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**Rights offerings, trading, and regulation: A global perspective**

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# Rights Offerings, Trading, and Regulation: A Global Perspective

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## Abstract

We study rights offerings using a sample of 8,238 rights offers announced during 1995-2008 in 69 countries. Although shareholders prefer having the option to trade rights, issuers deliberately restrict tradability in 38% of the offerings. We argue that firms restrict rights trading to avoid the execution risk associated with strict prospectus requirements, a prolonged and uncertain transaction process, and the potentially negative information signaled via the price of traded rights. In line with this argument, we find that issuers restricting tradability are those with more to lose from reduced participation or that are more likely to face execution risk.

*JEL classification:* G14, G32, G38, K22

*Keywords:* rights issue, seasoned equity offering, liquidity of rights

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In a rights offering, issuers give existing shareholders the right to buy new shares at a specified price. Because they allow current shareholders to avoid dilution, rights offerings are favorably regarded by regulators outside the United States and are mandatory in many European and Latin American countries (Spamann 2010). In the context of growing international equity issuance, rights offerings have become increasingly important (Figure 1). In 2007, firms around the world raised \$175 billion through rights offerings, compared with \$346 billion through cash offerings and \$295 billion by going public.

**[Insert Figure 1 about here]**

However, rights offerings do not automatically protect existing shareholders from dilution. When current shareholders *cannot* sell their rights, it is costly not to subscribe. And even when rights are traded, the market for them is illiquid and they are often underpriced. More specifically, within a sample of rights issues around the world announced during the period 1995-2008, we find that the average right does not trade during 55% of the trading days, as compared with 20% for the underlying stock. In 17% of the trading days, the rights are so undervalued relative to the stock that the quoted price violates the lower put-call parity (PCP) arbitrage bound.

In many countries, including the United States, the United Kingdom, and Australia, issuers are even allowed to restrict the tradability of the rights. In our sample, only 84% of offerings have tradable rights. In the group of countries that do not mandate the tradability of rights, issuers give shareholders this option in only 62% of the offerings. Yet, shareholders have a strong preference for tradability. In countries where issuers have the choice, cumulative abnormal

returns in the three-day window around the announcement of rights offerings are, on average, 2% higher for offerings with tradable rights.

In this paper, we investigate why so many companies decide to restrict the tradability of their rights even when doing so is neither required by regulation nor desired by the shareholders. For this purpose, we use a comprehensive global sample of 8,238 rights issues obtained from Bloomberg for the 1995–2008 period.

In a Modigliani-Miller setting, which has no transaction costs, liquidity constraints, information asymmetry, or control rights, tradability is irrelevant. Between the announcement and the ex right date, shareholders can sell shares to investors who wish to exercise the right. If they wish to continue holding shares, they can buy them back after the offering. When there are frictions, however, this picture changes. In particular, three factors are relevant to the decision to restrict the tradability of the rights: trading costs, stock misvaluation, and execution risk. We investigate each of these frictions in turn.

First, tradability is costly. Firms must pay a market maker for trading the rights and write a prospectus for external shareholders. These costs could be especially burdensome to small firms. So if issuers make rights nontradable because of transaction costs, we should expect small firms to restrict tradability and obtain — thanks to the lower transaction costs — better returns at their announcement (*Transaction cost hypothesis*). And indeed, consistent with this transaction cost hypothesis, we find that small firms are more likely to restrict trading. However, we do not find that this is reflected in the market's reaction. Offerings by small firms do not have higher

announcement returns when the rights are not traded, and firm size does not explain the difference in announcement returns between tradable and nontradable offerings.

Second, firms may prefer to restrict tradability in the case of stock undervaluation. When shares are undervalued, managers concerned with maximizing the wealth of the existing shareholders may be reluctant to issue shares to outside investors. With a non-traded rights issue, only existing shareholders can subscribe and will not be diluted as long as they exercise their rights. When the rights are traded, however, shareholders can still sell their rights at a price that is too low compared to the real value and transfer wealth to the buyer of the right (*Paternalistic hypothesis*).

This “paternalistic” motive is more likely in firms with better alignment between shareholders and management. This implies that tradability is more likely to be restricted in firms with better governance, and trading restrictions are indeed more common in countries with better governance. The paternalistic hypothesis also proposes that managers know that the stock is undervalued, so firms that restrict tradability should exhibit higher post-issuance profitability improvements than do firms with no restrictions on tradability. Such improvements would be reflected in higher excess returns whether at the announcement or over a longer period. However, we find no evidence to support this prediction. Firms actually become less profitable following nontradable rights offerings than tradable ones. Investors anticipate this effect: announcement returns after nontradable rights issues are significantly lower than those after tradable rights issues. This negative reaction does not correct in the long run, as long-run returns do not significantly differ between issuers of tradable and nontradable rights.

Finally, restrictions on tradability can reduce execution risk when the demand for new shares is limited and uncertain. There are three reasons why such execution risk can be reduced with nontradable rights. First, if rights are not tradable then shareholders' wealth is diluted if they do not participate in the issue. This lends an element of coercion to the issue, as remarked by the chairman of an investment firm: "The company is holding a gun against your head."<sup>1</sup> Some shareholders may still choose not to participate and thus accept the dilution, in which case the board of directors can give "oversubscription" privileges to existing investors and/or sell non-exercised rights to outside investors. Second, restricting tradability expedites the issuance. Indeed, tradability requires additional time, prolonging the average period between announcement and effective date from 12 days to 21 days. During this extended period, negative information about the firm or about market liquidity could leak and thereby reduce demand.<sup>2</sup> Third, restricting tradability reduces negative information spillovers. Indeed, shareholders may infer information from the trading activity in the rights market. We show that rights markets are usually illiquid and that rights are often undervalued relative to the stock. Such illiquid markets tend to be dominated by insiders (e.g., Cremers and Weinbaum 2010). As such, low rights prices can amplify negative signals. Therefore, restricting tradability can help to decrease the uncertainty about the offering (*Execution risk hypothesis*).

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<sup>1</sup> "Rights issues: Devil lies in detail," *Financial Review*, July 4, 2012.

<sup>2</sup> The concern about the impact of negative information is exacerbated by the stricter prospectus requirements that apply to traded rights issues—namely, requirements to provide more detailed information about the planned use of proceeds and risks associated with the firm. Disclosing such information could have a significant negative effect, as when high levels of financial distress are presumed if a firm announces that issue proceeds will be used to repay debt.

Certain types of firms are especially concerned about execution risk: firms that urgently need the proceeds because they are in financial distress, small risky firms with thinly traded stocks that are more sensitive to negative information, and firms that already possess negative information about the future. Indeed, we find that, in line with this execution risk hypothesis, firms with poor recent performance, relatively illiquid stock, and a low interest coverage ratio are more likely to make their issue rights nontradable. These firms are also less likely to find an underwriter who will guarantee the proceeds.<sup>3</sup> Also, in line with the intuition that execution risk is greater when the firm has bleak prospects, the stock market on average reacts negatively to offerings with nontradable rights. The firm performance (ROA) after such offerings is inferior to the performance subsequent to offerings with tradable rights. Uncertainty may not just be only about the firm, but about the market as well. Issuers are less likely to make rights tradable when economic conditions are bad (i.e., markets whose index falls more than 10% in the 42 days prior to the offering), and the abnormal announcement returns are higher in such “crisis” markets when rights are not tradable.

Execution risk can be reduced in other ways, such as offering deep discounts and underwriting. Yet, discounts are costly to those who do not exercise or sell their rights, which is a substantial proportion of shareholders [34%, according to a survey of U.S.-based issuers conducted by Holderness and Pontiff (2012)]. Furthermore, a deep discount may signal management’s belief that the stock is overvalued. Such signals can increase execution risk.

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<sup>3</sup> Although we have no access to consolidated underwriting information in our sample, we manually collect information for a random sample of rights issues with nontradable rights announced in 2013. The majority of the sample issuers did not employ an underwriter, and very few used standby underwriting by related parties (including board members).



Discounts also increase the number of new shares needed and thereby reduce the post-issuance earnings per share, a measure that determines the bonus of many executives. Underwriting are not available to some issuers and costly to others: both regulators and customers often complain about fees they think are too high with respect to the insurance they provide, which can be priced as a put option (Marsh 1980; Office of Fair Trading 2011).<sup>4</sup> These circumstances can make nontradability a more attractive way to reduce execution risk.

Many firms outside the U.S. and U.K. have controlling block owners, which have different incentives and information than do minority shareholders. In particular, shareholders with large ownership stakes need to finance the purchase of a larger number of new shares if they want to exercise their rights. Hence, we expect that blockholders will insist on having the option to sell their rights because they would suffer substantially more from not participating. In other words, blockholders are unlikely to consent to nontradable rights unless they plan to subscribe. Therefore, the decision to make rights nontradable may be interpreted as a signal of their commitment or of their confidence in the fact that the issue's proceeds will be invested wisely.<sup>5</sup> We therefore explicitly control for blockholder stakes. However, our results show that blockholder commitment does not affect the firm's decision to have rights traded, the announcement returns, or the firm's subsequent returns.

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<sup>4</sup> Underwriters often refuse to take on offerings and/or insist on substantial discounts as a condition for their mandate. According to "Guidance for Rights Issues" (Australian Government Takeovers Panel, report no. 17): "For many companies a related party or a major shareholder is the only realistic source of underwriting."

