

A Rent-protection Explanation for SEO Flotation Method Choice

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Abstract

We model how a rent protection motive drives the choice of flotation method in new equity issuance between two polar cases: rights issues and cash offers. Unexpected new blockholders would emerge in control-diluting cash offers and share in jealously guarded control benefits. But rights issues help the controlling shareholders avoid control dilution and safeguard their private benefits. Under asymmetric information about private benefits, the choice of flotation method can convey information about hidden private benefits and hence firm value. Our model can explain even a negative announcement effect of rights issues, and supports not just one but three important equilibriums.

Keywords: Rights Issue; SEO; Flotation Method Choice; Private Benefits of Control; Rent Protection

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1. Introduction

In seasoned equity offerings (SEOs) around the world, there are usually two major flotation methods: rights issues and cash offers. Cash offers are usually underwritten offers to new investors or public offers; in some markets like in Hong Kong and the UK, underwritten offers to outside investors are called “placing” which is not necessarily private placement (Wu, Wang and Yao, 2005). In contrast, rights issues are new equity sales to existing shareholders made on a *pro rata* basis. In the US among listed industrial firms, rights issues dominated from the 1930s to the 1950s, but since the 1960s rights issues have been on the wane and become rarely used today (Eckbo and Masulis, 1995). Despite their rarity in the US, rights issues are widely adopted and even used as the only flotation method in many other important markets. This phenomenon gives rise to the question: Why is the flotation method choice so different across countries?

The extant literature is largely based on the US context with at least two classic views. First, if managers or corporate decision makers maximize the existing shareholders’ wealth, rights issues do not give rise to conflict of interest because there will be no new shareholders involved (Smith 1977). The adverse-selection model of Myers and Majluf (1984) also implies that rights issues do not convey asymmetric information on firm valuation. The empirical results in the US—which on average show that the announcement effects of rights issues are not pronounced—seem to fit well in the prediction of the Myers-Majluf model (see Eckbo and Masulis, 1995, for a summary). Second, Hansen and Pinkerton (1982) and Hansen (1988) argue that if large shareholders renounce their rights of subscription in rights issues, then adverse selection occurs. This view can explain Smith’s (1977) rights issue paradox, which questions why the US managers prefer underwritten cash offers to rights issues given that the underwritten cash offers seem to have higher flotation costs (including the adverse selection discount in the announcement). Hansen and Pinkerton (1982) and Hansen (1988) suggest that firms with dispersed ownership structures, common in the US, would incur high costs for rights issues if they used them; the hidden costs of rights issues can be substantially high because only firms with concentrated ownership, as they find, use rights issues where the subscription commitment by large shareholders lowers the flotation costs of the rights issues. This subscription commitment is likely to produce high take-up ratios in rights issues and the resulting low

floatation costs are also consistent with the take-up model of Eckbo and Masulis (1992). (Note that more explanations in the literature regarding the rarity of rights issues in the US are detailed in Section 2.)

This paper suggests that even if large shareholders or controlling shareholders fully commit to subscribe to their entitled rights, rights issues still cannot avoid conflicts of interest between large shareholders and uninformed small shareholders because of private benefits of control. While the average private benefits of control are widely different across countries (Dyck and Zingales, 2004), the private benefits of the firms in a particular legal environment can also vary considerably in view of heterogeneity in firm level contracting conditions and differences in individual corporate governance quality (which may not be easily observable in general, see Himmelberg, Hubbard and Palia, 1999). In general, private benefits of control are intrinsically difficult to measure publically because their true value is largely inside information and also, by definition, hardly provable in court (Zingales, 1994).

Recognizing asymmetric information about private benefits, this paper models how the controlling shareholders' rent-protection motive plays a role in explaining: why almost all firms in the US are willing to choose cash offers rather than rights issues; why almost all firms in most European and Pacific Basin countries do the opposite; and why some firms choose rights issues and other firms choose cash offers within a particular market, such as in Hong Kong and the UK.

One may quickly attribute the flotation method choice to regulatory arrangements. For example, corporate charters usually include existing shareholders' preemptive rights, which are deemed to prevent unfair wealth transfers. Since cash offers to outside investors are in principle against the preemptive rights, firms with the preemptive rights must choose rights issues. US firms, however, are largely free to choose between cash offers and rights issues because shareholders of most US firms have waived the preemptive rights to subscribe to new equity issues. In contrast, shareholders in most European and Pacific Basin countries are reluctant to give up their preemptive rights. Thus rights issues have been the only flotation method used in these countries (see the survey paper by Eckbo and Masulis, 1995).

It is true that regulatory details vary across countries. Yet the regulatory constraints with

respect to the preemptive rights may to a great extent reflect controlling shareholders' optimal responses to economic fundamentals. Unless we understand these optimal responses, it is difficult to judge how crucial the regulatory details as a direct reason are. The extant literature (mostly in the US context) has offered important insights into rights issues in detail but we believe that how and what conflicts of interest arise in SEOs is important for understanding the rights issues in general. The rent-protection motive under asymmetric information about private benefits, however, is best understood in a worldwide perspective.

In a rent protection theory that this paper proposes, controlling shareholders' concern about a significant loss of part of their private benefits of control (or control benefits) affects the choice of SEO flotation method. While the status of controlling shareholders can be viewed as fairly stable over time, private benefits sharing among the controlling and other block shareholders can be sensitive to changing contracting conditions, especially during new equity issues. Rights issues seldom change ownership structures to the detriment of the incumbent controlling shareholders; in the case of UK rights issues, renounced rights are usually sold to passive investors and other existing shareholders (Armitage, 2007).

By contrast, control-diluting cash offers tend to increase the probability for the emergence of new blockholders. For example, Armitage (2010) empirically shows that underwritten offers to new investors in the UK facilitate block sales. Allotment of new shares is largely at the discretion of the underwriter in underwritten public offers. As a result, considerable shares may be allotted to investors who are keen to buy blocks of new shares. Brennan and Franks (1997) explain that a deep offer price discount in initial public offerings (IPOs) is deliberately used to create oversubscription to prevent aftermarket ownership concentration—a situation to the benefit of managerial control especially in the US context. By implication, since offer price discounts are usually much deeper in rights offers than cash offers, it is much harder for unexpected new blockholders to emerge after rights offers in general.

While ownership structure usually becomes more dispersed after public offers in the US, things can be totally different in ownership-concentrated markets where controlling ownership and especially control benefits are jealously guarded. In the worst scenario feared by the

incumbents, control dilution in public offers weakens the control and, at the same time, tends to give unexpected new blockholders the upper hand.

Compared with the more costly block purchases directly from the market—a move would push up the prices considerably especially in ownership-concentrated markets—coveted new blockholders are happy with the cost-effective opportunity through cash offers (often coming with some offer price discount) which facilitates their plan to become active in a sense of rent seeking. They act as intruders, unable to take over the firm but able to upset the incumbents or the controlling coalition of existing large shareholders, in order to share in the control benefits.¹ Once such intruders get in, it can be more costly for the incumbents to drive them out. For one thing, a newly emergent (unfriendly) blockholder can create enough noise to make the incumbents compromise in exchange for his or her silence. Even in the US, there have been cases of greenmail and targeted share repurchases (Dann and DeAngelo, 1983; Bradley and Wakeman, 1983).

Sharing in private benefits is common among large shareholders. Blockholders can help managerial entrenchment, indicating their private benefits sharing (Borokhovich, Brunarski, Harman, and Parrino, 2006). In markets with concentrated ownership structures where large private benefits of control are prevalent, it is common for large shareholders as a clique to share in connected business transactions or self-dealings. But the issue here is whether this clique is willing to let new blockholders share in their jealously guarded private benefits.²

¹ New blockholders are expected to emerge in private placements mostly used by smaller firms. But these new blockholders are often strategic business partners that are expected to bring positive synergies to the placing firms. This positive valuation effect may sufficiently offset the loss of private benefits due to control dilution. Nevertheless, Cronqvist and Nilsson (2005) show that family-controlled Swedish firms are more likely to choose rights issues than private placements to prevent control dilution.

² Bennedsen and Wolfenzon (2000) argue that control dilution due to new blockholders reduces the incumbents' private benefits. Our rent-protection argument is not at odds with this monitoring effect, because control-diluting cash offers would cause the controlling shareholders to lose some private benefits of control anyway. A loss of part of private benefits described in our model later is the signaling cost.

Intruders are more likely to go after a target with large control benefits. Consequently, when coming to raise new equity, the controlling shareholders of firms with large private benefits may prefer rights issues to control-diluting cash offers to safeguard their control benefits.³ Thus the choice of flotation method has implications for hidden private benefits.

The rent protection theory of this paper supports three important equilibriums. The amount of the incumbent's expected loss of control benefits, or simply the intrusion-induced loss of control benefits, is the standard signaling cost. In a separating equilibrium, (low-quality) firms with high control benefits choose rights issues and (high-quality) firms with low control benefits go for cash offers. But this is not the only equilibrium.

