The Choice between Rights Issues and Cash Offers under Asymmetric Information about Private Benefits of Control

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Abstract

Rights issues and cash offers to outside investors are the two main flotation methods used in seasoned equity offerings (SEO) worldwide. The existing literature has been unable to explain, within the same framework, why: (a) some firms choose rights issues and other firms choose cash offers in the same country; (b) almost all firms in the U.S. choose cash offers rather than rights issues; (c) almost all firms in most European and Pacific Basin countries do the opposite, and choose rights issues instead. We argue that the choice of flotation method is crucially affected by the controlling shareholders’ concern about the possibility of an intrusion-induced significant loss of their private benefits of control. Control-diluting cash offers provide an opportunity for rent-seeking new blockholders to intrude and share in control benefits effectively. Since undoing such intrusions can be very costly, when raising new equity, incumbents with large control benefits may prefer to use rights issues in order to safeguard their control benefits. Under asymmetric information about control benefits, the choice of flotation method can convey new information about private benefits and hence about firm value. Our theory supports three important equilibriums that characterize the choice of flotation method worldwide, and helps explain, in particular, the negative announcement effect of rights issues in many markets.

Key Words: Private Benefits, Control, Asymmetric information, Flotation Method, Rights Issue, SEO

JEL Classification Code: G14, G32, G34
1. Introduction

In seasoned equity offerings (SEOs) around the world, there are usually two major flotation methods: rights issues and cash offers. Rights issues are new equity sales to existing shareholders made on a *pro rata* basis, and cash offers are usually underwritten cash offers to outside investors. In the U.S. 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 U.S., 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?

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 protect shareholder rights. Since cash offers to outside investors in principle go against their preemptive rights, firms with preemptive rights must always choose a rights issue. U.S. firms, however, are largely free to choose between rights issues and cash offers because shareholders of most U.S. firms have waived the preemptive rights to subscribe to new equity issues. In contrast, shareholders in most European and Pacific Basin counties 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. The extant literature (mostly in the U.S. context) has offered some insights into rights issues but there is still a lack of a unified theory that helps us to understand rights issues around the world. We believe that how the conflicts of interest arise between existing and new shareholders in SEOs is important for understanding rights issues.
The extant literature has so far advanced two important views. First, if corporate decision makers or managers maximize the existing shareholders’ wealth, rights issues do not give rise to any conflicts of interest because there will be no new shareholders involved. This is exactly the setting of Myers and Majluf (1984). As a result, the Myers-Majluf model predicts that rights issues do not convey any asymmetric information. The empirical results in the US—which on average show close-to-zero announcement effects of rights issues—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 to subscription in rights issues, then adverse selection occurs, because the market and especially uninformed investors become suspicious about the motivation behind the rights issues and hence conflicts of interest between large shareholders and uninformed investors loom large. This view provides a significant step to understand Smith’s (1977) rights issue paradox, which questions why US managers prefer underwritten offers to rights issues given that the underwritten offers have obviously higher flotation costs (including the adverse selection discount at the announcement). Hansen and Pinkerton (1982) and Hansen (1988) suggest that firms with dispersed ownership structures, common in the U.S., 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 is the key to lowering the flotation costs of the rights issues.

This paper suggests that even if large shareholders or controlling shareholders commit to subscribe to their entitled rights, there will still be conflicts of interest between controlling shareholders and uninformed investors 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 across firms within a particular legal environment can also vary considerably in view of heterogeneity in firms' 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 because their true value is largely inside information and also, by definition, hardly provable in court (Zingales, 1994). Thus, this paper allows asymmetric information about private benefits to play a key role in explaining: why almost all firms in the U.S. 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 flows within a particular market, such as in Hong Kong and the U.K.

More precisely, we argue that controlling shareholders’ concern about a possibility of a significant loss in their private benefits of control (or control benefits) affects the choice of the 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. Unlike rights issues which seldom change ownership structures to the detriment of the incumbents, control-diluting cash offers are likely to weaken the control of the incumbents and, at the same time, facilitate the emergence of new, coveted blockholders.

Compared with the more costly purchase of a block of shares directly from the market—a move that would push up the prices considerably especially in closely-held markets—new blockholders are happy with the window of opportunity through cash offers (often coming with an offer price discount).

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1 An example of such a significant variation of private benefits of control even within a country with weak protection is the finding by Reese and Weisbach (2002) that some firms in countries with weak protection seek protection of minority shareholders through cross-listings in the U.S.
which facilitates their plan to become active in a rent seeking sense.\(^2\) 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. Once such intruders are in, it is costly for the incumbents to drive them out. For one thing, a newly emergent blockholder can make enough noise to make the incumbents compromise in exchange for his silence. This even used to happen in the U.S, for example, in the cases of greenmail and targeted share repurchases (Dann and DeAngelo, 1983; Bradley and Wakeman, 1983).

Sharing in private benefits is common amongst large shareholders. Blockholders can help sustain managerial entrenchment, indicating their private benefits sharing (Borokhovich, Brunarski, Harman, and Parrino, 2005). In markets with concentrated ownership structures where large private benefits of control are prevalent, it is common for large shareholders as a group to share in connected business transactions or self-dealings. But the issue is whether the existing controlling shareholders are willing to let new blockholders share in their private benefits of control.

As long as intruders exist and are more likely to go after a target with large control benefits, controlling shareholders with large private benefits, when coming to raise new equity, may be unable to afford control-diluting cash offers and so must resort to rights issues to safeguard their control benefits.\(^3\) Thus, the choice of flotation method has implications for hidden private benefits.