<sup>5</sup> Consistent with the hypothesis that blockholder participation is a good signal, Larrain and Urzua Infante (2013) show that the positive long-term performance of Chilean rights offers are predicted by blockholder participation. That being said, Baek et al. (2006) and Atanasov et al. (2010) find that blockholders in Bulgaria and South Korea use nontradable rights offerings to squeeze out minority shareholders. Subsequently these firms are less subject to takeover risk and more likely to engage in self-dealing.

This paper is, as far as we know, the first comprehensive international study of rights markets. Our documentation of the existence and liquidity of the secondary rights market contributes to the discussion on the costs and benefits of rights offerings. Existing research on seasoned equity offerings (SEOs) is mainly country specific, which is due perhaps to the wide variation in regulations and incidences of rights offerings across countries. In the U.S., only a few companies have made rights offerings in recent decades. This “disappearing rights phenomenon” has been documented by Smith (1977), Hansen (1988), Eckbo and Masulis (1992), Kothare (1997), Armitage (1998), Heron and Lie (2004), and Ursel (2006). In an international study, McLean, Zhang, and Zhao (2008) report a relation between country-wide governance standards and the choice between rights and cash offers. Holderness and Pontiff (2012) explain the lack of U.S. rights issues by arguing that they do not offer sufficient protection to uninformed or irrational shareholders. In a direct survey of issuers, these authors document that fewer than two-thirds of shareholders sell or exercise rights. Rantapuska and Knupfer (2008) find similarly low participation rates in Finland and also document that Finnish shareholders exercise rights too early or sell them below the intrinsic value. Balachandran et al. (2008, 2012) document take-up, liquidity, and announcement returns for nontradable rights in Australia. We provide evidence on both the undervaluation and tradability of rights in a larger international sample and describe how they are linked to the regulatory framework.

We also document long-run returns to rights offerings around the world. Previous research on long-run returns after seasoned equity offerings (SEOs) is mostly country specific and focuses primarily on cash offers (e.g., Loughran and Ritter 1995; Spiess and Affleck-Graves

1995). These studies report negative long-run returns. The common interpretation is that companies that are concerned about the interests of current shareholders issue shares to new investors when shares are overvalued. International studies on long-run returns after SEOs (e.g., Foerster and Karolyi 1999; McLean, Pontiff, and Wantanabe 2009) do not distinguish between rights and cash offerings. We use a large sample to document negative long-run returns after rights offerings. This finding contradicts the argument that firms use rights issues (rather than cash offers) to avoid diluting existing shareholders when the shares are undervalued.

Finally, we add to the literature on law and finance. La Porta et al. (1998) list the countries where rights issues are mandatory, a feature that has been widely used, sometimes (Spamann 2010) in refined form, as a measure of shareholder protection. We show that the effect of rights offerings on shareholder protection is more complex than previously indicated, and we review the impact of regulations on the existence of secondary rights markets.

The paper proceeds as follows. In Section I, we provide an overview of the institutional characteristics of markets for rights around the world. In Section II, we describe the data and provide descriptive statistics. In Section III, we describe the rights market, and in Section IV we test for the determinants of the choice to make rights tradable. In Section V, we examine whether tradability is associated with announcement returns, long-term excess returns, or long-term profitability. We conclude in Section VI.

## I. Institutional Characteristics of Rights Offerings

### A. Anatomy of a rights offering

The existence and nature of regulations on rights offerings vary widely across countries. In this section, we provide an overview of the rights issue process.

**The offering.** In a rights offering, the issuer's shareholders have the preemptive right to purchase a pro rata portion of the new shares. The subscription price is typically set at a discount to the recent market price to encourage participation. Some issuers (notably, U.S. and Austrian firms) first announce a range for the subscription price or the discount and do not actually set the price until after the subscription period. This procedure ensures that the stock price does not fall below the subscription price.<sup>6</sup> The number of rights given to shareholders is based on the number of shares owned on a specified "record date." That is, shareholders have a window of time during which to sell their shares if they prefer not to participate. The record date is, on average, five days after announcement of the rights issue. In only 12 of the 1,249 nontradable rights offerings in our sample is the record date *before* the announcement.

**Trading of rights.** In tradable rights offerings, shareholders who choose not to exercise their rights can trade them in a secondary market during the offering period. Trading in the absence of a market is rare and costly, and it typically involves larger blocks of rights. Thus, issuers effectively restrict the trading of rights when they do not provide a market for them.

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<sup>6</sup> Curiously, the main source of transaction risk is the number of share subscribed rather than the event that the market price falls below the subscription price. Some offers are fully subscribed despite a market price below the subscription price, and many offers are not fully subscribed despite a market price far above the subscription price, especially in illiquid markets. The stock price also only rarely falls below the subscription price, 21 times in our sample. Consistent with the execution risk hypothesis, all 21 transactions involved tradable rights.

**Non-exercised rights.** After the subscription period, the issuer can sell any rights that were not exercised (or sell the nonpurchased new shares directly) to a so-called standby buyer or place them in the public market. Standby buyers are usually controlling shareholders, related parties, or underwriters. Public placements typically occur in an accelerated book-building process that is comparable to cash offerings. Issuers can also give shareholders an “oversubscription privilege” that entitles subscribers to a second preemptive right to the unsubscribed shares. Very few regulators (notably, Hong Kong and the U.K.) require issuers to reimburse non-exercising shareholders from the proceeds due to purchased new shares.

**Regulations and discretion.** Rights offerings, tradability, and reimbursements are regulated by securities laws and listing rules. By definition, preemptive rights are optional; hence, shareholders can waive them (subject to country-specific limitations), typically in a majority vote. This fact makes rights offerings susceptible to possible conflicts of interest between groups of shareholders. For example, issuers in most countries exclude foreign shareholders from the distribution and/or tradability of rights. Further variants arise as a function of differences in brokerage agreements. In many European countries, most brokers will sell rights even when shareholders give no instructions to exercise or sell. Such behavior reduces the losses of the investors who do not actively decide about the subscription (e.g., Holderness and Pontiff 2012).

**Prospectus.** Issuers must provide a prospectus that details the offering’s characteristics and states its objectives and the risks involved. Exemptions to this rule typically apply to small offerings and offerings to a limited number of (new) shareholders. These exemptions apply to most offerings with nontradable rights.

## *B. Regulations and tradability*

Regulations in different countries require, enable, or are silent on the tradability of rights. As a result, depending on the country, all, some, or none of the issued rights are traded. Following La Porta et al. (1998) and Spamann (2010), we interview lawyers, investment bankers, and regulators about the existence and regulation of secondary rights markets.<sup>7</sup> Nontraded rights are the norm in only a few countries, most of whom are former communist countries that have seen a wave of privatization and in which the government still holds a large stake in public firms.<sup>8</sup> At the other end of the spectrum are many countries in Europe and Asia (and in all of Latin America), where issuers are required to make a market for rights. We refer to such countries as “mandatory trading” countries.

In the rest of the world, companies can choose whether or not the rights will be traded. We refer to these as “choice” countries. Within most of the Commonwealth, this choice is structured and regulated. In Hong Kong, Singapore, and the U.K., offerings without tradable rights are called *open offers* and are subject to a separate set of regulations (Korteweg and Renneboog 2002). In Australia and New Zealand, offerings without a secondary rights market are

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<sup>7</sup> For general descriptions of regulations on rights offerings, see Myners (2005) for an overview of European regulations. See also Balanchandran et al. (2008) for Australia, Fung et al. (2008) for China, Rantapuska and Knupfer (2008) for Finland, Gajewski, and Ginglinger (2002) for France, Stehle et al. (2000) for Germany, Tsangarakis (1996) for Greece, Ching et al. (2006) for Hong Kong, Marisetty et al. (2008) for India, Bigelli (1998) for Italy, Kang and Stulz (1996) for Japan, Salamudin et al. (1999) for Malaysia, Marsden (2000) for New Zealand, Bøhren et al. (1997) for Norway, Tan et al. (2002) for Singapore, Dhatt et al. (1996) for South Korea, Pastor-Llorca and Martin-Ugedo (2004) for Spain, Cronqvist and Nilsson (2005) for Sweden, Loderer and Zimmermann (1987) for Switzerland, Limpaphayom and Ngamwutikul (2004) for Thailand, Adaoglu (2006) for Turkey, and Armitage (1998) for the U.K. and U.S.

<sup>8</sup> For example, Atanasov et al. (2010) give a detailed description of diluted minority shareholder value due to Bulgarian rights offerings before a 2002 reform that required rights to be tradable. As in Bulgaria prior to 2002, trading occurs only rarely in Russia and China.

called *nonrenounceable* (Balachandran et al. 2008, 2012). Open and nonrenounceable rights offers often have size or discount requirements. In the U.K., for example, open offers are allowed unless the discount exceeds 10%. Open offers require only a simplified prospectus (or none at all). In contrast, U.S. and Swiss firms are free to choose whether to make their rights tradable. In other countries (e.g., Germany, Austria, Belgium, and the Netherlands), rights are always tradable but issuers are not required to provide a market for them. It is typical in these countries for issuers to be (at least partially) exempt from prospectus requirements if existing shareholders are the only ones subscribing to the new rights.