If the loss of control benefits remains small even for firms with the largest control benefits, or if large control benefits are simply unlikely to occur in a market with strong investor protection, all firms will choose cash offers—a pooling equilibrium. This can explain the phenomenon most apparent in the US today that almost all firms choose cash offers rather than rights issues. Since it is not through concentrated ownership that a US manager controls the firm, equity ownership dilution due to cash offers does not really threaten the managerial control. As a result, the intrusion-induced loss of control benefits due to managerial ownership dilution can be viewed as trivial.⁴ Perhaps, US managers concern more about takeovers, as described by Stulz (1988) for example, than new share dilution.

³ Rights offers in this paper do not explicitly include the rights with special strings attached. For example, as a means of payment in acquisitions, contingent value rights (CVR) are given only to shareholders of acquired firms (Chatterjee and Yan, 2008). Also in the shareholder rights plan or better known as poison pills, contingent rights are granted to all shareholders but raiders. But implications for hidden control benefits often loom large in contingent rights as well. For example, the poison pills (rights) are designed to be activated during a hostile takeover in order to dilute voting power of raiders. Although almost none of the hostile takeovers in the US have actually activated these poison pills (which certainly complicate the revaluation process for the target firms), many believe these poison pills mainly help entrench incumbent management in firms that should otherwise have faced takeover bids.

⁴ Smith (1977) suggests that the US managers enjoy personal benefits from using underwriters—a result of possible collusion with investment banks. While not contradictory to this position, our rent-protection argument can further explain the choice of flotation method used outside the US.

In sharp contrast, if the loss of control benefits is high across the board, all firms will choose rights issues—the other pooling equilibrium. This is an equilibrium explanation of the phenomenon that rights issues are used as the only flotation method in many markets, as is the case in most European and Pacific Basin countries. Although rights issues seem to be the direct result of the preemptive rights in these countries, there must be good economic reasons behind the incentive of controlling shareholders who are lukewarm about waiving the preemptive rights (which may also impose one-share-one-vote rule). If firms were able to benefit from cash offers as the alternative flotation method, the preemptive rights as a regulatory constraint on these firms could hardly be maintained. In effect, concentrated ownership structures which are associated with large control benefits are ubiquitous in these countries (Shleifer and Vishny, 1986, 1997); one could imagine that most controlling shareholders there would suffer a significant loss of control benefits if controlling ownership dilutions occurred easily.

Since the choice of flotation method conveys hidden private benefits, our rent protection argument also sheds light on some puzzling announcement effects of SEOs documented in the literature, where especially rights issues are involved. For example, rights issues can cause a negative announcement effect, given that underwritten offers to new investors can even produce a positive announcement effect in the same market (Suzuki, 1999, and Slovin, Sushka and Lai, 2000, for the UK; Wu and Wang, 2002, for Hong Kong).⁵ This phenomenon, especially the negative announcement effect of rights issues, gives rise to the question: Why do controlling shareholders choose value-destroying rights issues when offers to new investors seem to be a better alternative? A clear answer lies in our rent-protection argument that rights issues do not necessarily protect the interest of all existing shareholders; the incumbents would tolerate a loss

⁵ Cash offers are often expected to produce a negative announcement effect due to the adverse selection problem (Myers and Majluf, 1984). Myers (2003), however, emphasizes that the adverse-selection effect comes mainly from asymmetric information about assets-in-place. In effect, the generalized Myers and Majluf model of Wu and Wang (2005) suggests that asymmetric information about firm valuation that comes mainly from growth opportunities rather than assets-in-place does not necessarily inhibit new equity issuance; this generalized model can accommodate a positive announcement effect (see Wu, Wang and Yao, 2005, for empirical evidence from Hong Kong). It also helps explain firm growth type and capital structure persistence in the US (Wu and Au Yeung, 2012).

of entire firm value as long as their marginal gain in control benefits overcompensates for the loss of security benefits from their own equity holdings.

The remainder of the paper is organized as follows. Section 2 shows how the work in this paper is related to the existing literature in more detail. Section 3 develops a rent protection model that predicts three important equilibriums in a unified framework to characterize the choice of SEO flotation method worldwide. Section 4 further develops the model to produce empirical implications for announcement effects of SEOs especially when rights issues are involved. Section 5 concludes.

2. Relevance to the Literature

The work in this paper is closely related to the literature on both the choice of flotation method and corporate governance. Conflicts of interest or wealth transfers in corporate events are a major source of concern to shareholders at large. But conflicts of interest arise in different ways. In the SEO literature, the adverse selection effect in Myers and Majluf (1984) arises from the conflicts of interest between the existing and new shareholders mainly regarding the assets-in-place valuation under asymmetric information and this is well received for understanding cash offers to outside investors. In rights issues, however, active shareholders such as controlling shareholders and managers are deemed to be unlikely to sell themselves and existing shareholders overvalued new equity, because their interests are assumed to be well aligned with the existing shareholders' in the Myers and Majluf framework. As a result, one may view rights issues as a method to overcome the adverse selection problem. Additionally, in view of rights issues in the US rebounded somewhat in the 1990s, Heron and Lie (2004) suggest that rights issuers may signal their undervaluation (in contrast to overvaluation of cash offers). But Ursel (2006) points out that the recent US rights issuers are mostly in financial distress. Thus the use of rights issue as a last resort limits its usefulness in general and this is consistent with the rarity of rights issues still in the US.

This situation may explain why the academic focus had been mainly on cash offers to outside investors in the US. The literature has identified specific conflicts of interests in cash offers beyond what is analyzed in Myers and Majluf (1984). The free cash flow problem of

Jensen (1986) can also tarnish cash offers to outside investors. Jung, Kim and Stulz (1996) argue that the managerial agency problem plays an important role in cash offers and helps explain a negative announcement effect of cash offers as well. But these authors do not consider rights issues. Smith (1977) considers the managerial agency problem for cash offers versus rights issues, and suggests that managers' personal benefits from using underwriters explain why most US firms prefer cash offers to rights issues. But Smith does not consider the phenomenon that rights issues are usually more popular in many other countries. Wu and Wang (2005) consider private benefits of control in a Myers and Majluf framework that generates overinvestment as well as underinvestment concerns at the same time. That analysis, however, treats private benefits of control as public knowledge and cannot effectively examine rights issues.

Rights issues simply cannot avoid conflicts of interest. Like cash offers to outside investors, rights issues without full take-up by existing shareholders also suffer from adverse selection. The take-up ratio model of Eckbo and Masulis (1992) predicts that adverse selection occurs if expected take-up ratios are low. As a result, unlike uninsured rights offers where full take-up is deemed to happen (implying unnecessary underwriter certification), partial take-up ratios are expected in underwritten rights issues and the lowest take-up ratios in cash offers. Since firm valuation is assumed to increase with take-up ratio, the take-up model predicts the best valuation effect of uninsured rights issuers. But unlike underwritten cash offers, underwritten rights issues can theoretically have a better market reaction than do uninsured rights issues due to underwriter certification in the model of Heinkel and Schwartz (1986). Nevertheless, Balachandran, Faff and Theobald (2008) empirically show both the certification and take-up effects in rights issues in Australia.

High take-up ratios in rights issues may underestimate conflicts of interest between participating and nonparticipating shareholders. Holderness and Pontiff (2013) argue that participation rate is different from take-up rate where high take-up ratios (with the existing shareholders as a whole) do not necessarily reflect high participation by uninformed existing shareholders due to oversubscription by informed shareholders. Holderness and Pontiff (2013) find significant wealth transfers from nonparticipating to participating shareholders in valuable rights issues in the US due to the formers' confusion and ignorance.

In the literature, the choice of rights issue is found to be explicitly related to ownership structures as well as the behavior of large shareholders. As already mentioned in the introduction, Hansen and Pinkerton (1982) and Hansen (1989) find that only firms with concentrated ownership in the US use a rights issue where the subscription commitment by large shareholders lowers the flotation costs of the rights issue. They suggest that firms with dispersed ownership structures, common in the US, would incur high costs if they used rights issues because there are no large shareholders for the subscription commitment in the first place. This argument is consistent with the take-up model because lack of subscription commitment tends to result in low take-up ratios.

If private benefits of control are large as in many markets around the world, even the commitment to rights subscription by large shareholders may not necessarily solve the conflicts of interest between large shareholders and uninformed investors at large. Private benefits of control are responsible for insiders' expropriation from outside shareholders, giving rise to conflicts of interest between large shareholders/managers and dispersed outside investors.⁶ This type of agency problem is pronounced in concentrated ownership structures (Shleifer and Vishny, 1997; La Porta, Lopez-de-Silanes and Shleifer, 1999).

