be more challenging for samples based on the U.K., for example, where Slovin et al. (2000) report that less than 10 percent of rights offerings are uninsured.

From Table 2 panel B, we observe our sample is fairly well-distributed across industries, with issuers from the industrials category making up the largest proportion of our sample at 32 percent, and notable issuer representation ranging from 13 to 17 percent in the consumer goods, consumer services, financial, and technology categories.[17] Traditionally, the U.S. literature on rights offerings are restricted to samples weighted heavily on utilities (e.g., Eckbo and Masulis (1992) and Singh (1997)), limiting the generalizability of results that are largely based on a sample of issuers subject to extensive regulation.[18] In contrast, our sample is complementary in the sense that utilities constitute an insignificant part of our sample. Additionally, by juxtaposing our sample distribution with that for all Singaporean firms, we note the similarity of the distributions—the difference in proportions for any given industry classification is less than five percent. Therefore, it appears our sample of rights issuers is representative of Singaporean firms as a whole from an industry distribution standpoint.

Table 3 presents descriptive statistics for various offering, firm, and stock characteristics for our full sample, as well as for our uninsured and standby subsamples. Several points are worthy of mention. First, the mean subscription price discount, computed relative to the price last transacted prior to issue announcement, is approximately 46%, strikingly larger than that reported in Ursel (2006) of approximately 14% for U.S. rights offerings.[19] From an FCH perspective, the relatively larger discount can shed light on the relative popularity of rights issues in Singapore vis-à-vis the U.S. Compared with U.S. firms, Singaporean firms are more willing to set lower subscription prices, which suggests the subscription price discount is a more viable insurance mechanism for Singaporean issuers, whose uninsured rights issues have lower expected failure costs.[20]

Second, the mean subscription price discount for uninsured issues of 48.40% is notably larger than that for standby issues of 39.23%, with the difference statistically significant at the 5% level given a p-value of 0.0202. This suggests that issuers making uninsured offerings select lower subscription prices than those making standby offerings in order to self-insure against issue failure, highlighting the role of the subscription price and the underwriter as substitute insurance mechanisms.

Third, the mean offer size of S$138.89 million is significantly larger than the corresponding median of S$17.34 million. Although this implies a number of very large offerings, the mean and median offer sizes are remarkably similar to those for U.S. rights offerings, documented in Ursel (2006) to be $88.6 million and $12.6 million respectively. We note in passing that the median Singaporean rights offering increases the issuer's market capitalization by 25%. Fourth, standby offerings are, on

[17]We use Datastream's INDM2 industry classification, in which the industrials category comprises subcategories such as business support, construction, electrical equipment, industrial machinery, transportation, and waste disposal.
[18]An exception is Ursel (2006), in which the sample used excluded utilities by design.
[19]We refrain from using discounts reported in prospectuses due to potential biases that may arise from firms having discretion over the choice of reference prices.
[20]Willingness to set a larger subscription price discount implies lower direct flotation costs for standby rights issues, since the expected proportion of the issue that is unsubscribed which the underwriter has to take up is reduced. The discrepancy in subscription price discounts may, in turn, reflect country differences in attitudes toward risk, the availability of investment opportunities and the value of such opportunities, although we do not rule out the possibility that it reflects differences in tax structures, as capital gains are not taxed in Singapore.

average, substantially larger than uninsured offerings, with a median offer size of S$56.28 million for the former and S$14.66 million for the latter, a finding consistent with that of Eckbo and Masulis (1992) for industrial firms. This is possibly because the failure of larger issues is associated with foregone opportunities of greater economic significance, inducing managers to eliminate the possibility of failure through underwriting. We note, however, that the difference in relative offering size is much smaller. Thus, some of the difference in offer size might be driven by the fact that issuers of standby offerings are, on average, larger than those of uninsured offerings, with a mean market capitalization of S$1,987.52 million for the former versus S$353.30 million for the latter.

Fifth, the mean actual takeup for uninsured offerings is 94%, suggesting subscription prices are not always set sufficiently low to guarantee full takeup of uninsured issues, even though part of the unsubscribed portion is likely attributable to investor neglect.[21] Sixth, uninsured offerings have higher average subscription rates than standby offerings, 134% for the former compared with 110% for the latter, with the difference statistically significant at the 1% level given a p-value of 0.0006.[22] This finding suggests that managers prefer uninsured to standby offerings when they expect their offering to be "hot" or well-received, and lends credence to the FCH, as higher expected overall subscription implies lower expected failure costs.

Seventh, subscription precommitments by existing shareholders feature significantly in our sample, evident from the fact that both the mean and median proportion of issue subscription precommitted are 49%. On average, we observe that precommitment levels for uninsured issues are higher than those for standby issues, with means of 51% and 45% respectively. While this is consistent with precommitment and underwriting serving as substitute mechanisms to insure issue success, the observed difference in means is not statistically significant at conventional levels (p-value of 0.2173). Eighth, consistent with the FCH, it appears uninsured rights issuers have higher ownership concentration compared with standby rights issuers. This is evident from both the mean number of block shareholders, 2.50 for uninsured rights issuers versus 2.04 for standby rights issuers, and the mean aggregate firm ownership stake of block shareholders, 51.54% for uninsured rights issuers compared with 42.04% for standby rights issuers.[23] Of course, this finding is also consistent with the merchandising cost hypothesis of Hansen and Pinkerton (1982), which underscores the need for tests of the FCH that are more refined.

Lastly, we point out that stock price runup, defined as in Balachandran et al. (2008) to be the raw return for the one-year period prior to issue announcement, for uninsured offerings is on average positive with a mean of 37%, which is significantly different (p-value of 0.0194) from 3%, the mean runup for standby offerings. A possible explanation for this finding is that managers extrapolate

[21]The mean actual takeup for standby rights offerings is less than 100% due to the occasional offering where the underwriter guarantees only part of the unsubscribed portion of the issue.

[22]Subscription rates can exceed 100% because rights holders that fully subscribe to their pro-rata rights allocation are entitled to apply for allotment of unsubscribed shares at the subscription price, which is essentially the oversubscription privilege in the U.S context (Hansen et al., 1986), and the shortfall facility in the Australian context (Balachandran et al., 2008).

[23]Block shareholders, the equivalent of blockholders in Cronqvist and Nilsson (2005), are defined to be shareholders that own more than five percent of a firm's outstanding shares.

prior stock price performance when they decide whether to underwrite their issue, perceiving lower failure costs if their firm's stock has performed well and choosing uninsured rights issuances as a result. Alternatively, firms that have done well in the past make rights offerings from a "position of strength" and, thus, are likely more confident about the quality of the project for which they are raising funds and the reception of the issue, consequently opting for the uninsured offering. In any case, both explanations are in line with managerial concern over the success of equity issuances.

In sum, our descriptive statistics are broadly consistent with a setting where managers care about the expected failure costs of different equity flotation methods. Specifically, corporate managers can eliminate the probability of failure by issuing rights on a standby basis, or reduce the expected failure cost of an uninsured rights offering by lowering the subscription price or by procuring greater subscription precommitments. Even though our preliminary results are generally in agreement with the FCH, we will test the FCH more formally in the following section.

5. Key results

In this section, we test the implications of the FCH developed in Section 3 using both univariate and multivariate frameworks. We study and present results on (i) offering announcement shareholder wealth effects, (ii) determinants of subscription precommitment, and (iii) the the drivers of underwriting choice, testing FCH-1 through FCH-3 in the process.