## **II. Data and Descriptive Statistics**

### *A. Data*

We use a sample of SEOs obtained from Bloomberg. Our sample starts in 1995 (when data on rights trading became available from Bloomberg) and ends in 2008. We exclude offerings of preferred stocks, loan stocks, shares in related companies, rights with warrant sweeteners, and poison-pill rights. If the offering extends to cross-listed securities, we include only the main security. Bloomberg lists rights and cash offers in its corporate action calendar. Most of this information is listed on dedicated screens for each transaction that can be accessed from the corporate action calendar list. We collect this information by looking up the transaction window for each offering. These screens state whether the right is traded and provide trading dates and sometimes tickers in addition to event dates, currency, subscription price, number of rights issued, and number of rights needed to buy one share. When no ticker is listed, we identify the ticker as the related security that was listed and delisted on the dates provided. These tickers are

named after country-specific conventions and are usually identifiable as rights (e.g., by a suffix “R”). Accounting and market data on the underlying stock are obtained from Datastream.

Bloomberg lists announcements of 12,639 such rights offerings for which we are able to find accounting information from Thomson Datastream. For 8,238 rights offerings, we can determine with certainty whether the rights could be traded. We find that only 6,918 (84%) of the offerings could be traded. Bloomberg provides rights trading data for most countries. For 3,942 of the 6,918 offerings, we are able to retrieve trading data. We lose observations because of Bloomberg’s policy of storing and reusing security tickers, which varies across countries. For example, Bloomberg recycles security tickers for rights in Hong Kong and does not maintain records of all their trading histories; hence, we are able to retrieve trading data for only 10% of the traded Hong Kong rights offerings. Overall, our sample covers 69 countries and is not dominated by the largest markets.

For stock exchanges that are large and more developed, the number of events per country is in line with data reported by the European study of Rinne and Suominen (2008) and also with other data sources such as the Securities Data Corporation (SDC). The SDC data includes more transaction details than are available from Bloomberg, but only for a select sample of large offerings. The coverage of smaller, less developed markets (e.g., Panama, Turkey, Brazil) varies across databases. Appendix A compares the number of observations listed in Bloomberg with those listed by SDC (ordered by the number of transactions), and for this comparison we also obtain announcements of cash offers. Bloomberg lists cash offers as a corporate actions category separate from rights offerings; in contrast, SDC simply “flags” rights offerings within its single



list of all offerings. As a consequence, mixed offers may appear in each Bloomberg list but only once in SDC (sometimes flagged as a rights offer), which may explain the discrepancy between the two databases in the fraction of rights offers. On the one hand, SDC generally provides better coverage on cash offers. This advantage is consistent with its widespread use in the cash offer literature [for an overview, see Eckbo et al. (2007)]. On the other hand, Bloomberg offers a more comprehensive coverage of rights offerings in all countries but Japan (58 vs. 70 covered by SDC). In total, Bloomberg describes 25,077 rights offerings, compared with 7,919 described by SDC, for the period 1995–2008.

### *B. Descriptive statistics*

Table I lists our sample countries and the number of rights that were actually traded with Datastream data available. For comparison, we also document the number of cash offerings for which Datastream data are available. The number of offerings with a secondary rights market varies. In the U.S. and in most British Commonwealth countries, a substantial portion of rights is not traded. In particular, the fraction of offerings without trading is 56% in the U.S., where issuers have a free choice;<sup>9</sup> 8% in the U.K., where such open offers are allowed only if the discount does not exceed 10%, and 29% and 68% in Hong Kong and Australia (respectively), where neither has a discount limit. In Singapore, where the 10% discount limit does apply, companies provide a market for rights in all but 5% of the offerings. In Western Europe, issuers in several countries restrict trading in offerings: 38% of offerings in Germany provide no rights market; the fraction is 27% in Belgium and 21% in Switzerland. In most Scandinavian, Southern

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<sup>9</sup> This figure is similar to the 51% reported by Holderness and Pontiff (2012).

European, and Latin American countries, nearly all rights are traded, except for a few small offerings that involve controlling shareholders.

**[Insert Table I about here]**

We use the term “choice countries” when referring to the countries that allow the issuer to restrict the tradability of the rights. We identify these countries by observing the de facto incidence of secondary rights markets. Thus, choice countries are those in which each type (tradable and nontradable) accounts for more than 5% of the market. Actual trading incidences are important because they reflect a true market choice, rather than merely a rule imposed by regulations, which may or may not actually be enforced. We employ a 5% threshold because there are exceptional cases where issuers deviate from their regulatory regime; for example, when they cater to foreign shareholders or to a controlling shareholder. A 1% threshold yields similar results, but it would misclassify certain countries as choice countries when both regulators and issuers regard trading as mandatory. It is important to note that a classification based on interviews with regulators and lawyers confirms our assessment for almost all countries. The only exceptions are Malaysia, where issuers have a choice yet 97% of all rights are traded, and Argentina, where we obtain trading data for only 19 cases of which just one (5.3%) involved nontradable rights. None of our results changes qualitatively when we employ a 1% threshold.

In Table II, we compare the characteristics of the offerings with and without rights markets. (See Appendix B for a description of all variables.) Panels A and B report statistics for choice countries and all countries, respectively. The transaction costs of setting up a rights market are likely to be more relevant for small firms. Consistent with this argument, issuers that choose

nontradable rights (in choice countries) tend to be smaller, with average assets of \$632 million versus \$2,300 million for offers with rights markets. A similar relationship holds when we compare tradable and nontradable offerings in all countries.

**[Insert Table II about here]**

Firms that are more opaque engender a greater dispersion of opinions. Therefore, they may want to avoid the additional risk associated with rights trading. Indeed, we find that, in the choice countries, issuers with no tradable rights are less liquid [with a mean Amihud (2002) illiquidity measure of  $3.62 \times 10^{-5}$  vs.  $1.76 \times 10^{-5}$  for issuers with tradable rights]. They also tend to be covered by fewer analysts (12 vs. 28). We again see a similar pattern in the baseline sample.

We can make a similar argument for firms in financial distress: the success of the transaction should be more important for such firms, but the distressed state will make it more difficult to convince investors to insert new equity capital (e.g., Myers 1977). The univariate statistics on financial constraints and recent performance shown in Panel A of Table II are ambiguous. On the one hand, issuers with nontradable rights are on average less leveraged than are those with tradable rights (31% vs. 48%). On the other hand, there is no significant difference between the number of issuers in financial distress as measured by the Altman Z-score (38% in both samples), and issuers with nontradable rights have significantly lower interest coverage (0.87 vs. 1.58 in the sample with rights trading). Moreover, issuers with nontradable rights are far less profitable (ROA of -18% vs. -3%). A significant portion of the offerings occurs after market crashes, which is defined as periods during which the stock market falls by more than 10% in the

two preceding months, but there is no significant difference for the incidence of offerings with tradable and nontradable rights (15% and 17%) in such periods.

We report the difference between the ROA in the year of the offering and the ROA in each of the three following years. Consistent with the argument that firms want to restrict rights trading to cover up potentially bad information and induce investors into subscribing to reduce the firm's execution risk, issuers with nontradable rights underperform after the offering. On average, their profitability declines by 10% in the first year after the offering and recovers only by 2% (1%) in the second (third) year after the offering. This performance is significantly worse than for issuers with tradable rights: in the first year after the offering, the ROA of issuers offering tradable rights is 6% higher than that of issuers offering nontradable rights, and this difference remains fairly stable throughout the subsequent two years. The all-country sample (Panel B of Table II) exhibits a similar pattern.

In rights offerings, blockholders face a trade-off between sustaining their ownership level and financing a large part of the offering. We measure block ownership with a dummy variable that equals 1 in the presence of a shareholder with ownership greater or equals 25% (*block*), and another variable that indicates the total percentage held in such blocks (*% held*). Panel A of Table II shows that, in the choice countries, tradable rights are associated with more blocks (11% vs. 8% in nontradable offerings). This contrasts with the argument that blockholders use nontradable rights to squeeze out minority shareholders.<sup>10</sup> Conditional on owning a block of shares, full participation in the issuance is more expensive for those who seek to preserve their ownership.

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<sup>10</sup> Note that we define an ownership "block" as a share exceeding 25% of all outstanding shares. We also report the percentage of shares owned by such blockholders.

Consistent with this argument, we find that in the choice countries blocks are significantly larger in issues with tradable rights (53% vs. 46%). No such difference is observed in the all-country sample, despite its exhibiting a similar percentage of block ownership.

The paternalistic hypothesis proposes that firms with undervalued shares restrict trading to protect their shareholders from selling undervalued rights. This phenomenon should therefore be more prevalent in firms with better governance. To measure governance quality, we use the “corporate governance quality” index of Aggarwal et al. (2011), which is a composite measure of board composition, auditing thoroughness, anti-takeover provisions, compensation policies, and ownership quality (*governance (AEFM)*). Against the paternalistic hypothesis, in Table II we document that governance does not explain the difference between issuers of tradable versus nontradable rights in either the all-country or the choice-country sample.

Finally, we document transaction-specific characteristics. Recall that some countries allow nontradability only if the offer does not exceed certain size and discount limits. We measure the offering size with the number of shares offered as a percentage of shares outstanding prior to the offering, and the discount as the offering price relative to the closing stock price five days prior to the announcement. In line with such rules, offerings with no trading rights in choice countries are smaller (27% vs. 31%) and have smaller discounts (21% vs. 25%). This finding is consistent also with the hypothesis that firms use nontradability to minimize execution risk without offering a deep discount. Trading takes time: on average, rights are traded over a span of 13 days in choice countries. Altogether, 21 days pass between the announcement and the effective date when rights are traded, which is 9 days more (on average) than for offerings with

no trading rights. Nine days can lead to considerably higher execution risk, especially during a financial crisis. The Australian Securities Exchange (2010, p. 25) points out that “during times of extreme market disturbances the longer timetable for completing a renounceable issue carries the potential for exposure of the issuer to greater market risk.”