Rights issues are also related to stock liquidity as well as corporate control due to ownership structure changes. Using a well-controlled sample of 85 US firms, Kothare (1997) finds that in sharp contrast with cash offers, rights issues strengthen ownership concentration but widen bid-ask spreads of issuing firms' traded stocks—a negative effect on stock liquidity. The liquidity argument is consistent with Holmstrom and Tirole (1993) who suggest that more shares falling in the hands of outside investors during control-diluting cash offers enhances outside

⁶ Private benefits of control arise when control and ownership do not fully coincide. In reality, cash flow rights never fully coincide with control rights. In a dual-class ownership structure with superior voting rights for one class of shares, or in a pyramid structure, the deviation is obvious. In the one-share-one-vote structure advocated by Grossman and Hart (1988) and Harris and Raviv (1988), as is common in most listed firms, there is also a *de facto* deviation. Unlike the cash flow rights, the value of voting rights from the same shares is always asymmetric between large shareholders (or managers in a coalition with other blockholders) and dispersed shareholders.

monitoring through an increased liquidity of shares. In an initial public offering (IPO) context, however, Zingales (1995) suggests that corporate control is also an important aspect of new equity issues (see also Pagano and Roell, 1998, and Myers, 2000). The bottom line is despite reducing stock liquidity, rights issues help the incumbent to avoid control dilution.

All this is consistent with the incumbent insiders' concern about the emergence of unexpected new blockholders. As a result, the incumbent controlling shareholders of firms with large private benefits (especially in ownership concentrated markets) would like to keep this possibility low. This makes the incumbent insiders often walk on a tightrope in SEOs. Unlike rights issues, control-diluting cash offers can significantly increase this possibility, because new equity sales to outside investors suddenly shrink the incumbents' voting power in the first place. For example, Kothare (1997) reports while rights issues slightly increase insider ownership, cash offers on average reduce it by more than 10 percent. Thus the existing literature supports the notion that rights issues have a potential function of rent protection.

3. The Model: Equilibrium Regarding the Choice between Cash Offer and Rights Issue

In this section, we develop a rent protection model to analyze possible equilibriums regarding the flotation method choice under asymmetric information about control benefits. Section 3.1 introduces the setup. Section 3.2 characterizes the equilibriums and proves their existence. Section 3.3 shows our theory's empirical relevance in a worldwide perspective. Section 3.4 discusses some validity issues in the analysis.

3.1 The Setup

Consider a firm with an investment opportunity that needs equity financing. The value of firm's assets-in-place is a . The investment opportunity has a net present value (NPV), b . To facilitate our analysis, we assume that the value of assets-in-place, a , and the NPV of new investment, b , are known to both insiders and the market. We assume away the asymmetric information about assets-in-place and investment opportunities, because such asymmetric information in a Myers-Majluf framework does not help generate interesting results for rights issues. We show below that it is asymmetric information about private benefits of control that critically contributes to the

understanding of the choice between rights issues and cash offers.

We assume that the controlling shareholder of the firm receives private benefits of control, c , from the ongoing business. If a new project is undertaken, he also obtains additional private benefits arising from the new investment. The additional private benefits are positively correlated with the existing private benefits. For simplicity, we let the new benefits amount to a proportion of old ones, namely, $g*c$, where g is a constant percentage. Corporate insiders (including potential large shareholders) in our model know the true value of private benefits of control, c , and the market does the guesswork (see Gomes, 2000, for a similar assumption in an IPO study). To impose a workable structure on this information asymmetry, we assume that there are only two types of firm in the market: one with low private benefits, c_L , and the other with high private benefits, c_H ($c_L < c_H$). High firm quality is characterized by low control benefits obtained by controlling shareholders, c_L , from both the ongoing business and new investment, while low firm quality means high control benefits, c_H . Note that, in terms of total private benefits, we have $c_L + g*c_L < c_H + g*c_H$, where g is public knowledge (so that we can concentrate on the asymmetric information on c).

The time line in our model is the same as in Myers and Majluf (1984). At $t=0$, the controlling shareholder maximizes his entitled equity claim (security benefits) and private benefits of control at $t=1$. As in Zingales (1995), security benefits are enjoyed by all shareholders in proportion to their holdings in the firm, but private benefits are only obtained by the controlling shareholder. It should be noted that this self-interested objective function is different from the traditional assumption in Myers and Majluf (1984) and Daniel and Titman (1995) where managers maximize all existing shareholders' wealth in the firm. We also assume that all investors are risk neutral, and the interest rate is zero. The cost of the new investment, E , is public knowledge. So is the present value of the new project, $b+E$. The firm has no financial slack, that is, the firm has to issue equity equal to E .

Firm value: Consider the choice of floatation method. Decisions, when announced, have valuation effects because they may signal the size of hidden control benefits, which is the only variable under information asymmetry in the model described below. Let V_{rights} ($V_{cashoffer}$) be the

firm value, and c_{rights} ($c_{cashoffer}$) be the investors' estimate of, or the market's belief about, the extent of private benefits upon a rights offer (a cash offer) announcement at $t=0$. Because private benefits are a value loss to the entire firm, the investors' estimate of private benefits is a relevant determinant of firm value. The firm's value after the announcement of a rights offer is $V_{rights} = a + b - (1 + g)c_{rights}$; and the firm's value after the announcement of a cash offer is $V_{cashoffer} = a + b - (1 + g)c_{cashoffer}$. The firm may skip the new project. If so, the firm value is $V_{no} = a - c_0$, where $c_L < c_0 < c_H$, depending on the market's estimate of the composition of the two types of firm in the population that skips the new investment.

Payoff: We assume a full subscription commitment by the incumbent in rights issues. This makes rights issues seemingly impeccable. We do not explicitly consider underwritten rights because like uninsured rights issues, underwritten rights issues also cannot prevent conflicts of interest due to nonparticipation of uninformed existing shareholders (Holderness and Pontiff, 2013). We do not consider private placement because private placing firms are mostly small firms and this limits the usefulness of private placement in a general sense (Eckbo and Masulis, 1995). Keeping simplicity helps focus on the choice of flotation method between two polar cases.

Conditional on the issue-to-invest decision, the payoff to the incumbent controlling shareholder following a rights offer is:

$$\begin{aligned}
 P_{rights}(c, c_{rights}) &= w(V_{rights} + E) + (1 + g)c - wE \\
 &= w[a + b - (1 + g)c_{rights}] + (1 + g)c \\
 &= w(a + b) + (1 + g)c - w(1 + g)c_{rights},
 \end{aligned} \tag{1}$$

where w in percentage is the pre-issuance equity ownership of the incumbent (due to no insider ownership change), E is the issue size (the cost of new investment), and c is the true private benefits which is only known to the insiders. The incumbent's payoff, P_{rights} , depends on the true value, c (the first argument), as well as the market's estimate of the private benefits, c_{rights} (the second argument). Note that, in a sequential equilibrium, insiders know the market's belief about the true private benefits and hence the payoff in (1).

If the incumbent chooses a cash offer, new equity is sold to outside shareholders and the incumbent's controlling ownership will be diluted. Unlike rights offers, control-diluting cash offers weaken the incumbent's control of the firm in the sense of losing some control benefits. Such a loss can happen under either monitoring or private-benefit sharing due to new blockholders in general, which can emerge during control-diluting cash offers.

In concentrated ownership structures where the largest shareholder (or the coalition of large shareholders) is already in control, an unexpected newcomer-blockholder is more likely to engage in private-benefit sharing than impose additional monitoring on the incumbent. If private benefits of control are large, the incumbent cares about exposing his or her control benefits to intruders. We define intruders as newly emergent substantial shareholders who are unable to take over the firm (unlike raiders) but intend to share in the private benefits with the incumbent. Intruders with sufficient votes can exert pressure on the incumbent for their shares of rent seeking. Like the incumbent insider, an intruder after getting in can influence corporate business transactions. In our model, intruders are fundamentally different from portfolio investors at large, and they know the true value of private benefits, c , as does the incumbent.

The incumbent becomes vulnerable especially when his or her ownership is diluted and, at the same time, the intruder's voting power substantially increases. This situation is most likely to occur in an underwritten cash offer that suddenly causes control dilution and where considerable new shares are allotted to the intruder. If private benefits are large, the choice of flotation method has implications on the redistribution of control benefits and hence rent protection becomes important to the incumbent.

To reflect the threat of intrusive rent-seeking, we assume that the incumbent has an expected loss of some private benefits of control, $T(c)$, as a result of control-diluting cash offers; the intrusion-induced loss of control benefits, $T(c)$, is known to the insiders and potential intruders. Recall that there is no such loss in a rights offer because there is no share dilution. We further assume that it is common knowledge that $T(c)$ is positive and $T'(c) > 0$. In other words, the larger the private benefits involved, the bigger the intrusion-induced loss of control benefits is expected in control-diluting cash offers. In Section 3.4, we will discuss $T(c)$ in detail.