\(^2\) Cash offers are mostly made as underwritten offers in which the allotment of new shares is largely at the discretion of the underwriter(s). As a result, a considerable number of new shares may be allotted to the new blockholders (Brennan and Franks, 1997). Bennedsen and Wolfenzon (2000) argue that control dilution due to new blockholders reduces the incumbents’ private benefits. Even in the sense of monitoring by outside blockholders, control-diluting cash offers will cause the controlling shareholders to lose some private benefits of control anyway.

\(^3\) The rights offer in this paper is mainly related to financing new investments. Related, but out of the scope of, this paper, there is another kind of right which has an even stronger implication for hidden control benefits. The
Our theory supports three important equilibriums. (a) In a separating equilibrium, low-quality firms (with high control benefits) choose rights issues and the high-quality firms (with low control benefits) opt for cash offers. The amount of the incumbent’s loss of control benefits, or simply the intrusion-induced loss of control benefits, is the signaling cost here. (b) If the loss remains small even for low-quality firms with large control benefits, or if large control benefits are simply rare in a market, all firms will choose cash offers—a pooling equilibrium. This explains 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 significantly threaten 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 are more concerned about takeovers (Stulz, 1988) than new share dilution. (c) In sharp contrast, if the loss is high across the board, all firms will choose rights issues—another 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

shareholder rights plan contains contingent rights, or better known as the poison pill, granted to all shareholders but raiders as new blockholders. These poison pills (rights) are designed to be activated during a hostile takeover in order to dilute the voting power of raiders. Although almost none of the hostile takeovers in the U.S. have actually activated these poison pills—which certainly complicate the revaluation process for the target firms, many believe these poison pills mainly help entrench the incumbent management in firms that should otherwise have faced takeover bids.

4 Smith (1977) suggests that the U.S. managers enjoy personal benefits from using underwriters—a result of possible collusion with investment banks. While not contradictory to this position, our argument, which is based on large shareholders’ control benefits, can further explain the choice of flotation method used outside the U.S.
result of the preemptive rights in these countries, there must be good economic reasons behind the incentive of controlling shareholders who are reluctant about waiving the preemptive rights. 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 (Shleifer and Vishny, 1986, 1997); one could imagine that most controlling shareholders would suffer a significant loss of private benefits after ownership dilution in these countries.

Besides the three equilibriums described above, our theory also helps explain the evolution of the choice of flotation method in the U.S. When the legal environment and corporate governance improve over time, insiders’ expropriation from outside investors will become more contained, and the loss of control benefits due to insider ownership dilution will become less of a concern to the incumbent—because managers are in control of firms. As a result, more and more firms are abandoning rights issues, which tend to have a negative connotation if the notion that rights issues may safeguard large control benefits prevails in the market. In effect, the US is not the only market where rights issues have been on the wane. In a sense, the U.K. market has also been experiencing the same evolution. Previously, all U.K. firms used rights issues in SEOs. Since 1986, when new equity issues to outside investors were first allowed, high-quality U.K. firms have started to abandon rights issues and are turning to cash offers (Slovin, Sushka and Lai, 2000).

It is worthwhile to mention here that our control benefits approach also sheds light on some puzzling announcement effects of SEOs documented in the literature, where especially rights issues are involved. For example, rights issues regardless of being underwritten or not can cause a negative announcement effect, whereas cash offers can produce a positive announcement effect (Suzuki, 1999, and
Slovin, Sushka and Lai, 2000, for the U.K.; Wu and Wang, 2002, for Hong Kong). 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 cash offers seem to be a better alternative? The answer lies in our argument that rights issues do not necessarily protect the interest of outside shareholders; the incumbents would tolerate a loss of firm value so long as their gain in private 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 closely related to the existing literature. Section 3 models the choice between a rights issue and a cash offer and discusses the model’s empirical implications for the choice of flotation method worldwide. Section 4 explains 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 regarding both the choice of flotation method and corporate governance. In the SEO literature, the adverse-selection effect in Myers and Majluf (1984) which arises from the conflicts of interest between the existing and the new shareholders is well received for understanding cash offers to outside investors. In rights issues, however, active shareholders such as controlling shareholders and managers are unlikely to sell to themselves and to existing shareholders.

The existence of private benefits of control, however, is likely to discredit rights issues. Consistent with the insight from Jensen (1986), Jung, Kim and Stulz (1996) argue that the managerial agency problem plays an important role in cash offers. But they 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, or conflicts of interest, explain why most U.S. 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 so that ex ante under- and overinvestment problems coexist. That analysis, however, treats private benefits of control as public knowledge. In the take-up model of Eckbo and Masulis (1992), firms choose rights issues if they expect high take-up ratios in rights subscription, or opt for cash offers (through underwriters) if they expect low take-up ratios. Since rights issuers have higher value than firms with cash offers in this setting, the take-up model cannot explain bad connotations possibly associated with rights issues.

In the literature, the choice of rights issue is found to be 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 U.S. use rights issues where the subscription commitment by large shareholders is the key to lowering the flotation costs of the rights issues. They suggest that firms with dispersed ownership structures, common in the U.S., would incur high costs for rights issues if they used them because there is lack of large shareholders’ commitment. This is a reasonable explanation for Smith’s (1977) rights issue paradox. But if private benefits of control are large as in many markets around the world, controlling shareholders’ commitment to rights subscription may not necessarily solve the conflicts of interest between informed and uninformed...
shareholders. It is well known that private benefits of control are responsible for insiders' expropriation from outside investors and are the source of the conflicts between large shareholders/managers and dispersed outside investors.\textsuperscript{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 can be related to ownership concentration through lower market liquidity as well. In the U.S., Kothare (1997) finds that, in sharp contrast with cash offers, rights issues strengthen ownership concentration and widen bid-ask spreads of issuing firms’ traded stocks—a negative effect on stock liquidity. While the liquidity argument is consistent with Holmstrom and Tirole (1993)—who suggest that more shares falling into the hands of outside investors during control-diluting cash offers enhances outside monitoring through an increased liquidity of shares—Zingales (1995) suggests, in an initial public offering (IPO) context, that corporate control is also an important and previously unexplored aspect of new equity issues (see also Pagano and Roell, 1998, and Myers, 2000).