Table III provides descriptive statistics of characteristics for countries with different trading regimes. Choice countries have a significantly higher gross domestic product (GDP) per capita, as well as a higher average market-to-book ratio. These differences reflect the prevalence of developed countries in this group, which includes most Commonwealth countries and the U.S. However, choice and nonchoice countries do not differ in terms of real interest rate, government debt, size of the equity market, or inflow of foreign direct investment. This suggests that they are also not fundamentally different in terms of their equity markets or investor sophistication.

**[Insert Table III about here]**

Owing to the predominance of British Commonwealth countries in the choice-country sample, the legal system of the majority is of English origin. The other choice countries are mostly European, and 23% (resp., 15%) of them feature a legal system of French (resp., German) origin. Overall, the choice countries are less often governed by civil law (only 24%) than by common law. Table III also shows that, as a group, choice countries have better governance than countries where trading is mandatory. This difference is significant when governance is measured by judicial efficiency and the quality of accounting standards. The implication is that, in countries where shareholder rights are promoted, regulators will more likely support the freedom of companies to deny rights tradability. Regulators may well believe that there are good reasons,

based on maximizing shareholder value (via reduced transaction costs, execution risk, or paternalistic policies), for allowing nontradable rights.

### **III. The Market for Rights**

Finance textbooks often assume that investors are indifferent between exercising rights and selling rights to other investors. Such a stance presupposes that rights are liquid and priced correctly. In this section, we address two fundamental questions. First, just how liquid are rights? Second, are rights priced close to their intrinsic value?

#### *A. Liquidity of the rights market*

Panel A of Table IV displays univariate statistics on the liquidity measures for the rights and for the underlying stocks. The average sample firm had zero returns (Lesmond et al. 1999; Bekaert et al. 2007) for 20% of the rights trading period and a bid-ask spread of 4%, which is in line with previous research on the liquidity of international firms (e.g., Lesmond 2005; Lang et al. 2012). We also report the Amihud (2002) illiquidity measure; following Lesmond (2005), we exclude prices that exceed  $\pm 50\%$  of the prior day's price. The mean of this measure is  $3.40 \times 10^{-5}$ , a value comparable to the estimates of Lesmond (2005).

#### **[Insert Table IV about here]**

The rights are less liquid than the underlying shares. The mean bid-ask spread of rights is 28%, or seven times the 4% spread of the underlying stock. Rights are not traded on average 55% of all the days listed on the market—that is, on the majority of trading days. These values are two times the mean of the underlying stock's zero-trading days. The mean Amihud illiquidity measure is four times that of the stock.

### *B. Mispricing in the rights market*

To compare the quoted and theoretical prices, we follow the methodology of Hietala (1994), Poitras (2002), and Rantapuska and Knupfer (2008) in counting the days on which the quoted price is lower (higher) than the lower PCP bound. Violations of the PCP bound enable positive returns from an arbitrage strategy that involves shorting the stock and buying the right.

Given that short selling is not possible in all countries, we compute an additional, more conservative lower bound. We therefore first assume an underlying risk arbitrage strategy of buying the right and exercising it only if the share price exceeds the exercise price on the day before expiration. Then, we calculate the subsequent returns and count the number of days on which they are positive. To obtain an even more conservative estimate, we calculate the returns after transaction costs. In other words, these are the returns after compensating the investor for the trouble of buying and exercising the right. Following Lesmond (2005), we use data from Bloomberg and various exchanges to find the commissions and fees paid. We use the worldwide average commission and transaction fee for the countries for which we cannot find (respectively) an estimate of commissions or a list of official fees. As a conservative proxy for price impact, we use the full bid-ask spread at the close of the trading day.

Panel B of Table IV reports the statistics for our measures of undervaluation. The mean right is cheaper (58%, on average) than the lower bound on 17% of all days (*% violated*). These results are not much affected if we consider bid-ask prices instead of closing prices. Also, our estimates are on the low side when compared with single-country studies. For example, in his analysis of a 1977-1981 sample of Finnish rights, Hietala (1994) finds that 58% of rights are



mispriced. Poitras (2002) documents violations on 91% of all days in a sample of Singaporean rights offers for the period 1992–1998. In a more recent Finnish sample for 1995–2002, Rantapuska and Knupfer (2008) find that rights are underpriced by 15% on average. These values are much higher than the 3% of underpriced days observed for U.S. S&P 500 Index options (Ackert and Tian 2001), 1% for the French CAC 40 Index options (Capelle-Blancard and Chaudhury 2001), and 2% for the Italian MIB 30 Index options (Brunetti and Torricelli 2007).

The bound based on a risk arbitrage strategy reduces the proportion of positive-arbitrage days to 12%. Even after transaction costs, 5% of trading days allow for positive arbitrage. While relative mispricing may indicate that either the stock itself is overvalued or that the rights traders have (negative) inside information, these results still suggest that shareholders who prefer not to exercise their rights will not be fully compensated for the dilution entailed by selling those rights.

Overall, these findings document that rights markets are illiquid and often undervalued. The question is what the firm does in this context. This leads to the choice of tradability.

#### **IV. Choice of Tradability**

We now investigate why firms deliberately choose to make rights nontradable. Our three hypotheses make distinct predictions. Transaction costs should be more relevant for small firms. If such costs are the main motive for nontradability, we should observe it more often with smaller firms. Execution risk should be higher for firms that are distressed, underperforming, and/or opaque. Hence nontradability should be more prevalent among such firms if it does, in fact, reduce execution risk. Finally, if issuers restrict trading because they want to protect shareholders

from selling their undervalued rights (paternalistic hypothesis), then restrictions should be more common among better-governed firms.

We estimate the probability of making rights tradable as a Probit function of firm, transaction, and country characteristics. Firms do not randomly choose rights offers rather than cash offers. We control for this choice by using a Heckman (1979) model, which incorporates firm size, market-to-book ratio, ownership, and profitability as the drivers of the choice between rights or cash offerings. The variable *Preright* (Spamann 2010) identifies countries in which waiving preemptive rights is only allowed in special cases, e.g., with supermajority rules or substantive conditions. Given that this variable is likely to be unrelated to the tradability choice, we use it as an identifying restriction for our first stage choice between cash or rights. We control for year fixed effects. The regression results are reported in Appendix C.

Table V shows that issuers with tradable rights are significantly larger. This is consistent with the univariate results and supportive of the argument that transaction costs are a key driver of trading restrictions. Tradability is also associated with a higher pre-issue stock market performance (run-up), higher market-to-book ratios, and liquidity. These results are comparable to findings based on the Australian sample of Balachandran et al. (2008, 2013).

Unlike in the univariate analysis, tradability is not related to leverage. However, tradability is associated with larger interest coverage, consistent with the univariate analysis. These results support the execution risk hypothesis: larger firms with more liquid stock, better performance, and better financial health face less execution risk and so have fewer incentives to restrict the trading of rights. Block holdings are not significantly related to the choice of

tradability. This contrasts with the argument that firms use trading restrictions to consolidate ownership and thus evade the market of corporate control. Offerings with traded rights are larger and have greater discounts, in line with the rules on tradability in many countries and also with the hypothesis that nontradability allows firms to reduce execution risk with a smaller discount.

**[Insert Table V about here]**

In column 2 of Table V, we replace the country fixed effects with country-specific variables related to the legal environment [the anti-director index, accounting standards index, and judicial efficiency measure of La Porta et al. (2000)] and market development (GDP/capita, the real interest rate, ratios of debt, market capitalization, and foreign direct investment inflows to GDP). The legal environment is especially important for corporate governance and thus also for the paternalistic hypothesis, which proposes that issuers with nontradable rights are better governed. To test this hypothesis more precisely, we include the firm-specific governance index developed by Aggarwal et al. (2011).

In line with the paternalistic hypothesis, nontradability is more common in countries with better governance (i.e., a higher anti-director index). However, neither the firm-specific Aggarwal et al. (2011) governance index or the measure of accounting quality are significantly related to tradability. Block ownership is associated with more nontradable rights, which indicates that nontradability is more common in countries where block ownership is more prevalent. The negative association between equity market size and tradability is most likely driven by the U.S. and the U.K., and this underscores the importance of controlling for economic conditions or country fixed effects.

Overall, firms that restrict trading differ from firms that allow rights to be traded freely, especially with respect to size, performance, and financial health. These findings suggest that tradability is not irrelevant, and are generally consistent with the argument that issuers prevent trading in order to save transaction costs and reduce execution risk.

## **V. Profitability and Performance**

In this section, we document the long-term performance of firms after the transactions. As we discussed above, firms with bad prospects will need to improve their capital structure, and for them a failed rights issue may be more costly. Such firms may therefore seek to lower execution risk by pressuring investors into subscribing to a nontradable rights issue. If this is a predominant reason for trading restrictions, then we should observe inferior performance after nontradable offerings, in terms both of profitability and of financial market return. In contrast, if issuers restrict trading to encourage shareholders to subscribe to undervalued shares (paternalistic hypothesis), then we would expect to see higher profitability and long-term returns for transactions with nontradable rights.