The payoff to the incumbent with a cash offer is,

$$\begin{aligned}
 P_{cashoffer}(c, c_{cashoffer}) &= \frac{wV_{cashoffer}}{V_{cashoffer} + E}(V_{cashoffer} + E) + (1 + g)c - T(c) \\
 &= w[a + b - (1 + g)c_{cashoffer}] + (1 + g)c - T(c) \\
 &= w(a + b) + (1 + g)c - w(1 + g)c_{cashoffer} - T(c).
 \end{aligned} \tag{2}$$

In the last equation of (2), $w(1 + g)c_{cashoffer}$ represents the own expropriation cost to the cash flow rights of the incumbent for expropriating private benefits, $(1 + g)c$, from outside investors. For example, if the incumbent has equity ownership of 45 percent, his expropriation cost will be 0.45 dollars (if $c_{newissue} = c$) for every dollar of private benefits he “steals” from uninformed shareholders (e.g., through self-dealing transactions). The net private benefit here is 0.55 dollars. Note that this expropriation cost depends on the market’s belief about the extent of private benefits involved. Comparing (1) with (2), we see that while the incumbent’s expropriation cost occurs in both rights offers and cash offers, only the choice of cash offers causes the intrusion-induced loss of control benefits, $T(c)$.

3.2 Three Important Equilibriums

In this section, we show the firm’s choice of equity flotation method under asymmetric information about private benefits of control. In the signaling game we present below, the signaling cost, $T(c)$, is the extent of the incumbent’s loss of control benefits as a result of control-diluting cash offers. This can lead to three meaningful equilibriums rather than just one. Before we prove their existence, we first characterize the three equilibriums.

Equilibrium 1: Separating equilibrium. In this equilibrium, low-quality firms (with c_H) choose rights offers and high-quality firms (with c_L) choose cash offers. As the market believes, rights offers signal high private benefits and cash offers signal low private benefits (i.e. $c_{rights} = c_H$ and $c_{cashoffer} = c_L$). Given the specific signaling cost structure—namely, $T(c)$ is high only for low-quality firms, there is separation because low-quality firms cannot mimic high-quality ones.

Equilibrium 2: Cash-offer-pooling equilibrium. In this pooling equilibrium, both low-quality firms (with c_H) and high-quality firms (with c_L) choose cash offers. The possible out-of-equilibrium belief is $c_{rights} = c_H$, but given the signaling cost structure—namely, $T(c)$ is low in any case, low-quality firms are better off by choosing cash offers. Since even low-quality firms can signal, the market cannot infer firm type (i.e., $c_{cashoffer} = \bar{c}$, where $c_L < \bar{c} < c_H$).

Equilibrium 3: Rights-pooling equilibrium. This is the other pooling equilibrium in which both low-quality firms (with c_H) and high-quality firms (with c_L) choose rights offers. The reasonable out-of-equilibrium belief is $c_{cashoffer} = c_L$, but even high-quality firms cannot afford to signal by choosing a cash offer, given the signaling cost structure—namely $T(c)$ is high in any case. Since no firm can signal, the market again cannot infer firm type (i.e., $c_{rights} = \bar{c}$, where $c_L < \bar{c} < c_H$.)

Formally, we have the following proposition:

Proposition 1: *Given that the controlling shareholders/managers maximize their self-interested objective function, which includes the market value of their equity holdings and private benefits of control, and given that asymmetric information about firm value arises only from private benefits of control, one of the three equilibriums as follows will exist in the market:*

(a) *The separating equilibrium (Equilibrium 1) is supported only if*

$$T(c_L) < w(1+g)(c_H - c_L) < T(c_H). \quad (3)$$

(b) *The cash-offer-pooling equilibrium (Equilibrium 2) is supported only if*

$$T(c_H) < w(1+g)(c_H - \bar{c}). \quad (4)$$

(c) *The rights-pooling equilibrium (Equilibrium 3) is supported only if*

$$T(c_L) > w(1+g)(\bar{c} - c_L). \quad (5)$$

Proof: (a) The separating equilibrium in which low-quality firms (with c_H) choose rights offers and high-quality firms (with c_L) choose cash offers requires $P_{rights}(c_H, c_H) > P_{cashoffer}(c_H, c_L)$ and $P_{rights}(c_L, c_H) < P_{cashoffer}(c_L, c_L)$. Replacing c_{rights} and $c_{cashoffer}$ in payoffs (1) and (2) with the market's belief accordingly, i.e., $c_{rights} = c_H$ and $c_{cashoffer} = c_L$, produces (3). (b) Both high- and low-quality firms choose cash offers in the cash-offer-pooling equilibrium. This sequential equilibrium requires $P_{rights}(c_H, c_H) < P_{cashoffer}(c_H, \bar{c})$ and

$P_{rights}(c_L, c_H) < P_{cashoffer}(c_L, \bar{c})$. Inserting the market's belief into c_{rights} and $c_{cashoffer}$ in payoffs (1) and (2), i.e., $c_{rights} = c_H$ and $c_{cashoffer} = \bar{c}$, yields (4). (c) The rights-pooling equilibrium in which both high- and low-quality firms choose rights offers requires $P_{rights}(c_H, \bar{c}) > P_{cashoffer}(c_H, c_L)$ and $P_{rights}(c_L, \bar{c}) > P_{cashoffer}(c_L, c_L)$. Considering the market's belief in payoffs (1) and (2), i.e., $c_{rights} = \bar{c}$ and $c_{cashoffer} = c_L$, gives (5). ■

Recall, as shown in both payoffs (1) and (2), that the incumbent's expropriation cost, regardless of firm type, depends on the market's belief about the private benefits involved. In a control-diluting cash offer, the incumbent also bears the intrusion-induced loss of control benefits, $T(c)$, which increases with the true control benefits, c . As a result, the tradeoff between the intrusion-induced loss of control benefits (due to the incumbent's choosing a cash offer) and the expropriation cost differential to the incumbent (who chooses a rights offer instead of a cash offer) determines the choice of flotation method. Below we will see how this tradeoff leads to different equilibriums.

Conditions in (3) read that, given that the expropriation cost differential to the incumbent is $w(1+g)(c_H - c_L)$, the signaling cost, $T(c_L)$, of high-quality firms is smaller than this cost differential, but the signaling cost, $T(c_H)$, of low-quality firms is larger than this cost differential. This contrast suggests that high-quality firms are better off by signaling, but low-quality firms find their signaling too costly. In short, conditions in (3) suggest that a separating equilibrium will prevail only if the signaling cost, $T(\cdot)$, is sufficiently high for low-quality firms, but becomes sufficiently low for high-quality firms.

Condition (4) suggests that the intrusion-induced cost for low-quality firms (with c_H) is lower than the expropriation cost differential to the incumbent, namely, $w(1+g)(c_H - \bar{c})$. Thus even low-quality firms can signal and choose cash offers. Since both types of firm can signal, the market cannot infer firm type, and hence the cash-offer-pooling equilibrium prevails.

Finally, condition (5) implies that the intrusion-induced cost for high-quality firms (with c_L) is higher than the expropriation cost differential to the incumbent, namely, $w(1+g)(\bar{c} - c_L)$.

This means that even high-quality firms find the signaling cost too high, given the market's belief. As a result, no type of firm can signal, and hence the rights-pooling equilibrium prevails.

Under the original concept given in Kreps and Wilson (1982), each of the three equilibriums in Proposition 1 is a sequential equilibrium. For some parameter space, however, the rights-pooling equilibrium (Equilibrium 3) may not satisfy the intuitive criterion of Cho and Kreps (1987), because high-quality firms have the incentive to make an out-of-equilibrium move by choosing a cash offer. If low-quality firms find it difficult to mimic high-quality firms, a unique separating equilibrium is supported instead. Unlike Equilibrium 1, this unique separating equilibrium does not coexist with a rights-pooling equilibrium. We present the unique separating equilibrium as a refinement to Equilibriums 1 and 3 using Proposition 2 as follows.

Proposition 2: *Under reasonable beliefs, the rights-pooling equilibrium like Equilibrium 3 may be upset. As a result, a unique separating equilibrium in which high-quality firms (with c_L) choose cash offers and low-quality firms (with c_H) remain better off by choosing rights offers is supported if and only if*

$$T(c_L) < w(1+g)(\bar{c} - c_L) \quad (6)$$

and
$$T(c_H) > w(1+g)(c_H - c_L) \quad (7)$$

Proof. We elaborate how an out-of-equilibrium belief is more reasonable as follows. If some issuers decide to choose cash offers (as an out-of-equilibrium move), the market tends to judge which type of firm signals by choosing a cash offer. We can quickly rule out $c_{cashoffer}=c_H$ because we can show that $P_{cashoffer}(c_H, c_H) < P_{rights}(c_H, \bar{c})$ according to payoffs (1) and (2). In other words, low-quality firms remain better off in the rights-pooling equilibrium and have no incentive to make the move.