Analyses of abnormal announcement return. Table 4 shows univariate and bivariate analyses of abnormal announcement return, computed as the holding period return on the issuer's stock from the trading day prior to the announcement to the trading day after, less the holding period return for the Straits Times Index over the same three-day event window.[24] From panel A, abnormal announcement return is positively related with subscription price discount for uninsured issues, with no relation for standby issues. In particular, for uninsured offering announcements, the subsample with above-average discounts has mean abnormal return of 5.00% whereas the subsample with below-average discounts has mean abnormal return of -1.20%, and the difference is statistically significant at the 1% level given a p-value of 0.0074. On the contrary, for standby offering announcements, the mean abnormal return for the subsamples with above- and below-average discounts are -3.56% and -4.37% respectively, with the difference statistically insignificant (p-value of 0.8037). This result provides support for FCH-1, but additional multivariate tests are necessary to control for other factors known to induce issue announcement shareholder wealth effects.

We should note that an issuer's choice of using underwriting as an insurance mechanism does provide adverse information to the market. From Table 4 panel B, our sample of standby issues exhibits a mean abnormal announcement return of -3.98%, which is statistically significant at the 5% level given a p-value of 0.0151. This is consistent with the adverse selection hypothesis put forward by Eckbo and Masulis (1992). Eckbo and Masulis (1992) make the case that the equilibrium pool of

[24]The Straits Times Index is a value-weighted stock market index comprising the top 30 stocks listed on the SGX Mainboard by market capitalization that meet additional free float and liquidity selection criteria, and is generally accepted as the representative market portfolio in Singapore.

standby rights offerings are made by a disproportionately large number of overvalued firms as some undervalued firms choose not to issue instead of underwriting their offering; further, they propose the equilibrium pool of uninsured rights offerings do not exhibit similar adverse selection. However, in our sample their prediction on uninsured offerings is not supported given that uninsured issues exhibits a positive mean abnormal announcement return of 2.00%, which is statistically different from zero at the 10% level given a p-value of 0.0900. Rather, our result on uninsured offerings is reminiscent of that of Bøhren et al. (1997), who show the mean abnormal two-day announcement return is a statistically significant 1.55% for uninsured Norwegian rights offerings.

Often, a rights offering announcement is accompanied by communication of subscription precommitments procured for the issue. Are these precommitments signals of the value of the issuer's assets in place or growth opportunities, or a substitute insurance mechanism for the subscription price discount as implied by the FCH? Practitioners typically tout precommitments as positive signals for the issuer, while academics have proposed precommitments may certify issuer quality (e.g., Cronqvist and Nilsson (2005)). We explore this possibility in Table 4 panels C and D, which examine the relation between abnormal announcement return and subscription precommitment, where the former panel does not control for subscription price discount while the latter panel does. Consistent with the implications of the FCH, the level of subscription precommitment does not appear to be associated with any announcement wealth effects, as observed differences (see Table 4, Panels C & D) are not statistically significant at conventional levels. It is possible that the market expects a certain level of precommitment. However, using a model for subscription precommitment developed later in this paper, we find no statistically significant relation between abnormal announcement return and unexpected subscription precommitment (not reported in a table).[25]

Table 5 presents the results for regression analyses of abnormal announcement return. In the first model (M1) we do not allow the slope coefficient for subscription price discount to differ by issue type. Given that the prediction of FCH for subscription price discount is based on the issue type, in the second model (M2) we allow for differential slope coefficients for subscription price discount. Consistent with FCH-1 the abnormal announcement return is positively associated with subscription price discount for uninsured offerings, which is evident from a discount coefficient of 0.0015 that is statistically significant at the 1% level. In addition, the discount coefficient for standby offerings of -0.0006 (= 0.0015-0.0021) is statistically different from that for uninsured offerings at the 5% level, and not statistically different from zero at conventional levels (p-value of 0.4809). Note that in M1 the coefficient of the standby dummy variable, which takes a value of 1 if the rights offering is underwritten and 0 otherwise, is negative and statistically significant at the 5% level. Although this is consistent with the adverse selection hypothesis, once we allow for differential slope coefficients for subscription price discount (M2), the coefficient for the standby dummy variable is no longer significant at conventional levels. Alternative model specifications include as additional

[25]Yet another possibility is that the association should be between abnormal announcement return and unexpected subscription precommitment. Using a model for subscription precommitment developed later in this paper, we find no statistically significant relation between abnormal announcement return and unexpected subscription precommitment (not reported in a table).

explanatory variables price runup (M3), firm size as measured by log of market capitalization (M4), and relative offer size or the ratio of absolute offer size to market capitalization (M5). In addition to these variables, model M6 includes financial leverage (debt-to-equity ratio) and relative equity valuation (market-to-book equity ratio) as explanatory variables. Regardless of model specification, abnormal announcement return continues to be positively related with subscription price discount for uninsured issues, and not related with that for standby issues. Interestingly, the coefficient for runup is not significantly different from zero in both models M3 and M6, contrary to the prediction of the dynamic model of Lucas and McDonald (1990) on equity issuances, where overvalued firms, characterized by stock price runups, issue equity to fund valuable investment projects, whereas undervalued firms faced with the same investment opportunities do not.

Several other potential alternative explanations to the FCH for our observed positive relation between abnormal announcement return and subscription price discount should be addressed. First, Eckbo et al. (2007) suggest the dissipative signaling model of John and Williams (1985) can be modified to establish a positive relation between abnormal announcement return and subscription price discount. In John and Williams (1985), undervalued firms pay larger dividends in spite of the tax disadvantage of dividends (relative to stock repurchases) because the increase in stock price due to the positive dividend signal reduces shareholder dilution. Analogously, when rights are issued at a discount, shareholders who sell their rights cannot defer associated capital gains taxes. Presumably, then, undervalued firms set larger discounts in spite of the tax disadvantage (relative to lower discounts) because the increase in stock price due to the favorable discount signal reduces effective shareholder dilution. However, this tax-based discount signaling theory cannot explain our findings as capital gains are not taxed in Singapore. Second, Bigelli (1998) finds that positive abnormal announcement returns in Italian rights issues are accompanied by increases in dividend yield, which occur as long as the dividend is not reduced by a greater proportion than the proportion of reduction implied for the stock price by the subscription price discount. However, this dividend signaling hypothesis should apply regardless of offering type. Since we do not find a positive relation between abnormal announcement return and subscription price discount for standby offerings, this dividend signaling hypothesis is unlikely to account for our findings.

Together, Tables 4 and 5 provide robust support for FCH-1, namely, that the abnormal announcement return for uninsured rights issues is increasing in the subscription price discount, with no such relation for standby rights issues. Firms planning to fund projects of higher quality face higher opportunity costs of issue failure, and thus set larger discounts to self-insure against failure in an uninsured offering. Correspondingly, the market infers project quality from the magnitude of the subscription price discount, resulting in larger abnormal returns when larger discounts are announced. Hence, our evidence supports the position that the subscription price signals project quality in an uninsured rights offering.

Next, we study the underwriting decision using a multivariate, multi-stage regression analysis and summarize our results in Table 6. Our research design adapts the two-stage regression approach of Bøhren et al. (1997): First, we model expected overall subscription, which FCH-3 posits is a key

consideration in the underwriting decision, through a regression of overall subscription on variables that might be expected to influence overall subscription such as subscription price discount, return volatility, price runup, relative equity valuation, relative offer size, and firm size. Second, we use the predicted overall subscription in the first-stage regression as an explanatory variable in a probit model of the underwriting decision, in which the dummy dependent variable assumes a value of 1 if the offering is on a standby basis and 0 if the offering is on an uninsured basis. In the second-stage regression, our selection of control variables is guided by determinants of equity flotation mechanism choice proposed in prior literature.