### *A. Determinants of profitability*

In this section, we study the profitability of the issuer after the offering. To account for self-selection into the trading regime, we use a two-step switching regression model with endogenous switching, as described in Li and Prabhala (2007). We use the equation whose results are described in column 3 of Table V to model the choice of issuing tradable rights while restricting the sample to choice countries only. We model the change from the firm's last reported ROA before the offering to the firm's ROA in the three years after that offering as follows:

$$\Delta ROA^{Traded}_i = \beta_0 + \beta_1 \text{Transaction and firm characteristics}_i + \beta_3 \text{Year}_i + \varepsilon_i. \quad (1a)$$

$$\Delta ROA^{Non-traded}_i = \beta_4 + \beta_5 \text{Transaction and firm characteristics}_i + \beta_6 \text{Year}_i + \gamma_i. \quad (1b)$$

Here, we allow the residuals  $\varepsilon_i$  and  $\gamma_i$  to correlate with the residual of the selection equation. Because the error terms are correlated, the conditional expectations of the residuals are nonzero. Augmenting equations (1a) and (1b) with generalized residuals from the selection regression, we are able to obtain consistent estimators via a straightforward extension of the Heckman (1979) procedure (Idson and Feaster 1990).

For each offering  $i$ , our set of explanatory variables includes the logarithm of book assets; blockholdership, defined as a dummy equal to 1 if any shareholder held more than 25% of all shares and the size of the block holdings; the change in free float from the year-end before the effective date to the year-end after that date; and a crisis dummy equal to 1 only if the market index drops by more than 10% in the 42 days prior to the offering. We control for a set of firm- and transaction-specific characteristics such as the a dummy variable for cross-listed offerings; the discount of the offering price to the closing stock price five days prior to the announcement; the percentage sold as a fraction of the previous shares outstanding; a dummy variable for rights prices that were below the PCP bound; the number of previous rights offers undertaken by the same issuer in the sample period; the ratio of capital expenditures to sales (CAPEX/sales); ROA; leverage; and the market-to-book ratio.

The results are reported in Table VI. Columns 1-3 give the results for different years: the dependent variable in column 1 (resp., 2 and 3) is the difference between the ROA in the pre-offering year and the ROA in the first (second, third) year after the offering. Each column reports

first the coefficients and  $z$ -statistics for the offerings in which rights could not be traded, next are the coefficients and  $z$ -statistics for the offerings in which rights could be traded, and finally the difference between the two coefficients and the  $p$ -value for a Chow test that the two coefficients are equal. Column 4 reports the results of an OLS regression, which includes the same explanatory variables with the addition of an indicator for traded rights offerings and an inverse Mills ratio that controls for selection into a rights offering.

**[Insert Table VI about here]**

Issuers perform better after offerings with tradable rights, as indicated by the significantly higher intercepts for such issuers. This effect persists throughout the three years following issuance and is evident also in the OLS specification (column 4 in Table VI). The differences are economically large: 23% for the first year, 55% for the second, and 83% for the third. These values seem large, but are not unreasonable considering that the mean ROA is -3.5% for all issuers, -0.9% for issuers of traded rights, and -17.0% for issuers of nontraded rights (Table II). A closer look at the coefficients reveals that ROA improves significantly (by an average 9 percentage points) after issues with tradable rights, whereas ROAs either decline or stay at about the same level after issuances with no tradability. This effect is also evident in the OLS regression (column 4), in which the coefficient on traded rights is associated with statistically significant one-year changes in ROA of 4%. Such a positive relation between profitability and tradability is consistent with the argument that issuers with bad prospects restrict trading to reduce execution risk. However, it does not support the paternalistic hypothesis that issuers restrict trading when they believe the firm will perform better in the future.

Large firms perform better after offerings *without* rights trading; conversely, small firms perform better after offerings *with* rights trading. This suggests that even though small firms generally prefer nontradability because of concerns about transactions costs, they trade those off with execution risk concerns.

The presence of blockholders does not matter for the relationship between tradability and performance. The coefficients for the blockholder dummy and the size of the block ownership are not significantly different between tradable and nontradable offerings. The only significant coefficient for the blockholder dummy is positive (for nontradable offerings) in the third year after the offering; however, the difference with respect to tradable offerings is not significant. The results are similar for the change in free float, although here the only significant coefficient (also positive and for nontradable offerings) is in year two, not three. As with the blockholder dummy, the difference between nontradable and tradable offerings is not significant.

Issuers may restrict tradability to reduce execution risk in markets that are doing poorly for reasons unrelated to company-specific events. In this case, nontrading may be less a sign of future bad prospects and more a sign of paternalistic behavior: if managers believe that markets are overreacting, then pressuring investors to buy the new shares is a sensible course of action. In line with this argument, the coefficient for the crisis dummy is significantly negative for firms that issue tradable rights, in contrast to the general premise that trading is a signal of good economic prospects. The coefficient for nontradable rights is not significant in the first two years after the offering but significantly positive in the third year.

Overall, performance patterns after the offering indicate that the decision on tradability

reveals information about the issuer's prospects. Issuers with worse future performance tend to restrict trading, which is consistent with the execution risk hypothesis. However, this pattern is reversed if offerings coincide with markets in crisis: recovery appears smoother after crisis offerings with trading restrictions. The fact that ownership concentration is not related to the profitability gap between tradable and nontradable offerings suggests that abuse of minority shareholders (e.g., Baek et al. 2006; Atanasov et al. 2010) is not a factor in our sample.

### *B. Determinants of announcement returns*

Do the markets reward tradability? To answer this question, we examine market reaction in this section. We define the reaction to the event announcement as the residual of a market model run through the 250 trading days ending 42 days before the announcement. We use the respective regional MSCI index as a proxy for the market index. We cumulate abnormal returns over the windows  $(-1,1)$ , and  $(5,5)$ , where  $(x,y)$  denotes a window ranging from day  $x$  through day  $y$  relative to the announcement date. We use Datastream-adjusted returns for this exercise. Because Espenlaub et al. (2009) point out that Datastream does not always adjust correctly for ex rights and effective dates, we do not cumulate returns over longer windows and follow their recommendation to focus on the  $(-1,1)$  and  $(-5,5)$  returns.

The results are reported in Panel A of Table VII. The market reacts positively to rights offerings in general; on average, 1.83% over the  $(-1,1)$  window, and over the  $(-5,5)$  window, cumulative abnormal returns amount to 3.89%. These results are in contrast with those of numerous studies that have reported negative excess returns to *cash* offerings (see Eckbo, Masulis, and Norli, 2007 for a survey). One interpretation of this finding is that cash offers are



made when firms issue overvalued stock to new investors. Given that rights offers involve shares being offered to existing shareholders, such timing considerations should be irrelevant.

**[Insert Table VII about here]**

The positive returns to rights offer announcements are driven mainly by offers that allow rights to be traded. When focusing on choice countries, we find that average abnormal returns to offers with tradable rights are significantly positive: 1.48% for the (-1,1) window and 3.67% for the (-5,5) window. But if the rights are not traded, then the announcement returns are negative over both windows and significantly so for the (-5,5) window. The difference in abnormal returns between offers with and without tradable rights is also significantly positive: on average, 2.00% over the (-1,1) window.

Are the positive returns to tradable offerings due to the information conveyed by the choice to restrict rights trading or rather to the negative response of investors to a lack of trading? To address this question, we compare returns on offerings made in countries where issuers have no choice about tradability to the returns in countries in which issuers are free to decide. Table VII shows that announcement returns in countries where trading is mandatory are much smaller than in countries where trading results from managerial choice: on average, abnormal returns in the former are not significantly different from zero for the (-1,1) window and 1.1% for the (-5,5) window. These excess returns are significantly smaller than in the choice countries. This means that the choice of having rights traded and not being subject to a coercive offer without trading is appreciated by investors, and suggests that this choice may convey additional information.

In Panel B of Table VII, we report a comparison of our results on rights offerings with the extant (single-country) literature. The announcement returns are qualitatively comparable to those reported in most of the literature, despite differences in sample periods. The only notable discrepancy concerns Japan, a country with extremely few rights offers (52 in our sample) and for which Kang and Stulz (1996) report positive announcement returns, whereas we report negative announcement returns.

Next, we regress the cumulative abnormal returns (CAR) on transaction and firm characteristics. If a corporate event is voluntary and investors are rational, then the stock price reaction should incorporate their interpretation of the firm's selected issuance type (Eckbo et al. 1990). We therefore use a switching regression similar to the one described in Section V to account for self-selection into the respective trading regimes:

$$CAR^{Traded}_i = \beta_0 + \beta_1 \text{Transaction and firm characteristics}_i + \beta_3 \text{Year}_i + \varepsilon_i. \quad (2a)$$

$$CAR^{Non-traded}_i = \beta_4 + \beta_5 \text{Transaction and firm characteristics}_i + \beta_6 \text{Year}_i + \gamma_i. \quad (2b)$$

As in the last section, we allow the residuals  $\varepsilon_i$  and  $\gamma_i$  of the abnormal returns in equations (2a) and (2b) to correlate with the residuals of the selection equation. The control variables of *Transaction* and *firm characteristics* are the same as those described previously with respect to equations (1a) and (1b). The only difference is that here we exclude the variables that are not known at the time of the announcement: change in free float, future CAPEX/sales, leverage, and market-to-book. Instead, we add the run-up to the offering and the interest coverage ratio of the issuer in order to measure the effect of contemporaneous valuation and distress effects. For

offerings with rights trading, we again control for large discrepancies in rights and underlying prices with a dummy variable for rights prices that were below the PCP bound.