The analysis of firm type is slightly complicated if the out-of-equilibrium belief is $c_{cashoffer}=c_L$. In this case, although this belief is in favor of high-quality firms, both low- and high-quality firms are likely to signal. First, we consider high-quality firms. The fact that low c firms are better off by making the move means $P_{cashoffer}(c_L, c_L) > P_{rights}(c_L, \bar{c})$, or condition (6) holds.

Condition (6) alone, however, does not guarantee that a separating equilibrium occurs because high c firms may mimic low c firms and hence break the separation. Under the same belief, $c_{\text{cashoffer}} = c_L$, high c firms may follow the out-of-equilibrium move by choosing a cash offer. Conversely, high c firms have no incentive to choose a cash offer if $P_{\text{cashoffer}}(c_H, c_L) < P_{\text{rights}}(c_H, \bar{c})$, or $w(1+g)(\bar{c} - c_L) < T(c_H)$. Combining this condition and condition (6), the rights-pooling equilibrium is broken under a reasonable out-of-equilibrium belief if (and only if)

$$T(c_L) < w(1+g)(\bar{c} - c_L) < T(c_H). \quad (8)$$

Conditions (3) and (8) taken together yield conditions (6) and (7). ■

3.3 Empirical Relevance: A Worldwide Perspective

The three equilibria *in the same framework* summarize important variations in the choice between rights issues and cash offers (or placements to new investors) worldwide as empirically observed. In a survey paper, Eckbo and Masulis (1995) document that listed US industrial firms had gradually switched their favorite flotation method from rights issues to cash offers before the early 1980s. Since then, almost all US firms have used cash offers rather than rights issues (as in Equilibrium 2). The trend of using more cash offers as the flotation method has also been observed in other important markets. For example, Slovin, Sushka and Lai (2000) and Armitage (2010) show that listed firms in the UK used to use rights issues only, but since 1986 they have used cash offers as well as rights issues (as in Equilibrium 1). But in most European and Pacific Basin countries, as surveyed by Eckbo and Masulis (1995), rights issues remain as the only flotation method (as in Equilibrium 3).

The analysis of this paper shows that the choice of flotation method in a market can be largely an economic equilibrium outcome. The choice hinges on the signaling cost structure. To better understand the conditions for the three equilibria (including the refinement), we show their graphical presentations in Figure 1. The top end, labeled Y , of the short vertical bar at c_L marks the value of $w(1+g)(\bar{c} - c_L)$, and the bottom end, labeled N , of the hanging long vertical

bar at c_H marks the value of $w(1+g)(c_H - c_L)$. These numbers reflect different expropriation cost differentials to the controlling shareholder who chooses a rights offer instead of a cash offer under different market beliefs.

Only T_1 , the intrusion-induced cost function, which cuts through both short and long vertical bars, satisfies conditions (6) and (7); that is, on curve T_1 , the T -cost is sufficiently low at low c , but sufficiently high at high c . In other two cases such as T_2 and T_3 , neither satisfies these conditions, because on these curves either the T -cost is not prohibitively high even at high c , namely $T_2(c_H)$, or the T -cost is already sufficiently high at low c , namely $T_3(c_L)$. In other words, a unique separating equilibrium is viable if the intrusion-induced loss of private benefits is sufficiently big only at high c . Note that these conditions for a unique separating equilibrium are tighter than the conditions in (3). Thus the theory here can explain the UK findings by Slovin, Sushka and Lai (2000) that high-quality firms choose cash offers and low-quality firms choose rights issues (see also Wu and Wang, 2002, for similar evidence from Hong Kong.)

As shown in Figure 1, T_2 is consistent with a cash-offer-pooling equilibrium because condition (4) is satisfied—that is, when the upper bound of the loss of private benefits is small enough, all issuers choose cash offers. We do observe that almost all US industrial firms choose cash offers. It is well known that in the US, managers rather than large shareholders play an important role in controlling firms. Because US managers are somehow able to control firms without exerting large managerial ownership, the intrusion-induced loss of control benefits through managerial ownership dilution is, of course, of little concern to them. Another related reason is that, with the way in which the US legal environment has evolved to date, control benefits of the type under consideration in this paper may simply remain low due to the high degree of statutory protection of minority shareholders and high degree of law enforcement (Dyck and Zingales, 2004).

In contrast, T_3 produces a unique rights-pooling equilibrium. Thus when the lower bound of the intrusion-induced loss of private benefits of control in a market is big enough, no issuer has the incentive to choose a cash offer. In many markets, as in most parts of Europe, rights offers are the only flotation method used. In view of the conditions for the rights-pooling

equilibrium here, perhaps control benefits or the intrusion-induced loss of them are generally so large in these markets that few issuers really find comfortable with control-diluting cash offers. This can explain why, unlike in the US, the waiving of preemptive rights in these markets is not desirable to controlling shareholders—indeed, we do not observe that it has happened there.

3.4 More on the Intrusion-Induced Loss of the Incumbent's Control Benefits

In the above analysis, the intrusion-induced loss of private benefits of control, $T(c)$, which is the function of c known to the incumbent and potential intruders, is the signaling cost for the incumbent. Thus the validity of our assumptions about $T(c)$ is crucial. The assumption of our model is that $T(c)$ arises due to rent-seeking behavior of substantial shareholders, especially those emerging from control-diluting cash offers and becoming active. How common is private benefit sharing? Would a lock on control make $T(c)$ zero? We address these two issues below.

In the literature, many believe that large shareholders emerging from a diffuse ownership structure such as in US firms have interests more closely aligned with those of outside investors than do managers who usually have only small managerial ownership. Thus large shareholders are able to discipline usually powerful but less incentive-aligned managers (Shleifer and Vishny, 1986).

But it is the long-term rather than short-term institutional investors that monitor (Chen, Harford and Li, 2007); thus firm valuation has already reflected this monitoring effect in the first place. In a concentrated ownership structure where the largest shareholder is already in control, firm valuation also has already reflected the significant incentive effect from the largest shareholder. New blockholders or short-term institutional investors can simply free-ride on the largest shareholder or long-term institutional investors in this regard. Thus new blockholders in general (especially those that are not expected to bring positive business synergies) tend to be marginalized in playing a further monitoring role, but their rent-seeking behavior is likely to be the focus of attention for the public, especially in countries where investor protection is weak. These large shareholders can share in the incumbent controlling shareholder's control benefits (e.g., by gaining part of self-dealing transactions). Even in the US context, the lure of private benefits can be high; greenmail and targeted share repurchases are viewed as examples of special

deals for large investors (Dann and DeAngelo, 1983; Bradley and Wakeman, 1983). In a survey paper, Holderness (2002) concludes that evidence on the relationship between blockholders and firm value in the US is mixed and not pronounced. This is consistent with the view that active new blockholders may simply share in private benefits with the incumbent and the resulting valuation effect tends to overwhelm any additional positive monitoring effect to the benefit of uninformed shareholders at large.

Can the incumbent keep intruders outside? The rent-protection theory of corporate ownership structure in Bebchuk (1999) suggests that controlling shareholder tends to maintain a lock on control if private benefits are large. It follows that, if a lock is uncontestable, there cannot be any takeover threat. Indeed, hostile takeovers are rare, for example, in most parts of Europe where concentrated ownership structures are common. But this does not mean $T(c)$ is zero. An uncontestable lock can well deter raiders but may not be effective in preventing intruders from sharing in control benefits. For one thing, the intruders are willing to make and can make some noise that the incumbent does not like. As a result, the incumbent is willing to compromise with the intruders in exchange for the latter's silence. If the intruders succeed in grabbing some of connected business transactions, some of the incumbent's private benefits will inevitably be lost. Of course, the redistribution of control benefits depends on the intruders' bargaining power. Underwritten cash offers simply facilitate the previously hidden intruders to obtain sufficient votes and emerge if private benefits are attractively high.

It is worth noting that, for the issuing-to-invest decision, a good assumption is that the incumbent does not want to relinquish control. Thus control transfers that allow the incumbent to extract private benefits more efficiently, like those discussed in Burkart, Gromb and Panunzi (2000), are beyond the scope of this paper.⁷ The concern about exposing and losing part of private benefits of control because of substantial control dilution, however, enters the controlling shareholder's choice of floatation method naturally. The larger private benefits a target has, the

⁷ Empirical literature has shown evidence on premiums for block trades and shares with superior voting powers (e.g., Barclay and Holderness, 1989; DeAngelo and DeAngelo, 1985; Lease, McConnel and Mikkelsen, 1983; Zingales, 1994).

more attractive it is to potential intruders, and the more the incumbent of the target firm is concerned with how to safeguard his or her control benefits. Thus the incumbent's rent protection motive is legitimately linked to the intrusion-induced loss of control benefits.