Table 6 shows that our estimated first-stage model explains cross-sectional variation in overall subscription with an adjusted R^2 of 21.93%. As expected, overall subscription is increasing in the subscription price discount, and this relation is statistically significant at the 1% level; the larger the subscription price discount, the more likely the rights are to expire in-the-money and so, rights holders, regardless of whether they are existing shareholders, are more likely to exercise their rights. Quite surprisingly, although the coefficient for volatility is negative, it is not significantly different from zero; while the range of plausible in-the-money and out-of the money outcomes has increased, it appears the lower subscription rates that occur with out-of-the-money outcomes are offset by the higher subscription rates that occur with in-the-money outcomes, resulting in little net effect of volatility on overall subscription. Consistent with the evidence of Balachandran et al. (2008), we find runup has a significantly positive relation with overall subscription, which Balachandran et al. (2008) rationalize is indicative of the possibility that better prior performance induces greater rights offering participation. In addition, the coefficient for market-to-book equity is negative, implying lower subscription is expected for less attractively valued firms.

Examining the second-stage regression results (M1), we observe that an increase in expected overall subscription reduces the probability a rights offering will be underwritten, with the relation statistically significant at the 1% level, which affirms FCH-3. To address a possible errors-in-variable bias resulting from the use of an estimated expected overall subscription variable in the second-stage probit regression, we replace, as did Bøhren et al. (1997), the predicted overall subscription variable in the probit regression with the constituent explanatory variables in the first-stage regression (M1a). From the table, it is evident the variables that are statistically significant in explaining overall subscription continue to be statistically significant in explaining the underwriting decision, and their coefficient signs reverse as expected, due to the negative relation between expected overall subscription and the probability of underwriting. Thus, we believe, as did Bøhren et al. (1997), that errors-in-variable bias, if any, is relatively insignificant.

It is possible expected overall subscription in model M1 merely proxies for expected existing shareholder takeup, in which case our result would simply rehash the Eckbo and Masulis (1992) adverse selection hypothesis of equity flotation mechanism choice. Therefore, we explicitly control for expected existing shareholder takeup, using subscription precommitment as a proxy (M2), as suggested in Eckbo and Masulis (1992), among others. Prior literature (e.g., Bøhren et al. (1997) and Cronqvist and Nilsson (2005)) has employed 100% less the percent of rights traded in the secondary

market as a proxy for expected existing shareholder takeup. We use subscription precommitment instead, not only because it circumvents the assumption in the prior proxy that each right is traded at most once in the secondary market, but also because it is an ex ante variable in the sense that it is in the information set of corporate managers at the time the underwriting decision is made. From the second-stage regression results (M2), we find the inverse relation between expected overall subscription and the probability of underwriting maintains, even after controlling for expected existing shareholder takeup so, evidently, expected overall subscription has unique explanatory power. Also, the coefficient for subscription precommitment is negative and significant at the 5% level; although this result is consistent with the adverse selection hypothesis, it warrants a closer examination, one that we will undertake later in this paper.

Control considerations may influence underwriting choice and, even though uninsured and standby rights offerings do not differ in their ability to effect changes in ownership structure, Cronqvist and Nilsson (2005) hypothesize that firms with controlling families prefer uninsured to standby offerings in order to avoid underwriter monitoring which may reveal possible private benefits of control. Accordingly, we examine models of the underwriting decision with alternative specifications that include variables relating to control, defined similarly to those in Cronqvist and Nilsson (2005). One such variable is a dummy variable that takes the value of 1 if the issuer is owned by a controlling family, defined to be a block shareholder with greater firm ownership stake than the aggregate stake of all other block shareholders, and 0 otherwise (M3). Another such variable is controlling family margin, defined to be the percentage of the firm owned by the controlling family less the aggregate percentage owned by all other block shareholders (M4). In both specifications, the variable that relates to control is statistically insignificant at conventional levels, which suggests that underwriter revelation of possible private benefits of control does not sufficiently influence the underwriting decision of rights offerings.

Smith (1977) proposes an agency-based explanation of underwriting choice, with the implication that better-governed firms are less likely to underwrite their equity offerings. Thus, we examine a specification (M5) that includes a firm governance dummy variable, which takes the value of 1 if the issuer's GTI is above the median for Singaporean firms and 0 otherwise. From the table, the coefficient for the governance variable is not only positive, contrary to the prediction of an agency-based explanation, but also not significantly different from zero. Yet another potential determinant of underwriting choice is financial leverage, since Ursel (2006) finds the mean debt-to-equity ratio for a sample of largely uninsured rights offerings to be significantly higher than that for a sample of non-rights SEOs. From a specification (M6) that includes the debt-to-equity ratio as a control variable, we find no significant relation between leverage and the propensity to underwrite an offering.

In any case, regardless of the control variable included, and whether it is considered in isolation as in the preceding discussion or together with all other control variables (M7), expected overall subscription remains statistically significant at the 1% level. Hence, the results in Table VI validate FCH-3, which states that the propensity to underwrite rights issues is decreasing in the expected overall takeup, regardless of whether the subscriber is an existing shareholder. Of essence, this is an

implication of the FCH, and not of the adverse selection cost hypothesis. When corporate managers make the underwriting decision for a rights offering, it appears the expected overall subscription also matters, not just the expected subscription by existing shareholders, due to managerial concern over possible non-receipt of the intended proceeds.

The final set of analyses examines subscription precommitment within the context of the FCH. We first model subscription precommitment and establish its relation with firm ownership concentration, before investigating their contributions to explaining equity flotation mechanism choice; the multivariate regression results are presented in panels A and B, respectively, of Table VII. Unlike in Table VI, where subscription precommitment proxies for expected existing shareholder takeup, in Table VII, we are more interested in the role of subscription precommitment as an insurance mechanism; after all, the greater the proportion of proceeds guaranteed by existing shareholders, the less likely the issue is to fail.

In Table VII panel A, we first regress subscription precommitment on firm ownership concentration variables (M1) such as the number of block shareholders and aggregate firm ownership stake of these shareholders, and interpret the results as follows: Holding constant the number of block shareholders, an increase in the aggregate ownership stake of these shareholders (which increases ownership concentration) increases subscription precommitment. Conversely, holding constant the aggregate ownership stake of block shareholders, an increase in the number of these shareholders (which decreases ownership concentration) decreases subscription precommitment. Both observed relations are statistically significant at the 1% level, and substantiates FCH-2, the hypothesis that subscription precommitment is increasing in firm ownership concentration.

We then examine alternative model specifications that include additional explanatory variables such as controlling family dummy, controlling family margin, subscription price discount, relative offer size, and stock price runup (M2 through M6 respectively). From the table (M2), the coefficient for the controlling family dummy variable is negative and statistically significant at the 5% level. This is somewhat counterintuitive since a controlling family able to extract private benefits of control is likely to subscribe fully to its pro-rata rights allocation. Nonetheless, it is possible other block shareholders refuse to participate in the offering when they otherwise would if there were no controlling family. As expected, the discount coefficient (M4) is negative and statistically significant at the 5% level, which substantiates the claim that subscription price discount and precommitment are substitute insurance mechanisms. Interestingly, the relative offer size variable (M5) is statistically significant at the 1% level, but its coefficient is positive. Budget constraints and those imposed by the desire to diversify suggest individual block shareholder precommitments do not increase proportionately with relative offer size. However, perhaps relatively larger offerings have larger associated failure costs, so managers are more proactive in procuring subscription precommitments, leading to larger aggregate precommitment. Also quite remarkably, the runup coefficient (M6) is negative and statistically significant at the 5% level, especially in light of our earlier finding that runup is positively related with overall subscription. This is possibly because managers of firms that experience

stock price runups are more confident about the success of their issue, and thus expend less time and effort in procuring subscription precommitments.