The results for these regressions are reported in Panel C of Table VII. Columns 1-2 report the results for different return windows: column 1 for the three days between the day before the announcement and ending on the day after (-1,1), and column 2 for the 11 days starting five days before the announcement and ending five days afterwards (-5,5). As in Table VI, each column reports first the results for the offerings in which rights could not be traded, then those for offerings in which rights could be traded, and finally the  $p$ -value for a Chow test that the two coefficients are equal; column 3 reports the results of an OLS regression. We see that the market reacts positively to offerings in which rights can be traded, as indicated by their significantly higher intercepts. Controlling for selection and for firm and transaction characteristics, the difference between the residual announcement returns of issuers with and without tradable rights amounts to 21% for the (-1,1) window and 31% for the (-5,5) window. These findings hold also when we use an OLS framework that includes a dummy variable (*Trading*) for traded rights (column 3): the coefficient for the tradability indicator is a significant 2%, which is similar to the magnitudes found via the univariate analysis (Panel A). The positive reaction to rights tradability is in line with the observed subsequent better performance. However, it is not consistent with the argument that undervalued issuers restrict trading: the market, at least, seems not to view nontradable rights as a positive signal. A closer look at the coefficients reveals that the returns to offerings with no rights trading are still positive (albeit not significant for the (-1,1) window). It is

therefore unlikely that the difference between tradable and nontradable rights is driven by price pressure from investors selling their shares before the record date to avoid possible dilution.

Smaller firms do not experience higher returns when the rights are not tradable. That is, we find no evidence for the hypothesis that transaction costs drive restrictions on rights trading. Neither are the coefficients for ownership significantly different between traded and nontraded rights: apparently, investors do not interpret blockholder consent to nontradable rights as predicting either better or worse future performance.

The reported coefficients differ significantly during adverse market conditions. In crisis markets, the reaction to offerings without a rights market are significantly better than the reaction to offerings with a rights market; 2.3% for the (-1,1) window (significant at the 10% level) and 6.6% for the (-5,5) window (significant at the 5% level). This difference is driven mainly by the negative coefficients for offerings with tradable rights. The market reaction to those issuances indicates that in times of crisis, the absence of rights trading *increases* shareholder wealth.

The control variables show that issuers with cross-listed securities and greater discounts earn lower returns on traded rights offerings. Note that the market reaction to discounts is generally negative, consistent with the premise underlying the execution risk hypothesis: using a deep discount to enhance the prospects of a traded rights issue sends a negative signal. Firms with a greater number of past rights offer experience; less profitable firms and firms with better interest coverage exhibit better announcement returns without rights trading, but significantly so only for the (-1,1) window. Other coefficients are not significantly different, including the one for

rights prices below the put-call parity bound. The signs in the OLS regression (column 3) are almost always the same as in the switching regressions but the magnitudes are usually smaller.

In sum, we confirm the findings in Panel A of Table VII that announcement returns are higher for offerings with tradable rights. This disproves the hypothesis that shareholders are impartial to the tradability of rights beyond their implied transaction cost savings. Instead, the result is consistent with the observed subsequent development in profitability and therefore indicates that markets correctly interpret trading restrictions as a negative signal.

The market, however, does not always react negatively to restrictions on rights trading. For instance, the generally positive returns to voluntary trading are reversed after market crashes. This positive effect of nontradability in unstable markets suggests that issuers restrict trading to protect investors from selling undervalued rights in the middle of a financial crisis. Also, although transaction costs may increase the reluctance of small firms to issue rights that are tradable, size alone does not explain the market's response to trading restrictions.

### *C. Long-term returns*

If the market is not efficient, then the impact of tradability on shareholder value will not be confined to short-term announcement returns. We therefore study monthly abnormal returns in the two years starting from the month after the effective date.<sup>11</sup>

We plot the simple average cumulated monthly returns (in excess of the regional MSCI index) for choice countries in Figure 2. These returns are inconsistent with the paternalistic

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<sup>11</sup> We impose the one-month embargo to avoid any systematic Datastream mistakes in adjusting for the rights and new shares, as documented by Espenlaub et al. (2009) for UK open (i.e., nontradable) offers.

hypothesis: rights issues are followed by negative rather than positive excess returns. The returns of issuers of nontradable rights and those of tradable rights are similar: no group performs consistently better than the other.

**[Insert Figure 2 about here]**

However, simply subtracting the market index ignores the differences in other factors. Hence, we use a Fama and MacBeth (1973) regression model to forecast returns as a function of tradability. We control for the same variables described in Section V; we also add the contemporaneous return on assets, interest coverage, size of the issuer (in the year that returns are assessed), as well as the market index returns and the SMB (small minus big), HML (high minus low), and momentum factors from Ken French's website. We use global factors in our base specification and test for whether local factors make a difference (following Fama and French 2012). We estimate a cross-sectional regression for each month and then calculate the time series average of the coefficients; we report *t*-statistics using the time series standard error of the mean. As before, we restrict the analysis to choice countries.

The results are reported in Table VIII. There is no significant difference in long-term returns between issuers that choose to make their rights tradable and those that do not, a finding that is inconsistent with the paternalistic hypothesis. The negative announcement returns for nontradable issues is not reversed in the long run; the long-term stock price performance is consistent both with investors' beliefs at announcement and with the observed development in profitability. The coefficient is equally insignificant when we augment the return window from

12 to 18 (column 2) and 24 months (column 3) or when we use local Fama-French factors instead of the global ones (column 4).

**[Insert Table VIII about here]**

There are only few other variables that explain returns. Returns are lower after offerings with deeper discounts, although only at the 5% level of significance when we use local factors and higher after larger offerings. When rights prices violate the PCP bounds, 18-month returns are lower (significant at the 10% level). Larger firms perform better in the first 12 months (significant at the 10% level). Firms with past rights offers perform better in 24-month returns. Returns are higher after offerings during a financial crisis, but not significantly so unless we use local Fama-French factors.

To see how offering and firm characteristics affect returns after offerings with traded versus nontraded rights, we split the sample and repeat the analysis for the subsample of offerings without (column 5) and with (column 6) rights trading. None of the coefficients are significantly different from its counterpart. Whether the offering coincided with low market returns or was issued in the presence of block owners is not significantly related to returns in any specification.

To test for robustness, we also repeat our analysis of long-term returns with the “calendar time” portfolio return methodology advocated by Fama (1998) and Mitchell and Stafford (2000). Thus, we form equal- and value-weighted portfolios for each month. These portfolios include all companies that have completed an offering within the prior 24 months (or 12 and 6 months, respectively). Portfolios are rebalanced monthly by dropping all companies that reach the end of the holding period and adding companies that have just executed an offering. The monthly

portfolio excess returns are then regressed on the MSCI World Index returns in excess of the one-month U.S. T-bill rate, and the intercept is reported as the average monthly abnormal return.

Table IX shows the results. We first report the portfolio returns as intercepts measured against the MSCI World Index (Panel A). The returns for offerings are negative irrespective of rights trading, but they are significantly negative only for the traded rights sample over a period of two years. None of the differences between traded and nontraded rights offerings are statistically significant for equal-weighted or for value-weighted returns. We find no evidence for superior or inferior performance after issuance with or without rights trading. Note that the returns are not positive for any of the offering samples and that they are negative both for the mandatory countries and for the traded choice-country sample. These results indicate that rights offerings are not made only by undervalued firms.

**[Insert Table IX about here]**

We compute the same return differentials for subsamples. Most of the subsample results are either comparable to the base sample results or not significant. The only exception is that issuers with rights prices trading below the PCP bound have significantly negative equally-weighted returns in a two-year period; this result is consistent with our Fama-MacBeth analysis. Hence, it may be less accurate to say that the rights were undervalued than that the underlying shares were overvalued.

We provide two final robustness checks. First, we regress the portfolio returns against the Fama and French (1998) global factors, SMB, HML, and momentum; the results, which are virtually unchanged from the baseline results, are reported in Panel B of Table IX. The negative



coefficients for the individual returns of the portfolios with trading (voluntary), not trading (voluntary), and trading (mandatory) corresponds with gains in statistical significance, but there are no such gains with respect to differences in portfolio returns. In fact, the two-year return difference between voluntary and mandatory trading offers becomes insignificant while the other differences remain nearly unchanged. Second, we follow Eckbo et al. (2000) and create a benchmark by matching each issuer with a similar firm that did not undertake an SEO in the same year; the results are reported in Panel C. Once again, return differences are not significant.

Overall, issuers do not perform better after offerings with nontradable rights. This result contradicts the paternalistic hypothesis that issuers make rights nontradable to protect shareholders from selling undervalued shares or rights that are due to recover in the future.

## **VI. Conclusion**

Textbook descriptions of rights offerings often assume that shareholders who do not want to exercise their rights can sell them instead. However, this assumption does not always hold. In some countries, rights cannot be traded at all; in many other countries, the issuer itself decides whether or not rights will be tradable. Even though rights markets are often illiquid, investors appreciate rights tradability and react better to offerings of firms that make their rights tradable. This raises the question of why a firm would restrict the tradability of rights.

We consider three hypotheses. First, tradability involves transaction costs for the issuing firm. Such fixed offering costs should matter more to small firms, and we do find that small firms are more likely than large ones to issue rights that are not tradable. Yet nontradability does not

have a positive effect on the returns of smaller firms, which indicates that other reasons may also be important.

Second, we argue that tradable rights increase the risk of insufficient demand for the new shares. Concerns related to execution risk should be more important for firms with less attractive future prospects, firms for which information has a greater effect on share price, and during periods of market crisis. Consistent with this hypothesis, we find that unprofitable and opaque firms, as well as firms in markets whose returns have fallen by 10% or more in the month prior to the offering, are less likely to make their rights tradable. Subsequent to nontradable rights offerings, issuers experience declines in profitability, as well as negative short-term and long-term excess returns. These performance patterns are reversed when the offering coincides with a general market crisis, in which case issuers actually experience higher announcement returns when they restrict rights trading. A likely explanation for this reversal is that, in such markets, a prohibition against rights trading is perceived as a strategy to prevent shareholders from selling undervalued rights. Indeed, regulators (e.g., Australian Securities Exchange 2010) explain that they allow so-called fast-track offerings with nontradable rights in order to enable offerings during financial crises.