Brennan and Franks (1997) also address the incumbent insiders’ concern about the emergence of new blockholders in an IPO. They argue that the entrepreneur uses the well-known IPO underpricing to generate oversubscription in order to prevent the emergence of new blockholders and the subsequent monitoring (which is supposed to be more relevant to the U.S. market). Likewise, this paper suggests that a similar concern also occurs in SEOs if new blockholders are rent-seeking and share in the incumbent’s

\textsuperscript{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 \textit{de facto} deviation. Unlike the cash flow rights, the value of voting rights from the same shares is asymmetric between large shareholders (or managers in a coalition with other blockholders) and dispersed shareholders.
private benefits of control. Although the possibility of the emergence of new rent-seeking blockholders exists at any time, corporate events such as control-diluting cash offers can increase this possibility considerably. In SEOs, new equity sales to outside investors can suddenly cause substantial control dilution. For example, using a well-controlled sample of 85 U.S. firms, Kothare (1997) reports that while rights issues increase insider ownership slightly, cash offers on average reduce it by more than 10 percent.

The importance of control benefits has been recognized in the emerging literature that emphasizes the self-interest of corporate insiders. In effect, such a departure of the firm value maximization by corporate insiders has recently received more attention in the corporate finance literature: as Myers (2000) puts it, "Sooner or later the theory of corporate finance must deal generally with the self-interest of corporate managers...." In the same spirit, this paper will impose an explicit incentive structure. We will use the controlling shareholder’s wealth objective function, which includes both the security benefits of the incumbent’s equity holdings (cash flow rights) and private benefits of control (control value). As a result, there is a possibility that controlling shareholders are willing to make a bad corporate decision as long as their marginal gain in control value overcompensates for the drop in the market value of their cash flow rights—the drop in response to the bad decision.

3. Modeling the Choice between a Rights issue and a Cash Offer

In this section, we develop a theoretical framework to analyze possible equilibriums regarding the flotation method choice under asymmetric information about private benefits of control. 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 from a worldwide perspective. Section 3.4 discusses some validity issues of the analysis.

3.1 The Setup
Consider a firm with an investment opportunity that needs equity financing. The value of the 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 (the proof is available upon request). We show below that it is the asymmetric information about private benefits of control that critically contributes to the understanding of the choice of flotation method in equity financing.

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, \( g \times c \), where \( g \) is a positive coefficient (percentage). Corporate insiders (including potential large shareholders) in our model know the true value of private benefits of control, \( c \), and the market has to guess (see Gomes, 2000, for a similar assumption in an IPO context). 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 investments, while low firm quality means high control benefits, \( c_H \). Note that, in terms of total private benefits, we have \( c_L + g \times c_L < c_H + g \times c_H \), where \( g \) is public knowledge (note that \( g \) is not important in our analysis that follows).

The timeline 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 of
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. 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 control benefits, which is the only variable under information
asymmetry in the model described below. Let \( V_{\text{rights}} \) \( (V_{\text{cashoffer}}) \) be the firm value, and \( c_{\text{rights}} \) \( (c_{\text{cashoffer}}) \) be
the investors’ estimate of, or the market's belief about, the extent of private benefits upon a rights issue (a
cash offer) announcement at t=0. Because private benefits are not gained by the firm, the investors’
estimate of private benefits is a relevant determinant of firm value. The firm's value after the
announcement of a rights issue is \( V_{\text{rights}} = a + b - (1 + g)c_{\text{rights}} \); and the firm's value after the
announcement of a cash offer is \( V_{\text{cashoffer}} = a + b - (1 + g)c_{\text{cashoffer}} \). The firm may skip the new project. If
so, the firm value is \( V_{\text{no}} = a-c_0 \), 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:** Conditional on the issue-to-invest decision, the payoff to the incumbent controlling shareholder
following a rights issue is:

\[
P_{\text{rights}}(c,c_{\text{rights}}) = w(V_{\text{rights}} + E) + (1 + g)c - wE \\
= w[a + b - (1 + g)c_{\text{rights}}] + (1 + g)c \\
= w(a + b) + (1 + g)c - w(1 + g)c_{\text{rights}},
\]

(1)

where \( w \) in percentage is the pre-issuance equity ownership of the incumbent, \( E \) is the issue size (the cost
of new investment), and $c$ is the true private benefit which is only known to the insiders. The incumbent’s payoff, $P_{\text{rights}}$, depends on the true value, $c$ (the first argument), as well as the market's estimate of the private benefits, $c_{\text{rights}}$ (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). We further assume that the incumbent commits to subscribe to all his entitled rights. Hence controlling ownership is not diluted after the rights issue.

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 issues, control-diluting cash offers weaken the incumbent’s control of the firm and are likely to inflict a loss of some control benefits. Such a loss can happen under either monitoring or private-benefit sharing, imposed by intrusive blockholders possibly emerging during control-diluting cash offers.