Our results in Table VII panel A is largely consistent with a setting in which issuers actively assess the need for, and manage the level of, subscription precommitments. Most importantly, for all model specifications, coefficients for the firm ownership concentration variables have signs consistent with FCH-2, and are statistically significant at the 1% level. Hence, our evidence is consistent with the argument that soliciting precommitments for firms with lower ownership concentration is more costly for corporate managers, resulting in lower levels of subscription precommitment procured.

In Table VII panel B, we attempt to distinguish between the roles that subscription precommitment and firm ownership concentration play in the equity flotation mechanism decision choice. As a starting point, we estimate a probit model of the underwriting decision using subscription precommitment as the only explanatory variable (M1), and find its coefficient to be not significantly different from zero. This implies subscription precommitment, in and of itself, does not influence equity flotation mechanism choice, and is consistent with the argument that issuers do not necessarily care about the participation level of a subset of potential subscribers to the rights offering. When we include expected overall subscription, derived from the first-stage regression of Table VI, as an additional explanatory variable (M2), we observe the coefficient for subscription precommitment becomes significantly negative at the 5% level. This suggests subscription precommitment has incremental explanatory power for the underwriting decision over and above expected overall subscription, which is not surprising in light of the FCH considering that our model of expected overall subscription does not, by design, include subscription precommitment as an explanatory variable.

When we estimate the probit model using only firm ownership concentration explanatory variables (M3), the coefficient for aggregate block shareholder ownership stake is negative and significant at the 10% level, but that for block shareholder count is not significantly different from zero. Thus, we find some evidence that firms with higher ownership concentration are less likely to underwrite their offerings. If firm ownership concentration is only relevant to the underwriting decision as a result of its relation with subscription precommitment, then including subscription precommitment as an additional explanatory variable (M4) should reduce its significance; indeed, including subscription precommitment causes the coefficient for aggregate block shareholder ownership stake to not be significantly different from zero as well. In conjunction, the results of models M3 and M4 support FCH-2, which states that the propensity to underwrite rights issues is decreasing in the degree of firm ownership concentration, but only to the extent that firm ownership concentration is correlated with subscription precommitment.

6. Conclusion

Why do firms choose to incur substantial underwriting costs instead of raising capital with a rights offering? Given the paucity of satisfactory responses to the question posed, the finance literature has labeled this as the rights issue paradox. In this paper we argue that the uninsured

rights offering is also subject to costs, albeit different from the direct costs that accompany an offering with a standby guarantee. We identify three costs for issuers of uninsured offerings. First, the cost that comes from the possibility of failure. This opportunity cost is higher for issuers with better prospects. Second, to reduce the possibility of failure issuers offer a substantial subscription price discount, which imposes a cost on non-participating shareholders. Concerns of legal liability or fiduciary responsibilities will in turn impose the cost on corporate managers. Third, managers can work towards obtaining subscription precommitments. This too is costly, especially for firms with a dispersed shareholder base. In the paper we refer to these costs collectively as failure costs. Corporate managers, we hypothesize, compare the above costs with those borne in an underwritten offering and choose the issue mechanism with a lower cost.

Given that these failure costs are not directly observable we provide robust evidence consistent with issuer choices being affected by failure costs. Specifically, we show that concerns over uninsured issue failure result in subscription price discounts being higher for issuers with better prospects, that corporate managers use subscription precommitments as a supplementary insurance mechanism, and that corporate managers consider the probability of issue failure through assessment of overall takeup when they make the underwriting decision. These results support the notion that corporate managers are cognizant of the indirect costs of uninsured rights offerings and, potentially, find these costs to be higher when they choose underwritten offerings.

Accordingly, the FCH has the potential to resolve the long-standing rights issue paradox. Further, the FCH predicts uninsured rights offerings will become less prevalent in countries where the expected failure cost associated with such offerings becomes more prohibitive. A possible reason for an increase in expected failure cost is lower subscription precommitment, which we find is positively related to firm ownership concentration. The increasing scarcity of uninsured offerings in many countries, including most notably the U.S., is coincident with decreasing ownership concentration for firms in these countries; diffuse ownership concentration implies low subscription precommitment and a high probability of uninsured issue failure, which can result in firms shunning the uninsured offering.

Around the world, it appears issuers in many countries where rights offerings continue to be prevalent employ strategies to manage the expected failure cost of such offerings. For example, this study documents Singaporean issuers tend to set subscription price discounts that are more than three times as large as those of its U.S. counterparts, Slovin et al. (2000) indicate more than 90 percent of their U.K. sample rights offerings are insured, while Balachandran et al. (2008) report that more than 60 percent of their Australian sample rights offerings are non-renounceable, which encourages takeup as long as the subscription price discount is positive. Therefore, we believe characterizing and estimating failure costs of uninsured offerings to be a fruitful, albeit challenging, future research endeavor.

Technical Appendix

We present an illustrative model to provide intuition for our empirical hypotheses. Consider an all equity firm that is considering a rights issue. The firm's current share price is P and the number of outstanding shares are normalized to 1. It discovers a project that requires investment ιP and has an NPV of $\eta\iota P$, where $\eta \in \{\eta_l, \eta_h\}$ and $\eta_l < \eta_h$. The firm chooses a subscription price of $(1-\delta)P$ and needs a quantity of $\frac{\iota P}{(1-\delta)P}$ rights to be exercised to meet its investment needs, conditional on success of the offering. If the offering fails the firm will need to postpone its investment and it might even lose the opportunity. We assume the opportunity cost due to failure depends on the project's NPV and is denoted $F(\eta)$, where $F(\cdot)$ is increasing in η.

As documented by numerous previous studies, not all shareholders participate in rights offerings. Suppose the firm allows the participating shareholders to buy the rest of the unexercised rights in the second round. Thus after exercise the number of outstanding shares will increase to $1 + \frac{\iota P}{(1-\delta)P}$ and the post exercise stock price is given by

$$\frac{P + \iota P + \eta\iota P}{1 + \frac{\iota P}{(1-\delta)P}} = \left(\frac{1 + \iota(1+\eta)}{1 + \frac{\iota}{(1-\delta)}}\right) P,$$

which is less than the pre-announcement price if δ is not too low, specifically $\frac{\delta}{1-\delta} > \eta$. The observed wealth-loss of an atomistic shareholder that does not participate can be summarized by the difference between the pre-announcement price and the post-exercise price as follows:

$$\Delta_P \equiv \left(1 - \frac{1 + \iota(1+\eta)}{1 + \frac{\iota}{(1-\delta)}}\right) P = \frac{\delta - (1-\delta)\eta}{1 - \delta + \iota} P,$$

which is increasing in the subscription discount δ. We summarize this straightforward result in the following lemma.

Lemma 1. *The observed wealth loss of an atomistic shareholder who does not participate is increasing and convex in the subscription price discount δ.*

In our setting the firm has no private information on the future stock price return and treats it as a random variable with a distribution function that is common knowledge. A lower subscription price (a higher discount) implies a higher probability of the the issue succeeding. We capture this effect in a reduced form by assuming that the firm takes the stochasticity of stock price on the record day as exogenous and the probability of the stock price being above the subscription price (i.e. the probability of success) is denoted as $G(\delta)$. We assume that $G(\delta)$ is increasing and at least weakly concave in δ.