4. Announcement Effects

The existing literature has documented SEO announcement effects in different countries. Some evidence especially where rights issues are involved remains puzzling. Section 4.1 reviews these empirical results. Section 4.2 extends the rent protection model developed above to explain SEO announcement effects in the separating equilibrium. Section 4.3 analyzes rights issues in the rights pooling equilibrium, and explains why the announcement effects of rights issues can be positive as well as negative, a phenomenon that has not been examined in the literature within the same theoretical framework.

4.1. Related Literature

Empirical evidence from the US shows that, while the announcement effects of cash offers are on average significantly negative, the announcement effects of rights issues are not pronounced. Asquith and Mullins (1986), Masulis and Kowar (1986) and Mikkelsen and Partch (1986) are the early studies that formally document the negative announcement effects of cash offers. In survey papers, Smith (1986) and Eckbo and Masulis (1995) both document an average abnormal return of about -3.0 percent for US industrial firms at a short announcement event window. In contrast, for rights issues, Smith (1977) reports zero abnormal performance in the announcement-month and Eckbo and Masulis (1992) document an average abnormal return of about -1.0 percent for both industrials and utilities in the US.

While the negative announcement effects of cash offers are well understood as an adverse-selection effect of Myers and Majluf (1984) or a free cash flow problem in Jung, Kim and Stulz (1996) argue, the choice of SEO flotation method has puzzled researchers since Smith (1977). In the US market, rights issues are rarely used today. This has been puzzling because, despite rights issues having lower flotation costs, increasing numbers of firms have favored the more expensive underwritten cash offers (Smith, 1977).

Unlike in the US, rights issues are frequently used in many other countries. In countries where both rights issues and cash offers (or placements) are used, the literature has documented various kinds of announcement effects which are even more perplexing. For example, Kang and Stulz (1996) in Japan find significantly positive announcement effects for both rights issues (0.45 percent) and cash offers (2.02 percent). Yet Slovin, Sushka and Lai (2000) in the UK and Wu and Wang (2002) in Hong Kong find, on average, significantly negative announcement effects for rights issues (−3.09 percent in the UK and −7.64 percent in Hong Kong) in contrast with significantly positive announcement effects for placements (3.30 percent in the UK and 3.14 percent in Hong Kong). In the latter case, the evidence of the negative announcement effects of rights issues and positive announcements of underwritten offers to outside investors poses a new puzzle: Why are firms willing to choose value-destroying rights issues instead of value-enhancing offers to new investors?

To explain this phenomenon, Slovin, Sushka and Lai (2000) resort to the underwriter certification hypothesis. They argue that high-value firms choose offers to new investors through underwriter certification to signal firm type, and low-value firms are left to choose rights issues in which the (often observed) deep subscription price discount is a sign of weak underwriter certification. Thus the opposite announcement effects reflect a separating equilibrium regarding the choice of rights issues versus cash offers through a certification effect.⁸ Underwriter certification, however, can give a different prediction in this context. For example, it can work in favor of underwritten rights issues (more than cash offers), as suggested by Heinkel and Schwartz (1986). In the take-up model of Eckbo and Masulis (1992), however, underwriter certification is noisy (their assumption A.4) and tends to send a signal of weakness.

⁸ Underwriter certification helps improve valuation uncertainty in new equity issues (Booth and Smith, 1986). The literature for private placements often interprets offer discounts as a certification cost for compensating private investors for positive signaling or certification. Barclay, Holderness and Sheehan (2007), however, provides evidence that questions the certification or monitoring hypotheses premised on the active involvement of new investors (see also Wu, 2004; Wu, Wang and Yao, 2005).

In many markets, such as in most European and Pacific Basin countries where rights issues are almost the only SEO flotation method used, announcement effects of rights issues also appear mixed, as documented in the literature. For example, significantly negative average announcement returns of rights issues are reported in some markets (e.g., Balachandran, Faff and Theobald, 2008, -1.74 percent in Australia; Gajewski and Ginglinger, 2002, -2.84 percent in France; Kabir and Roosenboom, 2003, -2.80 percent in the Netherlands; Marsden, 2000, -1.01 percent in New Zealand). In other markets, positive, and sometimes significant, average announcement returns are also documented (Bigelli, 1998, in Italy; Bohren, Eckbo and Michalsen, 1997, in Norway; Dhatt, Kim, Mukherji, 1996, in Korea; Hietala and Loyttyniemi, 1991, in Finland; Loderer and Zimmerman, 1988, in Switzerland; Tsangarakis, 1996, in Greece). Given the mixed evidence, the existing literature has been unable to explain, within the same theoretical framework, why rights issues are expected to produce positive announcement effects in some markets and negative ones in others.

In the next two sections, we argue that our rent protection argument with asymmetric information about private benefits of control is able to facilitate our understanding of the announcement effects of rights issues in different contexts but within the same framework. We show that it is possible that rights issues produce negative announcement effects and cash offers create positive announcement effects in our separating equilibrium. We also analyze rights issues in a rights-pooling equilibrium. This investigation helps address—without any interaction with cash offers—the concerns why rights issues are good news in some cases and bad news in others.

4.2 Announcement Effects of Rights Issue verses Cash Offer in the Separating Equilibrium

In the separating equilibrium (as described in Proposition 2) in which high c firms choose a rights issue and low c firms choose a cash offer, the announcement signals the hidden value of private benefits of control. Conditional on issuing-to-invest, the difference in firm value between a rights issue and a cash flow after the announcement is $V_{rights} - V_{cashoffer} = (1 + g)(c_L - c_H)$, according Section 3.1. This value differential is negative. Simply put, relative to a cash offer, a rights issue has an adverse differential effect at the announcement, other things being equal. (Note that, in our private-benefits-sharing scenario, $T(c)$

influences the incumbents' payoff but not the firm's value directly.)

The negative value differential is a prediction conditional on the decision of issuing-to-invest. The announcement effects, however, also depend on the market expectation that firms may pass up new investment (or do nothing). At $t=0$, when the separating equilibrium prevails, the conditional firm values are $V_{no} = a - c_0$ (where $c_L < c_0 < c_H$), for doing nothing, $V_{rights} = a + b - (1+g)c_H$ for making a rights issue, and $V_{cashoffer} = a + b - (1+g)c_L$ for making a cash offer.

In our separating equilibrium, low-quality firms find that rights issues always dominate cash offers. But these firms will not necessarily make rights issues, since they may find the new investment unattractive.⁹ If a rights issue is chosen, the incumbent's payoff in (1) must be greater than his payoff from doing nothing, namely $wb + (1+g)c_H > w[(1+g)c_H - c_0]$. Intuitively, this means that, given that a rights issue is an optimal flotation method, the incumbent's gain from the new project—namely, his fair share of the NPV and his true private benefits—must together overwhelm the expropriation cost differential to the incumbent who chooses the rights issue rather than doing nothing.

On the other hand, if a cash issue is chosen, the incumbent's payoff in (2) must be greater than his payoff from doing nothing, namely $wb + (1+g)c_L > w[(1+g)c_L - c_0] + T(c_L)$. This is equivalent to saying that, given that a cash offer is an optimal flotation method, the incumbent's fair share of the new investment's NPV and his true private benefits together must overwhelm the sum of the expropriation cost differential if he chooses the cash offer rather than do nothing, and the intrusion-induced loss of control benefits, namely the T -cost.

⁹ The choice of flotation method is embedded in the decision between issuing-to-invest and doing nothing. The decision process based on backward induction goes as follows. First, controlling shareholders/managers identify the optimal flotation method (rights offer versus cash offer) given that an issuance decision is made. Second, the remaining decision is simplified as one between issuing-to-invest with the optimal flotation method versus doing nothing (i.e., skipping the new investment).

The issue-to-invest decisions can be formally summarized in the following proposition:

Proposition 3: *In a separating equilibrium in which low-quality firms (with c_H) choose rights issues and high-quality firms (with c_L) choose cash offers, a firm takes an issue-to-invest decision as long as*

$$b > (1+g)c_H - c_0 - \frac{(1+g)c_H}{w}, \quad (9)$$

in the case of a rights issue, or

$$b > (1+g)c_L - c_0 - \frac{(1+g)c_L - T(c_L)}{w}, \quad (10)$$

in the case of a cash offer.