In concentrated ownership structures where the largest shareholder (or a coalition of large shareholders) is already in control, a 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 is concerned very much about exposing his control benefits to intruders. We define intruders as the 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 (see Zwiebel, 1995, and Gomes and Novaes, 2001, about sharing in control benefits). Intruders with sufficient votes can exert pressure on the incumbent for their share of rent. In our model, we assume that intruders are fundamentally different from portfolio investors at large and know the true value of private benefits, $c$, as does the incumbent. The incumbent becomes vulnerable especially when his ownership is diluted and, at the same time, intruders' voting power has substantially increased. This is most likely to occur in an underwritten cash offer that suddenly causes control dilution and where a considerable number of new shares are allotted to intruders. Thus, if private benefits are large, the choice of flotation method has control dilution implications and
hence matters to the incumbent who intends to safeguard his large private benefits.

To reflect this threat of intrusive rent-seeking, we assume that the incumbent expects a certain loss of some private benefits of control, \( T(c) \), as a result of control-diluting cash offers; this intrusion-induced loss of control benefits, \( T(c) \), is exactly known also to the insiders. Recall that there is no such loss in a rights issue 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 market knows only that 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,

\[
P_{\text{cashoffer}}(c, c_{\text{cashoffer}}) = \frac{wV_{\text{cashoffer}}}{V_{\text{cashoffer}} + E} (V_{\text{cashoffer}} + E) + (1 + g)c - T(c) \\
= w[a + b - (1 + g)c_{\text{cashoffer}}] + (1 + g)c - T(c) \\
= w(a + b) + (1 + g)c - w(1 + g)c_{\text{cashoffer}} - T(c).
\]

In the last equation of (2), \( w(1 + g)c_{\text{cashoffer}} \) 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 \( c_{\text{newissue}} = c \)) for every dollar of private benefits he “steals” from outside investors (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 issues and cash offers, only the choice of a cash offer causes an intrusion-induced loss of control benefits, \( T(c) \).

3.2 Three Important Equilibriums
In this section, we show that there are three equilibriums for the firm’s choice of equity flotation method under asymmetric information about private benefits of control: a separating and two pooling equilibriums. In the signaling game we present below, the signaling cost function, \( T(c) \), is the extent of the incumbent’s loss of control benefits as a result of control-diluting cash offers. This type of signaling is similar to signaling in the job market through costly education, originally described in Spence (1973). 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 issues and high-quality firms (with \( c_L \)) choose cash offers. The market believes that rights issues signal high private benefits and cash offers signal low private benefits (i.e. \( c_{\text{rights}} = c_H \) and \( c_{\text{cashoffer}} = c_L \)). 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 \( c_{\text{rights}} = c_H \), but low-quality firms are better off by choosing cash offers, given the signaling cost structure—namely \( T(c) \) is low in any case. Since even low-quality firms can signal, the market cannot infer firm type (i.e., \( c_{\text{cashoffer}} = \bar{c} \), 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 issues. The reasonable out-of-equilibrium belief is \( c_{\text{cashoffer}} = c_L \), 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., \( c_{\text{rights}} = \bar{c} \), 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

\[ T(c_L) < w(1+g)(c_H - c_L) < T(c_H). \]  

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

\[ T(c_H) < w(1+g)(c_H - \overline{c}). \]  

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

\[ T(c_L) > w(1+g)(\overline{c} - c_L). \]

**Proof:** (a) The separating equilibrium in which low-quality firms (with \(c_H\)) choose rights issues and high-quality firms (with \(c_L\)) choose cash offers requires \(P_{\text{rights}}(c_H, c_H) > P_{\text{cashoffer}}(c_H, c_L)\) and \(P_{\text{rights}}(c_L, c_H) < P_{\text{cashoffer}}(c_L, c_L)\). Replacing \(c_{\text{rights}}\) and \(c_{\text{cashoffer}}\) in payoffs (1) and (2) with the market’s belief accordingly, i.e., \(c_{\text{rights}} = c_H\) and \(c_{\text{cashoffer}} = c_L\), produces (3). (b) Both high- and low-quality firms choose cash offers in the cash-offer-pooling equilibrium. This sequential equilibrium requires \(P_{\text{rights}}(c_H, c_H) < P_{\text{cashoffer}}(c_H, \overline{c})\) and \(P_{\text{rights}}(c_L, c_H) < P_{\text{cashoffer}}(c_L, \overline{c})\). Inserting the market’s belief into \(c_{\text{rights}}\) and \(c_{\text{cashoffer}}\) in payoffs (1) and (2), i.e., \(c_{\text{rights}} = c_H\) and \(c_{\text{cashoffer}} = \overline{c}\), yields (4). (c) The rights-pooling equilibrium in which both high- and low-quality firms choose rights issues requires \(P_{\text{rights}}(c_H, \overline{c}) > P_{\text{cashoffer}}(c_H, c_L)\) and \(P_{\text{rights}}(c_L, \overline{c}) > P_{\text{cashoffer}}(c_L, c_L)\). Considering the market’s belief in payoffs (1) and (2), i.e., \(c_{\text{rights}} = \overline{c}\) and \(c_{\text{cashoffer}} = c_L\), 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, $T(c)$, or the $T$-cost, which increases with the true control benefits, $c$. As a result, the tradeoff between the intrusion-induced losses of control benefits (due to the incumbent’s choosing of a cash offer) and the expropriation cost differential to the incumbent, who chooses a rights issue 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 who chooses a rights issue instead of a cash offer is $w(1 + g)(c_H - c_L)$, the signaling $T$-cost of high-quality firms (with $c_L$) is smaller than this cost differential, but the $T$-cost of low-quality firms (with $c_H$) is larger than this cost differential. This 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 $T$-cost is sufficiently high for low-quality firms, but becomes sufficiently low for high-quality firms.