Our third hypothesis is that managers resort to issuing rights (rather than cash) offers, and then restrict the trading of those rights, to prevent dilution of current shareholder value if the stock is undervalued. This paternalistic hypothesis implies that the firms choosing to restrict tradability should be characterized by better governance and also that restricting tradability should lead to higher subsequent firm performance. However, we find no evidence to support

either of these contentions. Although tradability is negatively related to the anti-director index, firm-specific governance matters little for the choice of tradability. Announcement returns are lower for offers in which rights are not traded, and that performance is not reversed; to the contrary, firms with nontradable rights perform worse in the two years after the offering in terms of both profitability and stock returns.

Unlike previous, country-specific evidence, our results do not suggest that issuers systematically squeeze out minority shareholders. Neither performance measure is systematically (negatively) related to the presence of controlling shareholders. This finding implies also that tradability is not an indicator of inside information held by controlling shareholders about the firm's prospects.

Regulations on rights offerings vary widely across countries. Few regulators (e.g., in the U.K.) allow and set out conditions for trading restrictions and also require issuers to reimburse shareholders that do not exercise their rights. Our results suggest that such regulations might improve shareholder value. We hope that future research in specific markets will lead to improvements in regulations on rights offerings. Another interesting research avenue would be to explore the interactions between rights offerings and other regulations (e.g., bankruptcy regimes).

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## Appendix A: Bloomberg versus SDC

This table reports the number of cash offers and rights offers listed in the Bloomberg and SDC databases, in order of the country's SEO frequency.

Country (underlying)	Bloomberg		SDC	
	Cash	Rights	Cash	Rights
US	10,894	549	15,375	304
UK	4,835	1,558	5,637	509
Australia	4,368	2,384	12,579	2,018
China	1,328	2,120	581	69
Japan	2,250	58	3,709	70
Hong Kong	1,962	913	2,549	463
South Korea	1,387	2,490	2,358	655
Canada	4,794	368	15,522	58
Germany	446	1,191	679	226
Taiwan	806	1,266	491	220
France	334	545	781	226
Malaysia	266	580	462	351
Sweden	173	631	378	236
Singapore	456	302	671	205
Brazil	214	998	412	13
Greece	174	427	173	39
Turkey	35	715	58	9
Italy	145	301	363	119
South Africa	183	506	183	27
Thailand	100	1,099	303	187
Norway	232	250	365	61
Indonesia	87	293	117	193
Switzerland	154	259	283	67
India	498	644	526	193
Spain	129	174	310	62
Poland	131	188	144	19
Chile	47	280	86	276
Mexico	57	391	171	18
Austria	75	184	105	50
Netherlands	225	40	478	31
Denmark	94	117	187	67
New Zealand	141	160	227	70
Ireland	235	65	237	16
Portugal	35	124	109	57
Philippines	63	159	180	80
Belgium	77	90	167	26
Pakistan	0	310	29	0
Finland	77	46	211	34
Bermuda	167	26	207	1
Israel	145	156	199	9
Peru	4	206	35	2
Egypt	13	133	72	35
Argentina	18	113	47	82
Kuwait	5	109	12	12
Sri Lanka	3	127	2	4
Russia	113	24	139	16
Jordan	1	121	13	10
UAE	13	47	13	1
Qatar	2	30	4	12
Oman	1	44	4	5
Others	617	1,166	1,140	406
Total	38,609	25,077	69,083	7,919

## Appendix B: Definitions of variables

Variable	Definition
Country/Market	
Accounting	LLSV (1998) estimate of accounting standards (where 90 represents a high level of transparency)
Anti-director	LLSV (1998) estimate of shareholder protection, ranging from 0 to 6 (where 6 represents a high level of protection)
Average Q	Countrywide average market-to-book ratio
Choice	One if trading of preemptive rights is not mandatory and 0 otherwise
Crisis	One if runup index $\leq -10\%$ (0 otherwise)
Debt/GDP	Ratio of government debt to GDP
FDI inflow/GDP	Ratio of net foreign direct investment inflow to GDP
GDP/capita	Gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current US dollars.
Governance (GMI)	GMI country governance index
HML	High-minus-low factor from Ken French's website
Index returns	Log return on the regional MSCI index
Judicial efficiency	LLSV (1998) estimate of the efficiency of the judicial system, ranging from 0 to 10 (where 10 represents a high level of efficiency)
Legal origin	LLSV (1998) legal origin
Market/GDP	Ratio of equity market size to GDP
Prevote	Spamann (2010) estimate: 1 if preemptive rights can be waived by a simple majority vote (0 otherwise)
Preright	Spamann (2010) estimate: 1 if waiver is subject to special conditions (0 otherwise)
Preexpl	Spamann (2010) estimate: 1 if the law makes special mention of shareholders' first opportunity to buy shares (0 otherwise)
Real interest	Real interest rate
Run-up index	Return on the local MSCI index from 42 days to 1 day before the announcement
MB	Small-minus-big factor from Ken French's website
UMD	Momentum factor from Ken French's website
Liquidity	
Amihud	Amihud (2002) measure with data corrections according to Lesmond (2005)
Bid-ask	Bid-ask spread divided by the average of bid and ask
Rights below PCP	One if #violated > 0 (0 otherwise)
%violated	Percentage of trading days on which the last price was below the put-call parity bound
#violated	Number of trading days on which the last price was below the put-call parity bound
Underpriced by	One minus the ratio of price to put-call parity bound if price is below the bound (0 otherwise)

Zero return days	Fraction of days with zero return to total days traded
Transaction	
Change in free float	Changes in free float from the last year-end before announcement to the year-end after the effective date
Cross-listed	One if the offering was registered for securities listed in more than one country (0 otherwise)
Days announcement to effective	Number of days between announcement and effective dates
Discount	Discount to the closing price five days prior to the announcement
% sold	Percentage of new shares sold as a fraction of shares outstanding prior to the offering
Trading	One if a market for rights existed (0 otherwise)
Trading days (actual)	Number of trading dates with positive volume
Firm	
# Analysts	Number of analysts covering the firm (on I/B/E/S)
Assets	Total assets (thousands of US dollars)
Block >25%	One if >25% of shares are held by a single blockholder, 2011 data from Orbit
CAPEX/sales	Capital expenditures/sales
Distress	One if $Z < 1.8$ and 0 otherwise
EBIT	Earnings before interest and taxes (thousands of US dollars)
Employees	Number of employees (000)
Forecast STD	Standard deviation of analyst forecasts
Free float	Ratio of Datastream free float market value to Datastream market value
Governance (AEFM)	Governance index of Aggarwal et al. (2011)
% held (>25%)	Sum of percentage of shares held in blocks > 25%
Interest coverage	EBIT/interest expenses
Leverage	Net market leverage
Market cap	Price multiplied by shares outstanding (thousands of US dollars)
Market-to-book	Market to book ratio
Past rights offers	Number of rights offers previously announced by the same issuer in the sample period
ROA	EBIT/assets
Run-up	Returns 6 months to 42 days before the announcement
Sales	Sales (thousands of US dollars)
Z	Altman Z-score

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### Appendix C: Rights versus cash offers

This table shows the results of a Probit regression in which the dependent indicator variable is set equal to 1 if the offering includes preemptive rights (and to 0 otherwise). \*, \*\*, and \*\*\* denote statistical significance at (respectively) the 10%, 5%, and 1% level.

Dependent variable= rights		
Firm	Log assets	-0.089*** (-22.215)
	Market-to-book	-0.167*** (-16.87)
	Block >25%	0.006*** (3.973)
	% held (>25%)	-0.181** (-2.071)
	ROA	0.026 (0.532)
	Preright	0.200*** (27.833)
Constant		0.919*** (15.507)
Fixed effects	Year	Yes
<i>N</i>		24,579

**Table I. Sample data by country**

This table gives a breakdown of the sample by country of incorporation (50 largest in terms of number of offerings) listed by the number of offerings. “Choice countries” are those in which > 5% and < 95% of rights are traded.