We assume that self-insurance by subscription price discounting is costly. In the paper, we discuss a few justifications that give rise to this cost. In summary they can arise from legal liability risk or directly due to the fiduciary responsibilities of management. We summarize this cost in reduced form as $\Omega(\delta)$, which is also increasing and convex in δ. We also assume that the firm's objective function is to minimize a weighted average of failure costs and the expected self insurance cost.

Specifically, the firm chooses the subscription discount by solving

$$\min_{\delta} \ [1 - G(\delta)] F(n) + \beta G(\delta) \Omega(\delta).$$

We can now prove the following result:

Proposition 2. *For firms in which the managers are minimizing a weighted average of failure costs and self-insurance cost the subscription discount will be increasing in project NPV.*

Proof. The FOC is given by

$$\Psi(\delta^*, \eta) \equiv G'(\delta^*)(-F(\eta) + \beta\Omega(\delta^*)) + \beta G(\delta^*)\Omega'(\delta^*) = 0$$

Rearranging we obtain,

$$(F(\eta) - \beta\Omega(\delta^*)) = \frac{\beta G(\delta^*)\Omega'(\delta^*)}{G'(\delta^*)} \tag{6.1}$$

For the SOC to be satisfied we need

$$-\frac{\partial}{\partial\delta}\left(\frac{G'(\delta)}{G(\delta)}\right)(F(\eta) - \beta\Omega(\delta)) + \frac{G'(\delta)}{G(\delta)}\beta\Omega'(\delta) + \beta G(\delta^*)\Omega''(\delta) > 0$$

Given that at the optimum $(F(\eta) - \beta\Omega(\delta)) > 0$ and $G(\delta)$ is assumed to be weakly concave, the SOC is satisfied. Using the implicit function theorem we have

$$\frac{\partial\delta^*}{\partial n} = -\frac{\Psi_2(\delta, \eta)}{\Psi_1(\delta, \eta)}$$

From the SOC we have $\Psi_1(\delta, n) > 0$, hence $\frac{\partial\delta^*}{\partial n} \propto -\Psi_2(\delta, \eta)$. Differentiating the FOC wrt η we have

$$\Psi_2(\delta^*, \eta) = \frac{G'(\delta^*)}{G(\delta)}\left(-F'(\eta)\right),$$

which is negative. Hence, $\frac{\partial\delta^*}{\partial n} > 0$. □

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Table 1

Worldwide survey of rights offerings

This table documents rights-issuing activity around the world from 1999 to the third quarter of 2009, using data from SDC Platinum. Panel A reports the annual number and dollar proceeds of rights offerings for select countries, with corresponding rankings in parentheses. Our procedure for explicit identification of a country is as follows: Each year, countries are ranked by their contribution to global rights issue proceeds. A country is explicitly identified if, for at least 9 of the 11 years, they are not among the countries that account for the last one percent of global proceeds. Panel B compares rights offerings with non-rights seasoned equity offerings at the global level, indicating the annual number of countries and deals, dollar proceeds, and median deal size. A separate subsection repeats the comparison excluding U.S. offerings.

Table 1 *(continued)*

Panel A. Country level

	1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009	
Country	**No**	**Proc**	**No**	**Proc**	**No**	**Proc**	**No**	**Proc**	**No**	**Proc**	**No**	**Proc**	**No**	**Proc**	**No**	**Proc**	**No**	**Proc**	**No**	**Proc**	**No**	**Proc**
Australia	115	1,052	109	972	126	1,399	121	1,371	133	4,830	105	2,224	129	4,731	92	2,484	120	7,763	109	6,626	158	20,950
	(1)	(10)	(1)	(8)	(1)	(5)	(1)	(5)	(1)	(4)	(1)	(4)	(1)	(3)	(1)	(8)	(2)	(6)	(2)	(7)	(1)	(1)
United Kingdom	27	3,750	21	4,081	31	738	8	2,059	5	58	13	1,490	20	2,761	14	5,643	4	1,460	7	26,832	13	17,013
	(6)	(3)	(5)	(2)	(2)	(9)	(12)	(3)	(14)	(28)	(8)	(7)	(5)	(5)	(6)	(4)	(23)	(18)	(20)	(1)	(15)	(2)
Italy	-	-	2	26	7	4,081	8	1,969	11	7,468	3	1,857	7	6,524	10	4,899	6	4,147	10	2,592	13	12,497
	-	-	(24)	(28)	(15)	(1)	(12)	(4)	(8)	(1)	(20)	(6)	(10)	(2)	(9)	(5)	(13)	(9)	(16)	(16)	(15)	(3)
France	3	1,030	6	4,922	13	3,071	12	2,784	11	6,462	7	3,115	12	9,690	12	19,777	25	13,481	16	21,431	35	9,405
	(18)	(11)	(16)	(1)	(9)	(2)	(8)	(2)	(8)	(2)	(14)	(2)	(7)	(1)	(8)	(1)	(6)	(2)	(14)	(2)	(4)	(4)
Singapore	4	380	7	272	11	260	12	892	10	190	10	377	8	1,086	14	387	48	1,876	23	2,349	45	8,756
	(17)	(18)	(14)	(13)	(10)	(15)	(8)	(11)	(10)	(17)	(11)	(23)	(9)	(9)	(6)	(21)	(3)	(15)	(6)	(18)	(3)	(5)
Sweden	25	2,226	8	215	29	475	22	3,485	6	189	7	337	5	193	9	483	5	1,955	27	1,034	23	7,314
	(7)	(5)	(11)	(16)	(3)	(11)	(6)	(1)	(12)	(18)	(14)	(25)	(13)	(24)	(11)	(19)	(18)	(13)	(4)	(25)	(9)	(6)
Spain	10	616	10	2,369	-	-	3	672	5	239	5	1,060	3	1,622	1	153	6	2,168	5	9,396	12	6,695
	(12)	(13)	(9)	(4)	-	-	(21)	(13)	(14)	(15)	(18)	(8)	(18)	(8)	(25)	(27)	(13)	(11)	(27)	(4)	(17)	(7)
Germany	3	4,219	3	106	3	755	2	418	9	5,401	11	5,204	5	2,969	6	3,295	9	1,073	23	4,770	24	6,242
	(18)	(2)	(20)	(20)	(18)	(8)	(24)	(17)	(11)	(3)	(9)	(1)	(13)	(4)	(14)	(7)	(11)	(21)	(6)	(10)	(7)	(8)
Greece	2	604	2	69	10	188	2	76	1	66	-	-	1	469	2	3,998	6	12,357	2	569	6	4,319
	(20)	(14)	(24)	(23)	(11)	(18)	(24)	(24)	(25)	(27)	-	-	(26)	(19)	(20)	(6)	(13)	(3)	(41)	(31)	(26)	(9)
South Korea	2	1,384	14	608	8	182	20	493	49	1,039	32	519	49	1,072	62	1,243	169	4,897	234	3,884	102	4,282
	(20)	(6)	(7)	(12)	(14)	(19)	(7)	(14)	(3)	(7)	(2)	(18)	(2)	(10)	(2)	(13)	(1)	(8)	(1)	(12)	(2)	(10)
Malaysia	18	1,119	42	1,080	25	514	37	923	56	997	23	410	7	109	1	13	15	872	23	1,326	8	3,415
	(8)	(9)	(2)	(7)	(4)	(10)	(3)	(8)	(2)	(9)	(5)	(22)	(10)	(28)	(25)	(35)	(9)	(23)	(6)	(23)	(22)	(11)
Hong Kong	35	1,141	25	632	23	420	33	491	24	170	28	944	26	1,054	31	1,057	43	7,017	29	3,218	28	1,739
	(4)	(8)	(4)	(11)	(5)	(12)	(4)	(15)	(4)	(19)	(3)	(10)	(4)	(11)	(4)	(14)	(4)	(7)	(3)	(13)	(5)	(13)
United States	15	1,200	5	67	14	862	30	1,357	24	1,907	11	703	6	545	7	2,052	4	430	8	594	10	1,269
	(10)	(7)	(17)	(24)	(8)	(7)	(5)	(6)	(4)	(6)	(9)	(13)	(12)	(16)	(12)	(9)	(23)	(30)	(19)	(29)	(19)	(16)
Indonesia	10	6,271	13	2,058	9	326	9	787	3	204	9	331	5	180	2	188	5	222	23	5,963	9	997
	(12)	(1)	(8)	(6)	(12)	(13)	(11)	(12)	(19)	(16)	(12)	(26)	(13)	(25)	(20)	(23)	(18)	(36)	(6)	(9)	(20)	(19)
Taiwan	50	411	31	144	2	11	62	982	22	830	14	835	5	198	10	164	1	6	11	408	18	802
	(2)	(16)	(3)	(17)	(21)	(29)	(2)	(7)	(6)	(11)	(7)	(11)	(13)	(23)	(9)	(25)	(35)	(45)	(15)	(34)	(12)	(21)
Switzerland	-	-	1	94	3	2,015	4	915	2	2,653	4	2,986	2	2,151	7	6,437	4	835	7	15,607	4	590
	-	-	(28)	(22)	(18)	(3)	(18)	(9)	(23)	(5)	(19)	(3)	(22)	(6)	(12)	(3)	(23)	(24)	(20)	(3)	(35)	(25)
Rest of the World	126	5,618	71	7,297	75	3,969	62	2,925	58	3,989	87	8,438	85	7,046	89	16,944	146	59,176	228	47,611	240	15,122