Condition (4), however, suggests that the intrusion-induced cost for low-quality firms (with $c_H$) is lower than the expropriation cost differential to the incumbent who chooses a rights issue instead of a cash offer, 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 $T$-cost for high-quality firms (with $c_L$) is higher than the expropriation cost differential to the incumbent, namely $w(\bar{c} - c_L)(1 + g)$. 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 intuition 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 ones, 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 issues is supported if and only if

\[
T(c_L) < w(1+g)(\bar{c} - c_L) \tag{6}
\]

and

\[
T(c_H) > w(1+g)(c_H - c_L) \tag{7}
\]

**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 \( c_{\text{cash offer}} = c_H \) because we can show that

\[
P_{\text{cash offer}}(c_H, c_H) < P_{\text{rights}}(c_H, \bar{c})
\]

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 \( c_{\text{cash offer}} = c_L \). 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

\[
P_{\text{cash offer}}(c_L, c_L) > P_{\text{rights}}(c_L, \bar{c})
\]

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. 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)

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

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

### 3.3 Empirical Relevance: A Worldwide Perspective

The three equilibriums suffice to characterize the choice of flotation method worldwide as empirically observed. In a survey paper, Eckbo and Masulis (1995) document that listed U.S. industrial firms had gradually switched their favorite flotation method from rights issues to cash offers before the early 1980s. Since then, almost all U.S. 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 et al. (2000) show that listed firms in the U.K. 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. To better understand the conditions for the three equilibriums (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 issue instead of a cash offer under different market beliefs.

Only $T_1$, the intrusion-induced cost structure, 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 two other 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 explains the U.K. findings by Slovin et al. (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 U.S. industrial firms choose cash offers. It is well known that in the U.S., managers rather than large shareholders play an important role in controlling firms. Because U.S. 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 U.S. 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 which minority shareholders enjoy and a 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 issues 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 the alternative flotation method of control-diluting cash offers. This explains why, unlike in the U.S., the waiving of preemptive rights is usually not desirable for controlling shareholders—indeed, we do not observe that the waiving has happened in many markets outside the US.

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, $T(c)$, is the signaling cost for controlling shareholders. Thus, the validity of our assumptions about $T(c)$ is crucial. We assume that $T(c)$ arises due to rent-seeking behavior of large 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.

It is recognized in the literature that large shareholders, or blockholders, emerging from a diffuse ownership structure such as in U.S. firms, have interests more closely aligned with those of outside investors than do managers who usually have only small managerial ownership. Large shareholders are able to discipline usually powerful managers (Shleifer and Vishny, 1986). The extant ownership structure literature, however, has paid scant attention to the role of active new blockholders when there is already a controlling shareholder (or a coalition of large shareholders). In a concentrated ownership structure where the largest shareholder is already in control, firm value has already reflected the significant monitoring effect from the largest shareholder. Thus, it seems unlikely for a new blockholder to bring any further monitoring effect in the interest of minority shareholders. While new blockholders are marginalized in playing a monitoring role in this situation, their rent-seeking behavior is likely to be pronounced. 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 U.S. context, the lure of private benefits to active new blockholders is 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 U.S. is muted. This is consistent with the view that active blockholders may not always bring about a significantly positive monitoring; instead they may simply share private benefits with the incumbent.

Can the incumbent keep intruders outside? The rent-protection theory of corporate ownership structure in Bebchuk (1999) suggests that the 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 tend to facilitate the previously hidden intruders to obtain sufficient votes.

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. The concern about exposing and losing part of the private benefits of control because of substantial control dilution from cash offers, however, legitimately enters the controlling shareholder’s choice of floatation method. The larger private benefits a target firm has, the more attractive it is to intruders, and the more the incumbent of the target firm is concerned with how to safeguard his control benefits. We simply use the intrusion-induced loss of control benefits to characterize the incumbent’s concern.

4. Announcement Effects

The existing literature has documented various findings for the SEO announcement effects. Some evidence especially where rights issues are involved remains puzzling. Section 4.1 reviews these empirical results. Section 4.2 extends the theory 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 is little understood within the same theoretical framework in the literature.

4.1. SEO Announcement Effects: Related Literature

Empirical evidence from the U.S. shows that, while the announcement effects of cash offers are on average significantly negative, the announcement effects of rights issues are quite close to zero. Asquith and Mullins (1986), Masulis and Kowar (1986) and Mikkelson and Partch (1986) are the early studies that formally document the negative announcement effects of cash offers. In survey papers, Smith (1986)

While the negative announcement effects of cash offers are well understood as an adverse-selection effect of Myers and Majluf (1984), the choice of SEO flotation method has puzzled researchers since Smith (1977). In the U.S. market, rights issues have been on the wane since the 1960s and are rarely used today (Eckbo and Masulis, 1995). This is puzzling because, despite rights issues having lower flotation costs, increasing numbers of firms have favored the more expensive underwritten cash offers (Smith, 1977).