Proof. Conditions (9) and (10) hold following the comparison of the payoffs in (1) and (2) with the payoff of doing nothing, $w(a-c_0)$, respectively. Note that since the right hand side of the inequality in (9) is negative and the right hand side of the inequality in (10) can be negative, a new project would be undertaken even if its NPV is negative. ■

Now assign a probability to each of the firms' decisions: doing nothing, rights issue, and cash offer. Let the probabilities be π_0 , π_1 , and π_2 ($\pi_0 + \pi_1 + \pi_2 = 1$) respectively. Just before the announcement at time $t=0$, (or at $t = -1$) the market evaluates all the future states and hence reaches the (pre-announcement) equilibrium firm value:

$$V_b = a + (\pi_1 + \pi_2)b - \pi_1(1+g)c_H - \pi_2(1+g)c_L - \pi_0c_0. \quad (11)$$

The announcement effects of rights issues and cash offers are as follows:

$$V_{rights} - V_b = \pi_0b - (1-\pi_1)(1+g)c_H + \pi_2(1+g)c_L + \pi_0c_0, \quad (12)$$

and
$$V_{cashoffer} - V_b = \pi_0b - (1-\pi_2)(1+g)c_L + \pi_1(1+g)c_H + \pi_0c_0. \quad (13)$$

Corollary 1: *In a separating equilibrium in which low-quality firms (with c_H) choose rights issues and high-quality firms (with c_L) choose cash offers, the signs of the announcement*

effects depend largely on the new investment's NPV, namely b , in relation to the other parameters as follows.

(i) The announcement effect of a rights issue is negative if

$$(1+g)c_H - c_0 - \frac{(1+g)c_H}{w} < b < (1+g)c_H - c_0 + \frac{\pi_2(1+g)(c_H - c_L)}{\pi_0}; \quad (14)$$

(ii) the announcement effect of a rights issue is positive if b becomes sufficiently large so that the second inequality in (14) is reversed.

(iii) the announcement effect of a cash offer is negative if

$$(1+g)c_L - c_0 - \frac{(1+g)c_L - T(c_L)}{w} < b < (1+g)c_L - c_0 - \frac{\pi_1(1+g)(c_H - c_L)}{\pi_0}; \quad (15)$$

(iv) the announcement effect of a cash offer is positive if b becomes sufficiently large so that the second inequality in (15) is reversed.

Proof: (i) The first inequality in (14) is the same as in (9), and the second inequality holds if the valuation effect in (12) is negative. (ii) The second inequality in (14) is reversed if the valuation effect in (12) is positive. (iii) The first inequality in (15) is the same as in (10), and the second inequality holds if the valuation effect in (13) is negative. (iv) The second inequality in (15) is reversed if the valuation effect in (13) is positive. ■

Corollaries 1 (i) and (iii) predict negative announcement effects. Given private benefits, the new investment quality is the driving force; if the new investment's NPV is low enough, outside investors are likely to incur net losses due to private benefits, and hence the market is likely to react negatively to the announcement of the issue-to-invest decisions by both rights issuers and cash offering firms. (Note that b cannot be too small because it would be optimal to skip the new project.)

Now concentrate on the second inequality in conditions (14) and (15). When the variation in control benefits, $c_H - c_L$, is big, the negative reaction (given b) is more likely to happen to a rights issue than a cash offer. This is mainly because a rights issuer's control benefits revealed are larger in our separating equilibrium (recall the valuation differential is in favor of cash offers,

i.e., $V_{rights} - V_{cashoffer} = (1 + g)(c_L - c_H) < 0$). But to see a negative announcement effect, the negative valuation effect from large control benefits revealed in the separating equilibrium must overwhelm any value-added effect of new investment. Of course, if a loss-making new investment is undertaken, the negative valuation effect will be more pronounced. On the other hand, cash offers may not necessarily lead to negative announcement effects, because the second inequality in (15) can be reversed if $(c_H - c_L)$ is big. This can explain the negative announcement effects of rights issues in contrast with valuation-preserving cash offers as documented in Slovin, Sushka and Lai (2000) and Wu and Wang (2002).

Corollaries 1 (ii) and (iv) predict positive announcement effects, indicating that as long as the new project's NPV is large enough, the announcement effects, regardless of the flotation method, should be positive. This is because the new investment can add more value to the firm than compensates for the controlling shareholder's gain in private benefits, even in a rights issue.¹⁰ Thus this corollary also helps explain the results documented in Kang and Stulz (1996).

4.3. The Rights-Pooling Equilibrium and Announcement Effects

In this paper, rights issues do not necessarily protect the interests of outside shareholders. The market is ready to weigh the valuation effects from both private benefits of control and investment opportunities, and responds to a firm's issue-to-invest decisions accordingly. Rights issues often produce mixed announcement effects, as we have already confirmed analytically in our separating equilibrium. In this section, we focus on the rights-pooling equilibrium. Except for changes we make in some assumptions below, we basically follow the analytical approach in Myers and Majluf (1984), which is confined to cash offers only (like in a cash-offer-pooling equilibrium).

¹⁰ This can happen even when control benefits are large. In a market without effective legal institutions, controlling shareholders may have double benefits. Poor legal protection of shareholder rights allows them to expropriate large control benefits from outside investors, and widespread corruption also provides them with unfair opportunities to grab lucrative (monopoly) business, often controlled by local governments. Good investment opportunities and large private benefits can go hand in hand in such a market (See Khanna and Palepu, 2000, in the case of India).

We start with assumptions which are basically the same as those we have used so far. First, the controlling shareholder/manager maximizes the sum of the market-valued security benefits of his equity holdings and his private benefits of control. This is the objective function we use throughout the paper. The private benefits consist of the existing private benefits, c , and additional private benefits from new investment if undertaken. The additional private benefits are positively correlated with the existing ones, and assumed to be equal to a proportion of the latter, $g*c$, where g is a positive constant (percentage) as public knowledge. Second, there is asymmetric information about the NPV of new investments as well as about private benefits of control.¹¹ The market knows the distributions of the NPV and the private benefits, \tilde{B} and \tilde{C} , while insiders know their true values, b and c . The true value, b , becomes fully known to the market at $t=1$ (similar to the setting in Myers and Majluf, 1984), while c remains under asymmetric information forever—because in the setting of pooling, private benefits are hard to be revealed. We still assume that the true value of assets-in-place, a , is known to both insiders and the public. We show below that asymmetric information about a is not relevant in a rights issuing decision that causes no control dilution. Finally, there is no financial slack, and issue size, E , is fully known to both the insiders and the market, as in Myers and Majluf (1984).

At time $t=0$ (the event time), if the incumbent controlling shareholder decides to issue and invest, the payoff to the incumbent is $w[a + b + E - (1 + g)\bar{c}] + (1 + g)c - wE$, where w is the incumbent's current ownership that will not be diluted after a rights issue, and \bar{c} is the market's estimate of the average private benefits involved. The first term in this payoff is the incumbent's share of the firm value at $t=1$, i.e., the sum of assets-in-place and the present value of new investment, net of his total private benefits of control expected by the market. The second is the true private benefits. The third is his share of the cost of the new investment. On the other hand, the incumbent may skip the new investment. Then, his payoff becomes $w(a - c_0)$, where c_0 is the market's estimate of private benefits conditional on the firm's decision to skip the new

¹¹ The assumption that the NPV is also under asymmetric information does not prevent our analysis here from being theoretically tractable.

investment (i.e., doing nothing). The firm's decision on whether to issue and invest or whether to skip the new project is summarized in the following proposition:

Proposition 4: *In a market in which rights issues are the only flotation method used (like in Equilibrium 3) and where asymmetric information about firm value comes from the new investment's NPV as well as private benefits of control, separation occurs such that a firm issues new equity and undertakes the new investment if the true values, b and c , satisfy*

$$b + \left(\frac{1+g}{w}\right)c - (1+g)\bar{c} - c_0 > 0. \quad (16)$$

Otherwise, the firm foregoes the new investment otherwise.

Proof: Compare the incumbent's payoffs of doing nothing versus issuing-to-invest. The incumbent prefers issuing-to-invest if

$$w(a - c_0) < w[a + b + E - (1+g)\bar{c}] + (1+g)c - wE. \quad (17)$$

Reorganizing condition (17) yields (16). ■

Note that assets-in-place, a , does not appear in the issue-to-invest condition in (16). The adverse-selection problem arising from managers selling overvalued assets-in-place to new investors as originally analyzed by Myers and Majluf (1984) is not a relevant concern in the rights offering decision.¹² That is why we can simply treat the true value of assets-in-place, a , as common knowledge here.

¹² If the incumbent large shareholders take up fewer rights than they are together entitled to, the adverse selection problem creeps back (Eckbo and Masulis, 1992). This effect depends on how the market weighs the importance of the large shareholders who renounce their subscription right. But even in this case, rent protection can still drive the other incumbent large shareholders to use a rights offer. The adverse selection problem certainly constitutes an additional effect but this is outside our model.

Figure 2 depicts the decision-making scenarios for the controlling shareholder. Under asymmetric information about private benefits and investment opportunities, separation occurs. When (c,b) falls into region M' , condition (16) is satisfied and the firm conducts a rights issue. When (c,b) falls into region M , the firm passes up the new investment.