Table 1 *(continued)*

Panel B. Global level

Year	Non-Rights				Rights			
	No of Countries	No of Deals	Total Proceeds	Median Deal Size	No of Countries	No of Deals	Total Proceeds	Median Deal Size
Including the U.S.								
1999	60	2415	272,894	53.40	28	445	31,019	33.23
2000	50	2843	310,744	62.10	31	370	25,012	15.90
2001	48	2603	207,556	41.63	31	389	19,265	11.90
2002	57	2649	182,898	45.05	36	447	22,598	19.85
2003	50	3232	217,792	48.50	33	429	36,691	16.10
2004	52	3490	298,896	75.30	34	369	30,830	30.85
2005	56	3452	323,658	90.65	31	375	42,399	83.65
2006	58	3825	355,664	80.70	38	369	69,217	88.28
2007	76	6389	458,438	83.90	46	616	119,736	99.23
2008	72	5462	426,201	19.50	56	785	154,208	26.40
2009	64	6120	503,296	8.33	55	748	121,408	18.30
Total			3,558,038				672,382	
Excluding the U.S.								
1999	59	1988	186,559	52.20	27	430	29,820	32.20
2000	49	2440	214,281	60.40	30	365	24,945	17.75
2001	47	2207	141,755	40.65	30	375	18,402	11.85
2002	56	2288	124,616	42.98	35	417	21,241	20.00
2003	49	2776	157,540	45.70	32	405	34,784	19.50
2004	51	2948	221,289	73.60	33	358	30,126	34.50
2005	55	3005	246,925	89.20	30	369	41,854	68.78
2006	57	3346	268,722	79.45	37	362	67,165	90.30
2007	75	5932	378,576	82.70	45	612	119,306	99.80
2008	71	5148	289,258	19.30	55	777	153,615	26.30
2009	63	5502	367,936	8.20	54	738	120,138	16.95
Total			2,597,457				661,397	

Table 2

Sample Distribution

This table presents distributions for our sample of rights offerings and subsamples of uninsured and standby offerings across years (panel A) and industries (panel B). Our sample comprises Singaporean rights offerings that span the 1997 to 2009 period, excluding offerings by REITs, issues in which warrants with long maturities are offered, and those whose associated filings are unavailable in the SGX depositories. In panel A, for each subsample, Proportion for a given year refers to the fraction of all rights offerings that year that belong to the corresponding subsample; for the full sample, Proportion for a given year refers to the fraction of rights offerings over the entire period attributable to that year. In Panel B, industry distributions for all listed Singaporean firms are also presented. Included is an 11-industry classification as defined in Datastream, as well as a coarser 3-industry classification of industrials, financials, and utilities. For each sample, Proportion for a given industry refers to the fraction of the corresponding sample that belongs to that industry.

Panel A. By year

	Uninsured		Standby		All Rights	
Year	**No**	**Proportion**	**No**	**Proportion**	**No**	**Proportion**
1997	0	0.0000	5	1.0000	5	0.0255
1998	1	0.1667	5	0.8333	6	0.0306
1999	0	0.0000	5	1.0000	5	0.0255
2000	6	0.6667	3	0.3333	9	0.0459
2001	3	0.3750	5	0.6250	8	0.0408
2002	6	0.5455	5	0.4546	11	0.0561
2003	6	0.7500	2	0.2500	8	0.0408
2004	5	0.6250	3	0.3750	8	0.0408
2005	9	0.6923	4	0.3077	13	0.0663
2006	20	0.9091	2	0.0909	22	0.1122
2007	51	0.8947	6	0.1053	57	0.2908
2008	16	0.8000	4	0.2000	20	0.1020
2009	17	0.7083	7	0.2917	24	0.1224
Total	140		56		196	

Table 2 *(continued)*

Panel B. By industry

	Uninsured		Standby		All Rights		All Singapore	
	No	**Proportion**	**No**	**Proportion**	**No**	**Proportion**	**No**	**Proportion**
Datastream classification								
Basic Materials	3	0.0214	3	0.0536	6	0.0306	60	0.0642
Consumer Goods	16	0.1143	14	0.2500	30	0.1531	149	0.1595
Consumer Services	15	0.1071	10	0.1786	25	0.1276	89	0.0953
Financials	22	0.1571	11	0.1964	33	0.1684	117	0.1253
Healthcare	6	0.0429	2	0.0357	8	0.0408	31	0.0332
Industrials	52	0.3714	10	0.1786	62	0.3163	332	0.3555
Oil & Gas	1	0.0071	1	0.0179	2	0.0102	23	0.0246
Technology	22	0.1571	4	0.0714	26	0.1327	90	0.0964
Telecommunications	2	0.0143	1	0.0179	3	0.0153	7	0.0075
Utilities	1	0.0071	0	0.0000	1	0.0051	10	0.0107
Others	0	0.0000	0	0.0000	0	0.0000	26	0.0278
Total	140		56		196		934	
Three-industry classification								
Industrial	117	0.8357	45	0.8036	162	0.8265	807	0.8640
Financials	22	0.1571	11	0.1964	33	0.1684	117	0.1253
Utilities	1	0.0071	0	0.0000	1	0.0051	10	0.0107
Total	140		56		196		934	