There have been attempts in the literature to explain the U.S. rights issue puzzle. For example, Smith (1977) advances a monitoring cost hypothesis. He suggests that managers gain personal benefits from using underwriters but gain little from the more mechanical flotation method of rights issues. Thus the higher costs incurred by cash offers compared with rights issues reflect a lower bound of monitoring costs. There are other competing explanations. For example, Hansen and Pinkerton (1982) suggest that not all firms can enjoy low costs for rights issues. The commitment by a firm’s large shareholder to subscribe to the firm’s rights issue is the key to lowering the flotation costs of the rights issue. They find that only firms with concentrated ownership use rights issues. In other words, firms with dispersed ownership structures, common in the U.S., would find rights issues more costly. Since standby fees can make underwriters guarantee the success of rights issues, firms can choose between underwritten rights issues and pure rights issues. Eckbo and Masulis (1992) suggest that when the expected take-up (or subscription) rate of rights issues is low, there will be a significant adverse-selection problem. They believe that underwriter certification is noisy (their assumption A.4). As a result, high-quality firms choose pure rights issues where they find the highest take-up rate, medium-quality firms go for
underwritten rights issues, and the low-quality firms have to use cash offers in which the degree of adverse selection is greatest. They conclude that their predictions are consistent with evidence from the U.S. on the announcement effects of these flotation methods.

Unlike in the U.S., rights issues are frequently used in many other counties. In countries where both rights issues and cash offers are used, the literature has documented various kinds of announcement effects which are even more perplexing. For example, Kang and Stulz (1996) for Japan, and Cronqvist and Nilsson (2001) for Sweden, find significantly positive announcement effects for both rights issues (0.45 percent in Japan and 1.97 percent in Sweden) and cash offers (2.02 percent in Japan and 5.92 percent in Sweden). Yet Slovin et al. (2000) for the U.K. and Wu and Wang (2002) for Hong Kong find, on average, significantly negative announcement effects for rights issues (−3.09 percent in the U.K. and −7.64 percent in Hong Kong) in contrast with significantly positive announcement effects for cash offers (3.30 percent in the U.K. 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 cash offers poses a new puzzle: Why are firms willing to choose value-destroying rights issues instead of value-enhancing cash offers?

To explain this phenomenon, Slovin et al. (2000) resort to the underwriter certification hypothesis. They argue that high-value firms choose cash offers 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, could work in favor of underwritten rights issues, as

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8 The underwriter certification argument is very close to the certification argument for private placements. Barclay, Holderness and Sheehan (2003), however, provides evidence that questions the monitoring and certification hypotheses premised on the active involvement of new investors (see also Wu, 2004; Wu, Wang and Yao, 2005).
suggested by Heinkel and Schwartz (1986), and hence cannot explain *ex ante* why underwritten cash offers may produce negative announcement effects elsewhere.⁹

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., Gajewski and Ginglinger, 2002, −2.84 percent in France; Kabir and Roosenboom, 2002, −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 Loyttyiemi, 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 may produce positive announcement effects in some markets and negative ones in others.

In the next two sections, we argue that our approach that emphasizes the private benefits of control under asymmetric information is able to facilitate our understanding of the announcement effects of rights issues in different contexts. We show that it is likely 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

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⁹ The Myers and Majluf (1984) framework can be generalized to predict either positive or negative information effects of cash offers, depending on whether the dominant asymmetric information arises from growth opportunities or from assets-in-place (see Cooney and Kalay, 1993; Wu and Wang, 2005). But the generalized Myers-Majluf model is unable to explain the announcement effects of rights offers.
interaction with cash offers—the questions of why rights issues are good news in some cases and bad news in others.

4.2 Announcement Effects of Rights issue vs. 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 true 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 $V_{\text{rights}} - V_{\text{cash offer}} = (1 + g)(c_L - c_H)$, according to Section 3.1, for the setup regarding firm value. 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 effect, however, also depends on the market’s expectation that firms may pass up new investment (or do nothing). At $t=0$, when the separating equilibrium prevails, the conditional firm values are $V_{\text{no}} = a - c_0$ (where $c_L < c_0 < c_H$) for doing nothing, $V_{\text{rights}} = a + b - (1 + g)c_H$ for making a rights issue, and $V_{\text{cash offer}} = a + b - (1 + g)c_L$ 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.\(^\text{10}\) If a rights issue is chosen, the incumbent’s payoff in (1) must be greater than his payoff

\(^{10}\) The choice of floatation 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 floatation method (rights offer versus cash offer) given that an issuance decision is made. Second, the
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 offer 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.

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, whether its new investment’s NPV is positive or negative, a firm takes an issue-to-invest decision as long as

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

(9)

in the case of a rights issue, or

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

(10)

remaining decision is simplified as one between issuing-to-invest with the optimal floatation method versus doing nothing (i.e., skipping the new investment).
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, a rights issue, and a cash offer. Let the probabilities be \( \pi_0 \), \( \pi_1 \), and \( \pi_2 \) \((\pi_0 + \pi_1 + \pi_2 = 1)\) 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:

\[
V_b = a + (\pi_1 + \pi_2) b - \pi_1 (1 + g) c_H - \pi_2 (1 + g) c_L - \pi_0 c_0. 
\] (11)

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

\[
V_{\text{rights}} - V_b = \pi_0 b - (1 - \pi_1)(1 + g) c_H + \pi_2 (1 + g) c_L + \pi_0 c_0, 
\] (12)

and

\[
V_{\text{cashoffer}} - V_b = \pi_0 b - (1 - \pi_2)(1 + g) c_L + \pi_1 (1 + g) c_H + \pi_0 c_0. 
\] (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 true NPV, namely \( b \), and the difference in firm quality, \( c_H - c_L \), as follows.

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

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

(ii) the announcement effect of a rights issue is positive if \( b \) becomes sufficiently high, namely the second
inequality in (14) is reversed.