Interestingly, underinvestment may occur even when the Myers and Majluf (1984) adverse-selection effect is completely absent. Myers and Majluf (1984) argue that managers will pass up positive NPV projects if they anticipate more value dilution than the gain from the new projects for existing shareholders. In our model here, rights issues do not involve any share dilution but underinvestment may still occur, because a positive NPV project may not be attractive enough to the incumbent when c is small while the market's estimates of control benefits, \bar{c} and c_0 , are high. This corresponds to (c,b) falling in the top triangle area under the indifference line in region M . Note that \bar{c} and c_0 may not necessarily be equal, given the probability distribution of private benefits among firms; these expectations on private benefits are conditional on the decisions of issuing-to-invest and doing nothing, respectively.

Conversely, a rights issue may go ahead even when b is negative. This overinvestment favors the incumbent because he can gain more from his private benefits than his share of the loss of firm value caused by a negative NPV new project. Yet the possibility of overinvestment cannot be rampant because the incumbent does have a large insider ownership. As shown in Figure 2, given c and the market expectations, \bar{c} and c_0 , when the new investment is very bad (i.e., b is very negative), it is more likely to fall in region M where the firm will not launch a loss-making project. The incentive alignment role of insider ownership works after all.

Taken together, our analysis shows that asymmetric information about control benefits and investment opportunities jointly affect corporate investments through rights issues.

What is the announcement effect of a rights issue? At time $t=0$, the market will update its estimate of the firm's value conditional on new information. If the firm undertakes the new investment, the equilibrium firm value is

$$V_{is} = a + \bar{B}(M') - (1 + g)\bar{c} , \quad (18)$$

where $\bar{B}(M')$ and \bar{c} (i.e., $\bar{C}(M')$) are the conditional expected values of \tilde{B} and \tilde{C} on region M' , respectively, as shown in Figure 2. If the firm passes up the investment, the firm value is

$$V_{no} = a - c_0. \quad (19)$$

Now we are ready to formally describe the announcement effects of rights offers using the following corollary.

Corollary 2: *In the same setting as in Proposition 4, if a firm's expected NPV of new investment (conditional on the decision of issuing-to-invest) is larger than the difference in the market expected private benefits to the incumbent controlling shareholder who makes the decision of issuing-to-invest instead of doing nothing, i.e.,*

$$\bar{B}(M') > (1 + g)\bar{c} - c_0, \quad (20)$$

the announcement effect of the firm's rights issue is positive. Otherwise, the announcement effect is negative.

Proof. Just before the announcement at $t=0$ (or at time $t = -1$), the market will evaluate all the scenarios for time $t = 0$ to reach a pre-announcement equilibrium value. This pre-announcement firm value lies between the two values, V_{is} and V_{no} , depending on the probability the market assigns to the rights issuing decision. As a result, according to equations (18) and (19), if $V_{is} > V_{no}$, we have condition (20); otherwise, condition (20) is reversed. ■

To summarize, like in the separating equilibrium, rights issues in the rights-pooling equilibrium can produce negative as well as positive announcement effects. When both private benefits and investment opportunities are under asymmetric information, the valuation effects from private benefits of control and investment opportunities jointly determine the announcement effects for rights issues. This provides a coherent framework for understanding the mixed announcement effects of rights issues, especially documented in markets where rights issues are the only flotation method.

5. Conclusion

We model how a rent protection motive drives the choice between rights issues and cash offers in seasoned equity offerings. The framework described in this paper supports not just one but three important equilibriums, which help explain why (a) firms with large control benefits choose rights issues and firms with small control benefits choose cash offers, like in Hong Kong and the UK; (b) why almost all firms in the US market choose cash offers; and (c) why almost all firms in many other markets, as is the case in most European countries, choose rights issues. In the literature, the two extreme cases of (b) and (c) have almost never been analyzed together in the same framework. This paper, however, shows that the choice of the two flotation methods in the US (cash offer dominating) and in most European countries (rights dominating), although sharply contrasted, can be explained by the rent protection argument—namely, unlike US managers, controlling shareholders of most European firms would suffer a significant loss of control benefits after control-diluting cash offers and hence have to resort to rights issues to safeguard their large control benefits.

While specific security designs/mechanisms and liquidity problems as described in the literature can sometimes better explain the choices of SEOs in much detail in individual countries, our rent protection argument has no conflicts with these detailed explanations. In effect, our model is best understood beyond the US context in a more general sense. First, concentrated ownership structures and jealously guarded large private benefits of control are prevalent in many important non-US markets. Second, the choice of flotation method between two polar cases, rights issues and cash offers, varies puzzlingly across countries. On the surface, these variations are related to regulatory details. The theoretical analysis of this paper which is able to preserve internal consistency shows that regulatory constraints may well be an equilibrium result in disguise. Third, our model is able to produce predictions that are consistent with the announcement effects of rights issues versus cash offers in many countries as documented in the literature. Fourth, consistent with our model, the interaction of control protection and corporate financial restructuring seems to have played a role in the increase use of rights issues worldwide—possibly also as a last resort in dire financial condition—during the recent global financial crisis.

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Figure 1: The Intrusion-Induced Loss of Private Benefit of Control, $T(c)$

This figure shows some typical structures of $T(c)$ and the corresponding values for high and low private benefits, c_H and c_L . Corporate insiders know the true value of the existing private benefits, c , and the market does the guesswork. Additional private benefits arising from the new investment are positively correlated with c , namely equal to $g*c$, where g is a constant (percentage). $T(c)$ as the standard signaling cost is the intrusion-induced loss of the incumbent's private benefits of control. The incumbent controlling shareholder has current equity ownership, w , in percentage. $w(1+g)$ times the market's estimate about c is the expropriation cost to the incumbent. $T(c)$ is an increasing function of c . The average value of the private benefits in a pooling equilibrium is \bar{c} ($c_L < \bar{c} < c_H$).

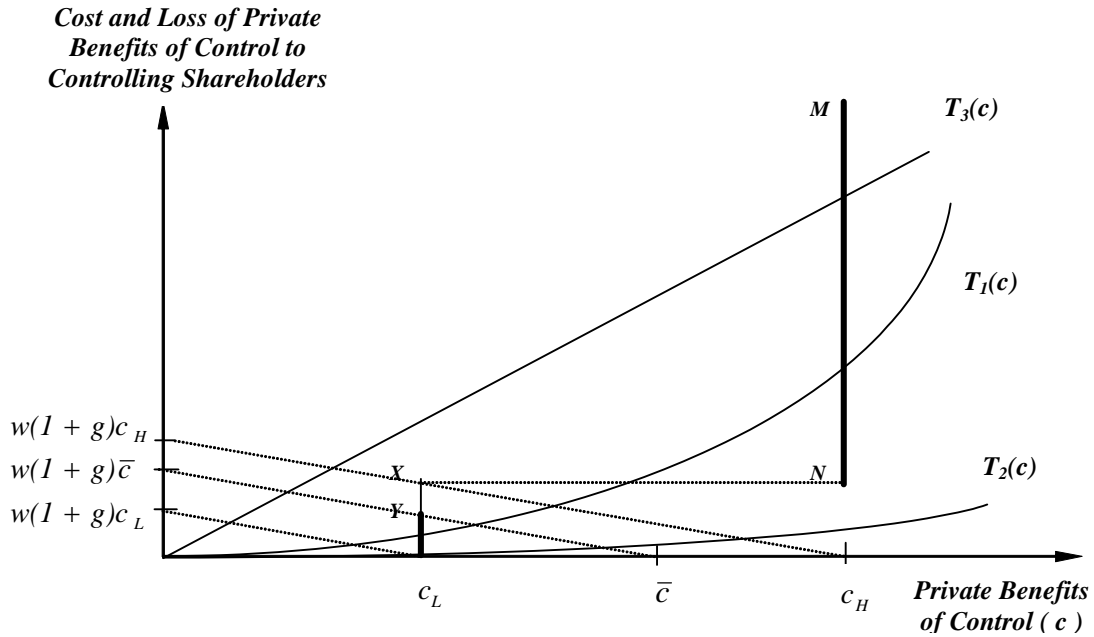


Figure 2: A Firm's Issue-to-invest Decisions in a Rights-Pooling Equilibrium

This figure shows whether a firm decides to go ahead with a rights issue or not, when only rights issues are used as the flotation method. If the inside information about the existing private benefits of control, c , and about growth prospects, b , or (c, b) , falls in Region M', the firm issues to invest. If (c, b) falls in Region M, the firm skips the new investment (i.e., does nothing). Additional private benefits arising from the new investment are positively correlated with c , namely equal to $g \cdot c$, where g is a constant (percentage). w is the controlling equity ownership in percentage before the issue. The indifference line marks the separation. \bar{c} and c_0 are the market's estimates of the existing private benefits conditional on Regions M' and M respectively.