Table 3

Sample Summary Statistics

This table reports means and medians for various offering, firm, and stock characteristics for our sample of rights offerings and subsamples of uninsured and standby offerings. For any given variable, Diff reports p-values for the t-test (Wilcoxon rank sum test) of difference in means (medians) for that variable across the uninsured and standby subsamples. DiscountPct is the subscription price discount in percent computed relative to the stock price last transacted prior to issue announcement. RelOfferSize is the ratio of AbsOfferSize, absolute offer size, to MarketCap, the issuer's market capitalization at the end of the day immediately preceding the offering announcement, where both constituent variables are in millions of Singaporean dollars. OfferRatio is the number of rights offered per existing share, Precommitment is the fraction of the offering to which existing shareholders have precommitted subscription at the offering announcement. Subscription is the ratio of the number of rights subscribed, including applications for allotment of unsubscribed shares, to the number of rights available for subscription. Takeup is the proportion of proceeds the issuer intends to raise that is actually funded. BlkHldrCnt is the number of block shareholders, those that own at least five percent of the issuer's outstanding shares, while BlkOwnPct is the aggregate firm ownership stake of block shareholders in percent, both as at the quarterly (annual) financial reporting date immediately preceding the offering announcement, provided shareholdings information on major shareholders are available in Thomson ONE Banker (annual reports) for the financial reporting date. AveBlkOwnPct is the mean firm ownership stake of block shareholders in percent. GoodGov is a dummy variable that assumes the value of 1 if the issuer's most recent Governance and Transparency Index (GTI), published annually by The Business Times and the National University of Singapore since 2008, is greater than the median GTI for all Singaporean firms in the corresponding year, and 0 otherwise. BVAssets is the book value of the issuer's assets in millions of Singaporean dollars. BVD/BVE is the ratio of the issuer's book value of debt to its book value of equity, while MVE/BVE is the ratio of the issuer's market capitalization to its book value of equity. FirmAge is the number of years from the issuer's incorporation to its offering. Runup is the raw stock return from day -260 to day -2 inclusive, while Volatility is the volatility of daily returns for the period from day -260 to day -61 inclusive, where day 0 is the offering announcement day. Daily price, number of shares outstanding, and foreign exchange rates are sourced from Datastream, while incorporation year and book values of debt and equity are extracted from OSIRIS.

Table 3 ***(continued)***

	All Rights			Uninsured		Standby		Diff (p-val)	
	Obs	**Mean**	**Med**	**Mean**	**Med**	**Mean**	**Med**	**Mean**	**Med**
Offering Charateristics									
DiscountPct	189	45.88	44.98	48.40	50.00	39.23	38.12	0.0202	0.0046
AbsOfferSize	196	138.89	17.34	50.50	14.66	359.88	56.28	0.0017	<0.0001
RelOfferSize	196	0.33	0.25	0.33	0.22	0.36	0.29	0.4499	0.0449
OfferRatio	196	0.91	0.50	0.93	0.50	0.86	0.50	0.7744	0.9450
Precommitment	193	0.49	0.49	0.51	0.51	0.45	0.40	0.2173	0.2575
Subscription	187	1.28	1.22	1.34	1.29	1.10	1.06	0.0006	0.0060
Takeup	185	0.95	1.00	0.94	1.00	0.99	1.00	0.0006	0.0110
Firm Charateristics									
BlkHldrCnt	187	2.37	2.00	2.50	2.00	2.04	2.00	0.0452	0.0359
BlkOwnPct	187	48.90	49.72	51.54	50.81	42.04	41.04	0.0237	0.0269
AveBlkOwnPct	187	25.13	19.72	26.60	20.25	21.33	18.29	0.0575	0.2543
GoodGov	158	0.52	1.00	0.48	0.00	0.67	1.00	0.0729	0.0734
MarketCap	196	820.22	74.16	353.30	62.95	1987.52	279.05	0.0296	0.0002
BVAssets	195	3190.91	152.47	1184.49	101.02	8171.14	503.34	0.1175	<0.0001
BVD/BVE	188	2.28	1.21	1.96	1.10	3.04	1.45	0.1135	0.0016
FirmAge	192	22.83	20.00	22.31	20.00	24.19	20.00	0.5572	0.5464
Stock Charateristics									
MVE/BVE	188	2.64	1.20	2.19	1.22	3.71	1.12	0.3706	0.5323
Runup	196	0.28	0.07	0.37	0.18	0.03	-0.13	0.0194	0.0061
Volatility	195	0.05	0.04	0.05	0.04	0.04	0.04	0.0429	0.1787

Table 4

Subsample Analyses of Abnormal Announcement Return

This table shows, for various subsamples, means and medians of abnormal announcement return, computed as the holding period return on the issuer's stock over the three-day window centered on the rights offering announcement day less the corresponding holding period return for the Straits Times Index. For all panels, Number indicates the size of a given subsample. Panel A reports, separately for uninsured and standby offerings, results for subsamples whose subscription price discounts are below and those whose discounts are above the mean discount for the respective offering type, where Diff presents p-values for the t-test (Wilcoxon rank-sum test) of difference in means (medians) across subsamples within each offering type. Panel B reports results for uninsured and standby offerings, and for the former offering type, also for discount tercile subsamples. Figures in parentheses are p-values for tests of mean or median abnormal announcement returns from zero. Panel C reports, separately for uninsured and standby offerings, results for subsamples whose subscription precommitment are below and those whose precommitment are above the median precommitment for the respective offering type, where Diff presents p-values for the t-test (Wilcoxon rank-sum test) of difference in means (medians) across subsamples within each offering type. Panel D reports, separately for uninsured offerings whose subscription price discounts are below and those whose discounts are above the median uninsured offering discount, results for subsamples whose subscription precommitment are below and those whose precommitment are above the median uninsured offering precommitment, where Diff presents p-values for the t-test (Wilcoxon rank-sum test) of difference in means (medians) across subsamples within each discount category.

Panel A. Effect of subscription price discount by offering subsample

	Uninsured			**Standby**		
	Below Mean Disc	**Above Mean Disc**	**Diff (p-val)**	**Below Mean Disc**	**Above Mean Disc**	**Diff (p-val)**
Mean	-0.0120	0.0500	0.0074	-0.0437	-0.0356	0.8037
Median	-0.0123	0.0424	0.0025	-0.0285	-0.0150	0.2339
Number	66	71		27	25	

Table 4 ***(continued)***

Panel B. Effect of underwritting

	Uninsured				Standby
	All	**Low Disc**	**Mid Disc**	**High Disc**	
Mean	0.0200	-0.0225	0.0148	0.0684	-0.0398
	(0.0900)	(0.1686)	(0.4121)	(0.0080)	(0.0151)
Median	0.0170	-0.0155	0.0133	0.0604	-0.0258
	(0.2320)	(0.3713)	(1.0000)	(0.0025)	(0.0704)
Number	137	45	47	45	52

Panel C. Effect of subscription precommitment by offering subsample

	Uninsured			Standby		
	Below Med Precommit	**Above Med Precommit**	**Diff (p-val)**	**Below Med Precommit**	**Above Med Precommit**	**Diff (p-val)**
Mean	0.0218	0.019	0.9070	-0.052	-0.0443	0.8292
Median	0.0169	0.015	0.8058	-0.0268	-0.0241	0.7555
Number	68	68		26	27	

Panel D. Effect of subscription precommitment by discount subsample (uninsured offerings only)

	Below Med Discount			Above Med Discount		
	Below Med Precommit	**Above Med Precommit**	**Diff (p-val)**	**Below Med Precommit**	**Above Med Precommit**	**Diff (p-val)**
Mean	-0.0113	-0.0129	0.9514	0.0548	0.0508	0.9183
Median	-0.0062	-0.0176	0.8110	0.0563	0.0476	0.8015
Number	34	34		34	34	

Table 5

Regression Analyses of Abnormal Announcement Return

This table reports OLS regression results for model specifications in which the dependent variable is abnormal announcement return, computed as the holding period return on the issuer's stock over the three-day window centered on the rights offering announcement day less the corresponding holding period return for the Straits Times Index. Standby is a dummy variable that assumes a value of 1 if the rights offering is underwritten and 0 otherwise. DiscountPct x Standby is the interaction term of DiscountPct and Standby. Other independent variables used are defined in Table 3. Reported p-values are for Wald tests of the hypothesis that DiscountPct + DiscountPct x Standby = 0. Standard errors are reported in brackets and ***,**,* indicate statistical significance at the 1%, 5%, and 10% levels respectively.