(iii) The announcement effect of a cash offer is positive if

\[ b > (1 + g)c_L - c_0 - \min \left\{ \frac{\pi_i(1 + g)(c_H - c_L)}{\pi_0}, \frac{(1 + g)c_L - T(c_L)}{w} \right\}; \]  

(15)

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

\[ (1 + g)c_L - c_0 - \frac{(1 + g)c_L - T(c_L)}{w} < b < (1 + g)c_L - c_0 - \frac{\pi_i(1 + g)(c_H - c_L)}{\pi_0}; \]  

(16)

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 inequality in (15) holds if the effect in (13) is positive and at the same time the inequality in (10) is satisfied. (iv) The first inequality in (16) is the same as in (10), and the second inequality holds if the valuation effect in (13) is negative.

Corollaries 1 (i) and (iv) predict negative announcement effects of SEOs, suggesting that if the new investment’s NPV is low enough, outside investors are likely to suffer net losses, and hence the market reacts negatively to the announcement of the issue-to-invest decisions by both rights issuers and cash offering firms. (\( b \) cannot be too small because otherwise it would be optimal to skip the new project.) As shown in conditions (14) and (16), when the difference in firm quality or asymmetric information about control benefits, \( c_H - c_L \), is big, the negative reaction is more likely to happen to a rights issue than a cash offer. This is mainly because a rights issuer’s control benefits that are revealed are larger in our separating equilibrium (recall the valuation differential is in favor of cash offers, i.e., \( V_{\text{rights}} - V_{\text{cash offer}} = (1 + g)(c_L - c_H) \)). In the negative announcement effects for rights issuers, the negative valuation effect from large control benefits that are revealed in the separating equilibrium simply overwhelms any value-added benefit of the new investment. If a loss-making new investment is undertaken, the negative valuation effect will be compounded. With a big difference in firm quality
in a market, cash offers may not produce negative announcement effects (because condition (16) can be more easily violated).\textsuperscript{11} All this may explain the negative announcement effects of rights issues in contrast with valuation-preserving cash offers documented in Slovin \textit{et al.} (2000) and Wu and Wang (2002).

Corollaries 2 (\textit{ii}) and (\textit{iii}) predict positive announcement effects of SEOs, indicating that as long as the new project’s NPV is big 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 is needed to compensate for the controlling shareholder’s gain in private benefits, even in a rights issue.\textsuperscript{12} Thus, this corollary also helps explain the results documented in Kang and Stulz (1996) and Cronqvist and Nilsson (2001). Note that in the separating equilibrium, a positive announcement effect of an issuing-to-invest decision is more likely to happen to a cash offering firm because this flotation method conveys smaller private benefits of control. As a result, this corollary also explains why cash offers can have positive announcement effects, as documented in Slovin \textit{et al.} (2000) and Wu and Wang (2002).

\textsuperscript{11} The Myers-Majluf adverse selection effect is assumed away in the model of this paper. But that negative effect is not always dominant according to the generalized Myers-Majluf framework (Cooney and Kalay, 1993; Wu and Wang, 2005).

\textsuperscript{12} 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).
4.3. The Rights-Pooling Equilibrium and Announcement Effects

One of the main arguments of this paper is that 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 may produce mixed announcement effects, as we have already shown in our separating equilibrium. In this section, we focus on the rights-pooling equilibrium. Except for changes in some assumptions, we basically follow the analytical approach in Myers and Majluf (1984), which focuses on cash offers only (like in a cash-offer-pooling equilibrium).

We start with the assumptions, some of which are new. 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, $g \cdot c$, where $g$ is a positive constant (percentage) and public knowledge. Second, we introduce asymmetric information regarding the NPV of new investments as well as private benefits of control. The market knows the distributions of the NPV and the private benefits, $\bar{B}$ and $\bar{C}$, 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 for outsiders to determine. 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 issue decision that causes no control

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$^{13}$ The assumption that the NPV is also under asymmetric information is not crucial in our analysis here. With this assumption added, our analysis is more general and remains theoretically tractable.
dilution. Finally, there is no financial slack, and issue size, \( E \), (i.e., investment scale) 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 private benefits involved (\( \bar{c} \) can be generalized here as the mean of a certain distribution rather than the mean of high and low values). 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 term is the true private benefits. The third term 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 investment (i.e., do 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

\[
b + \left(\frac{1+g}{w}\right)c - (1+g)\bar{c} - c_0 > 0,
\]

and 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

\[
b + \left(\frac{1+g}{w}\right)c - (1+g)\bar{c} - c_0 > 0,
\]

and the firm foregoes the new investment otherwise.
Reorganizing condition (18) yields (17).

Note that assets-in-place, \( a \), does not appear in the issue-to-invest condition in (17). 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 issue decision.\(^{14}\) That is why we can simply treat the true value of assets-in-place, \( a \), as common knowledge here.

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 (17) 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, 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 but 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.

\(^{14}\) If the incumbent takes up fewer rights than they are entitled to, the adverse-selection problem creeps back (Eckbo and Masulis, 1992). But even in this case, the safeguard of control benefits may still be the main reason behind the investment decision with a rights offer. The adverse-selection possibility certainly constitutes an additional effect, but it would complicate the analysis here.
given the probability distribution of private benefits among firms; these expectations on private benefits are conditional on the decisions of issuing-to-invest and of doing nothing, respectively.

Conversely, a rights issue may go ahead even when \( b \) is negative. This overinvestment is worthwhile for the incumbent because he can gain more from his private benefits than his share of the loss of firm value caused by a new, negative NPV, 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 highly negative), it is more likely to fall in region \( M \) where the firm will decide not to 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 financed 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

\[
V_{ss} = a + \bar{B}(M') - (1 + g)\bar{C}, \tag{19}
\]

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

\[
V_{no} = a - c_0. \tag{20}
\]

Now we are ready to formally describe the announcement effects of rights issues using the following corollary.
Corollary 2: In the same setting as in Proposition 4, if a firm’s expected NPV of a 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.,

\[ B(M') > (1 + g)\bar{\epsilon} - c_0, \]  

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 that the market assigns to the rights issuing decision. As a result, according to equations (19) and (20), if \( V_{is} > V_{no} \), we have condition (21); otherwise, condition (21) is reversed. ■

To summarize, like in the separating equilibrium, rights issues in the rights-pooling equilibrium can produce positive as well as negative 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, providing a coherent framework for understanding the aforementioned mixed announcement effects of rights issues, especially those documented in markets where rights issues are the only flotation method used in SEOs.

5. Summary and Conclusions

How conflicts of interest arise in SEOs can crucially affect the choice between rights issues and cash
offers to outside investors. The extant literature has offered two important views on right offers. First, if managers maximize the existing shareholders’ wealth, there will be no adverse selection in rights issues. Second, if (informed) large shareholders renounce their entitled rights, adverse selection does occur.

This paper argues that even if controlling shareholders commit to the full subscription to their entitled rights—a situation where they can avoid both control dilution and the kind of adverse selection recognized in the literature, conflicts of interest between controlling shareholders and uninformed investors still arise because of private benefits of control. Unlike rights issues, control-diluting cash offers are likely to substantially weaken the incumbent controlling shareholders’ control on the firm, and at the same time provide a window of opportunity for rent-seeking new blockholders to facilitate their participation in control benefits sharing. We argue that the larger the control benefits in a target firm, the more attractive it is to intruders, and the more the incumbents are concerned with the possibility of their loss of control benefits to the intruders, because undoing such coveted intrusion can be very costly. Thus, the incumbents with large control benefits may not be able to afford to use control-diluting cash offers and have to resort to rights issues in order to safeguard their private benefits during SEOs.

It follows that under asymmetric information about private benefits of control, the choice of SEO flotation method can convey significant information about firm value which is, ceteris paribus, negatively related to an issuer’s private benefits. Our theory supports three important equilibriums, which help us explain why (a) firms with large control benefits (low-value firms) choose rights issues and firms with small control benefits (high-value firms) choose cash offers, like in Hong Kong and the U.K.; (b) why almost all firms in the U.S. market choose cash offers; and (c) why almost all firms in many other markets, as is the case in most European counties, choose rights issues. The two extreme cases have almost never been analyzed together in the literature. This paper, however, shows that the choice of the two flotation methods in the U.S. (cash offer dominating) and in most European countries (rights dominating), although sharply contrasting, can be explained by the argument based on the intrusion-
induced losses of incumbent’s control benefits. Unlike U.S. 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. It is also worth mentioning that our theory sheds new light on the evolution of the choice of SEO flotation method—that is, given that the U.S. has achieved a significant improvement in protection of small investors (against the type of expropriation through self-dealing transactions) well ahead of other countries, this well-developed market has become the first to abandon rights issues to a great extent.

The notion that rights issues can safeguard corporate insiders’ large control benefits also helps explain the mixed announcement effects of rights issues around the world. In the separating equilibrium, given investment opportunities, when the information gap about control benefits is big, rights issues are likely to produce negative announcement effects. This is because the negative effect of large control benefits revealed in rights issues is likely to overwhelm any positive effects of the investment opportunities. On the other hand, outside investors’ gain from the new investment, if the issuer has a very good new project, can subdue a negative valuation effect of revealed control benefits, producing a positive announcement effect for rights issues.

In the rights-pooling equilibrium, adding the assumption of asymmetric information about investment opportunities still makes our model tractable; as a result, asymmetric information about control benefits and asymmetric information about investment opportunities jointly determine the announcement effects. Given the negative connotation of rights issues, the expected control benefits conditional on the decision of issuing-to-invest, i.e. rights issue, must be greater than the expected control benefits conditional on the decision of doing nothing. If this positive expectations differential is more than offset by the expected NPV of new investment (conditional on the decision of issuing-to-invest), rights issues produce positive announcement effects. Conversely, given investment opportunities, negative announcement effects for rights issues occur if the market expects larger control benefits
involved when firms go ahead with the rights issue.

While such a value-destroying move is rational for controlling shareholders in some cases, their expropriation from uninformed investors cannot be rampant and is to some extent contained in our framework because the incentive alignment role of insider ownership starts to work if expropriation aggravates. We show that even underinvestment is possible—and this happens when the Myers-Majluf adverse selection effect is completely absent. Underinvestment may occur in this situation because some good projects may not be attractive enough to the controlling shareholders when the market severely overestimates their control benefits if they make the move. This is consistent with the view that large average private benefits of control in an economy choke investment and economic growth.

In conclusion, our control benefits argument in SEOs is best understood from a worldwide perspective. First, concentrated ownership structures and large private benefits of control prevail in many important non-U.S. markets. Second, rights issues and cash offers to outside investors are two major SEO flotation methods used worldwide. Yet the choice between the two flotation methods varies significantly across countries. On the surface, these variations are related to regulatory details. For example, unlike in the U.S., shareholders in most European and Pacific Basin countries never waive their preemptive rights to subscribe to new equity issues. Thus, rights issues have been the only flotation method used in these countries. The theory of this paper shows that regulatory constraints may well be an equilibrium result in disguise.
References:


Myers, S., and N. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13, 187–221.


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 $g \cdot c$, where $g$ is a constant (percentage). $T(c)$ as the signaling cost is the intrusion-induced loss of the incumbent’s (some) 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.

\[ b + \frac{1 + g}{w} c - (1 + g) \bar{c} - c_0 = 0 \]

Region $M'$ (Issue and Invest)

Region $M$ (Do Nothing)