	M1	M2	M3	M4	M5	M6
DiscountPct	0.0011***	0.0015***	0.0014***	0.0015***	0.0015***	0.0012**
	[0.0004]	[0.0004]	[0.0004]	[0.0004]	[0.0005]	[0.0005]
Standby	-0.0502**	0.0371	0.0385	0.0481	0.0356	0.0437
	[0.0215]	[0.0443]	[0.0441]	[0.0464]	[0.0445]	[0.0483]
DiscountPct x Standby		-0.0021**	-0.0021**	-0.0022**	-0.0021**	-0.0020**
		[0.0009]	[0.0009]	[0.0010]	[0.0009]	[0.0010]
Runup			0.0138			0.0163
			[0.0091]			[0.0101]
ln(MarketCap)				-0.0048		-0.0068
				[0.0059]		[0.0064]
RelOfferSize					-0.014	-0.0195
					[0.0314]	[0.0335]
BVD/BVE						0.0014
						[0.0024]
MVE/BVE						-0.0001
						[0.0034]
Constant	-0.0312	-0.0539**	-0.0538**	-0.0341	-0.0464	-0.0095
	[0.0221]	[0.0241]	[0.0240]	[0.0344]	[0.0295]	[0.0446]
p-val (Wald test)		0.4809	0.4427	0.409	0.4625	0.3404
Adjusted R^2	0.0658	0.0857	0.0921	0.084	0.0818	0.0726
Observations	189	189	189	189	189	181

Table 6

Regression Analyses of the Underwriting Decision

This table reports results for a two-stage regression approach to modeling the underwriting decision for rights offerings. In the first-stage OLS regression, the dependent variable is Subscription, as defined in Table 3, and its predicted value is used as an explanatory variable (ExpectedSubscription) in the second-stage probit regression, where the dummy dependent variable Standby assumes a value of 1 if the offering is on a standby basis and 0 if the offering is on an uninsured basis. Other independent variables used are defined in Table 3. Standard errors are reported in brackets and ***,**,* indicate statistical significance at the 1%, 5%, and 10% levels respectively.

First stage

Dependent variable: Subscription		
	Coefficient	**p-val**
DiscountPct	0.0059	<0.0001
RelOfferSize	-0.1473	0.2070
ln(MarketCap)	-0.0349	0.0950
Runup	0.1265	<0.0001
MVE/BVE	-0.0316	0.0100
Volatility	-0.7580	0.4940
Constant	1.2949	<0.0001
Adjusted R^2	0.2193	
Observations	174	

Table 6 *(continued)*

Second stage

Dependent variable: Standby

	M1	M1a	M2	M3	M4	M5	M6	M7
ExpectedSubscription	-1.8184***		-2.2956***	-2.1135***	-2.1252***	-1.3338***	-1.7542***	-1.8805***
	[0.4641]		[0.5164]	[0.5104]	[0.5101]	[0.5177]	[0.4700]	[0.6292]
DiscountPct		-0.0090*						
		[0.0050]						
ln(MarketCap)		0.2736***						
		[0.0682]						
RelOfferSize		0.3498						
		[0.3665]						
Runup		-0.2731**						
		[0.1300]						
MVE/BVE		0.0572						
		[0.0391]						
Volatility		-3.0086						
		[3.5945]						
Precommitment			-0.6829**					-0.7664*
			[0.3428]					[0.4406]
ControlFamily				-0.1981				-0.2043
				[0.2392]				[0.3649]
ControlMargin					-0.006			0.0017
					[0.0047]			[0.0073]
GoodGov						0.3379		0.4251
						[0.2489]		[0.2710]
BVD/BVE							0.0201	-0.0005
							[0.0213]	[0.0297]
Constant	1.7021***	-1.5730***	2.6402***	2.1939***	2.1944***	0.6396	1.5703***	1.7082*
	[0.5824]	[0.5221]	[0.7122]	[0.6867]	[0.6589]	[0.6884]	[0.6003]	[0.9588]
Pseudo R^2	0.0760	0.1562	0.1054	0.0932	0.0983	0.0695	0.0801	0.1135
Observations	181	181	180	172	172	149	181	141

Table 7

Regression Analyses of Subscription Precommitment

This table studies the relation between subscription precommitment and firm ownership concentration, and their respective roles in the underwriting decision for rights offerings. Panel A reports OLS regression results for model specifications in which the dependent variable is Precommitment, as defined in Table 3. Panel B presents results for a probit regression in which the dummy dependent variable assumes a value of 1 if the offering is on a standby basis and 0 if the offering is on an uninsured basis. ExpectedSubscription is as defined in Table 6, while the other independent variables used are defined in Table 3. Standard errors are reported in brackets and ***,**,* indicate statistical significance at the 1%, 5%, and 10% levels respectively.

Panel A. Determinants of subscription precommitment

	M1	M2	M3	M4	M5	M6	M7
BlkHldrCnt	-0.0678***	-0.0948***	-0.0839***	-0.0623***	-0.0647***	-0.0667***	-0.0935***
	[0.0168]	[0.0198]	[0.0260]	[0.0171]	[0.0165]	[0.0166]	[0.0261]
BlkOwnPct	0.0055***	0.0068***	0.0066***	0.0055***	0.0054***	0.0056***	0.0071***
	[0.0011]	[0.0012]	[0.0017]	[0.0011]	[0.0011]	[0.0011]	[0.0017]
ControlFamily		-0.1498**					-0.1499**
		[0.0601]					[0.0620]
ControlMargin			-0.0013				-0.0005
			[0.0016]				[0.0016]
DiscountPct				-0.0024**			-0.0018*
				[0.0009]			[0.0010]
RelOfferSize					0.1938***		0.1296*
					[0.0695]		[0.0740]
Runup						-0.0491**	-0.0355*
						[0.0211]	[0.0213]
Constant	0.3873***	0.4998***	0.4026***	0.4819***	0.3213***	0.3960***	0.5417***
	[0.0586]	[0.0733]	[0.0616]	[0.0681]	[0.0622]	[0.0580]	[0.0907]
Adjusted R^2	0.1390	0.1630	0.1373	0.1590	0.1699	0.1594	0.2070
Observations	185	185	185	180	185	185	180

Table 7 ***(continued)***

Panel B. Role of subscription precommitment in the underwriting decision

	M1	M2	M3	M4	M5
Precommitment	-0.3343	-0.6829**		-0.3271	-0.7398*
	[0.3091]	[0.3428]		[0.3409]	[0.3794]
ExpectedSubscription		-2.2956***			-2.3394***
		[0.5164]			[0.5540]
BlkHldrCnt			-0.0812	-0.1115	-0.0783
			[0.0782]	[0.0822]	[0.0876]
BlkOwnPct			-0.0089*	-0.0057	-0.0042
			[0.0048]	[0.0051]	[0.0055]
Constant	-0.4223**	2.6402***	0.0219	0.0786	3.0779***
	[0.1757]	[0.7122]	[0.2437]	[0.2824]	[0.7835]
Pseudo R^2	0.0051	0.1054	0.0343	0.0330	0.1270
Observations	193	180	187	185	172