Country (underlying)	Total	Offering		Rights		Choice country
		Cash	Rights	not traded	traded	
US	4648	4316	332	56%	44%	x
UK	2935	1581	1354	8%	92%	x
Australia	2685	1413	1272	68%	32%	x
China	1819	442	1377	N/A	N/A	
Japan	1555	1503	52	0%	100%	
Hong Kong	1318	902	416	29%	71%	x
South Korea	1232	353	879	0%	100%	
Canada	1206	1085	121	1%	99%	
Germany	1077	187	890	38%	62%	x
Taiwan	762	318	444	0%	100%	
France	560	177	383	5%	95%	x
Malaysia	491	85	406	3%	97%	
Sweden	470	83	387	0%	100%	
Singapore	460	222	238	5%	95%	x
Brazil	435	64	371	0%	100%	
Greece	378	75	303	0%	100%	
Turkey	348	20	328	0%	100%	
Italy	298	79	219	1%	99%	
South Africa	267	58	209	0%	100%	
Thailand	257	37	220	0%	100%	
Norway	251	82	169	5%	95%	x
Indonesia	247	39	208	1%	99%	
Switzerland	236	70	166	21%	79%	x
India	231	117	114	1%	99%	
Spain	196	64	132	0%	100%	
Poland	171	50	121	0%	100%	
Chile	170	13	157	0%	100%	
Mexico	164	22	142	0%	100%	
Austria	161	42	119	19%	81%	x
Netherlands	160	127	33	20%	80%	x
Denmark	156	43	113	0%	100%	
New Zealand	131	33	98	12%	88%	x
Ireland	127	73	54	9%	91%	x
Portugal	105	23	82	0%	100%	
Philippines	104	25	79	0%	100%	
Belgium	89	34	55	27%	73%	x
Pakistan	86	1	85	0%	100%	
Finland	81	46	35	4%	96%	
Bermuda	79	73	6	20%	80%	x
Israel	75	39	36	0%	100%	
Peru	63	1	62	0%	100%	
Egypt	60	4	56	0%	100%	
Argentina	57	2	55	5%	95%	x
Kuwait	57	2	55	N/A	N/A	
Sri Lanka	40	0	40	0%	100%	
Russia	39	15	24	N/A	N/A	
Jordan	35	0	35	0%	100%	
UAE	25	2	23	0%	100%	
Qatar	24	0	24	0%	100%	
Oman	23	0	23	0%	100%	
Others	101	64	37	6%	94%	

**Table II. Descriptive statistics**

Panel A provides statistics for choice countries (listed in Table I) and Panel B for all countries. \*, \*\*, and \*\*\* denote statistical significance at (respectively) the 10%, 5%, and 1% level.

		Panel A. Choice countries					
		Rights trading		Rights not trading		t-stat	
		mean	median	mean	median	of difference	
<i>General firm characteristics</i>	Assets	2,300,922	157,211	631,823	12,272	(6.40) ***	
	Market cap	395,970	74,612	143,874	11,501	(8.35) ***	
	Market-to-book	1.45	1.10	1.77	1.53	7.09 ***	
	EBIT	67,593	4,390	19,813	(552)	(7.06) ***	
	Sales	843,187	69,505	237,455	3,324	(7.89) ***	
<i>Liquidity/information asym.</i>	Employees	2,826	439	1,019	53	(8.34) ***	
	Amihud	1.76E-05	7.67E-07	3.62E-05	9.03E-06	11.17 ***	
<i>Financial constraints</i>	# Analysts	28.10	2.00	12.16	0	(6.92) ***	
	Leverage	47.7%	40.9%	31.1%	16.6%	(9.74) ***	
	Z	4.30	2.16	7.59	2.74	8.99 ***	
<i>Recent performance</i>	Distress	38.3%	0.0%	37.5%	0.0%	(0.18)	
	Interest coverage	1.58	0.70	0.87	0.34	(3.23) ***	
	ROA	-3.4%	2.9%	-17.8%	-7.0%	(16.27) ***	
<i>Post-offering performance</i>	Run-up index	6.2%	8.5%	5.0%	8.6%	(1.53)	
	Crisis	15.3%	0.0%	16.6%	0.0%	1.45	
	Change in ROA (year 1)	-4.1%	-0.3%	-10.3%	-0.3%	(4.14) ***	
<i>Ownership and governance</i>	Change in ROA (year 2)	-3.4%	-0.1%	-8.3%	0.9%	(2.85) ***	
	Change in ROA (year 3)	-2.0%	0.3%	-6.9%	0.7%	(2.78) ***	
	Block >25%	10.9%	0.0%	7.9%	0.0%	(2.65) ***	
<i>Transaction characteristics</i>	% held (>25%)	52.85	50.15	45.69	45.27	(3.05) ***	
	Governance (AEFM)	47.0%	46.3%	46.3%	46.3%	(1.12)	
	% sold	31%	27%	27%	21%	(8.23) ***	
	Discount	25%	21%	21%	15%	(3.99) ***	
	Days announcement to effective	21.16	13	12.26	5	(8.93) ***	
	Trading days (actual)	12.86	10				
<i>N</i>		2,045		1,249			

		Panel B. All countries						
		All rights offerings		Rights trading		Rights not trading		t-stat
		mean	median	mean	median	mean	median	of difference
<i>General firm characteristics</i>	Assets	4,741,630	204,121	5,487,145	318,985	835,016	14,079	(14.28) ***
	Market cap	340,707	50,585	374,074	64,860	165,858	12,718	(8.21) ***
	Market-to-book	1.33	1.03	1.25	1.00	1.75	1.50	15.57 ***
	EBIT	166,895	5,195	194,181	8,621	25,945	(508)	(13.34) ***
	Sales	1,892,035	108,233	2,192,965	164,471	314,500	4,361	(14.93) ***
<i>Liquidity/information asym.</i>	Employees	2,603	467	2,833	602	1,236	66	(8.55) ***
	Amihud	1.83E-05	6.14E-07	1.49E-05	3.65E-07	3.51E-05	7.60E-06	16.29 ***
<i>Financial constraints</i>	# Analysts	21.04	0	22.57	1.00	13.04	0	(4.74) ***
	Leverage	52.1%	41.7%	56.0%	47.7%	31.9%	16.8%	(15.47) ***
	Z	3.73	1.74	2.89	1.65	7.33	2.63	19.71 ***
<i>Recent performance</i>	Distress	51.4%	1.00	54.5%	1.00	38.5%	0.0%	(8.62) ***
	Interest coverage	0.90	0.18	0.91	0.17	0.84	0.27	(0.64)
	ROA	-3.5%	2.8%	-0.9%	3.5%	-17.0%	-5.9%	(26.13) ***
<i>Post-offering performance</i>	Run-up index	6.1%	8.4%	6.4%	8.4%	4.8%	8.6%	(2.48) **
	Crisis	17.9%	0.0%	18.1%	0.0%	16.4%	0.0%	(0.16)
	Change in ROA (year 1)	-4.3%	-0.3%	-3.3%	-0.3%	-9.6%	-0.2%	(6.45) ***
<i>Ownership and governance</i>	Change in ROA (year 2)	-3.9%	-0.2%	-3.0%	-0.2%	-8.3%	0.7%	(4.71) ***
	Change in ROA (year 3)	-2.6%	0.0%	-1.8%	-0.1%	-6.5%	0.6%	(4.22) ***
	Block >25%	8.8%	0.0%	9.1%	0.0%	7.6%	0.0%	(1.58)
<i>Transaction characteristics</i>	% held (>25%)	50.91	49.29	51.66	50.00	46.38	45.54	(2.45) **
	Governance (AEFM)	44.7%	43.9%	44.4%	43.9%	45.9%	46.3%	(0.07)
	% sold	32%	26%	34%	29%	25%	19%	(15.54) ***
	Discount	24%	21%	25%	23%	23%	18%	(2.29) **
	Days announcement to effective	19.08	11	20.50	13	11.92	5	(10.20) ***
	Trading days (actual)			14.24	12			
<i>N</i>		12,639		6,918		1,320		

**Table III. Country characteristics**

This table shows univariate statistics for countries under different rights trading regimes. Listed are the means for mandatory trading versus choice countries and the results of tests for differences between them (i.e., 24% of countries with mandatory regime have legal systems of English origin, and those countries have an average GDP/capita of USD17,509). \*, \*\*, and \*\*\* denote statistical significance at (respectively) the 10%, 5%, and 1% level.

		Trading		
		Mandatory	Choice	t-stat of difference
Economic	GDP/capita	17,509	49,264	(4.89) ***
	Real interest	2.32	3.23	(0.44)
	Debt/GDP	51.41	52.29	(0.07)
	Market/GDP	39.62	99.86	(2.85)
	FDI Inflow/GDP	7.17	8.17	(0.28)
	Average Q	1.98	4.17	(2.58) **
Legal origin	English	24%	54%	(2.11) **
	French	52%	23%	1.88 *
	German	20%	15%	0.34
	Nordic	4%	8%	(0.48)
	Civil	76%	46%	2.11 **
Regulation of pre-emptive rights	Preright	2.40	2.25	0.97
	Prevote	2.53	2.58	(0.38)
	Preexpl	2.33	2.50	(0.41)
Governance	Anti-director	3.57	4.40	(1.40)
	Judicial efficiency	8.18	10.00	(2.12) **
	Accounting	63.45	71.80	(2.28) **
	Governance (GMI)	4.42	5.95	(1.09)

**Table IV. Liquidity and mispricing characteristics**

This table reports the mean, standard deviation, and minimum and maximum of rights liquidity and of the underlying stock (Panel A) in addition to underpricing characteristics (Panel B).

	Mean	SD	Min	Max
Panel A: Liquidity measures				
Right				
Bid-ask	28%	34%	3%	152%
Zero return days	55%	32%	0	97%
Amihud	1.53E-04	6.11E-04	0.00E+00	4.40E-03
Underlying				
Bid-ask	4%	6%	0%	0%
Zero return days	20%	16%	0%	99%
Amihud	3.40E-05	7.80E-05	0.00E+00	3.12E-04
Panel B: Underpricing				
% violated				
Close	17%	34%	0	100%
Ask	12%	29%	0	100%
Bid	15%	31%	0	100%
If violated, underpriced by				
Close	58%	34%	9%	99%
Ask	60%	33%	10%	99%
Bid	55%	34%	6%	99%
% risk arbitrage possible (no short sales)				
No transaction costs	12%	31%	0%	100%
Transaction costs	5%	20%	0%	100%



**Table V. Choice of offering type**

This table shows the results of Probit regressions in which the dependent indicator variable is set equal to 1 only if the rights are traded (choice-country sample); the inverse Mills ratio (for selection into a rights offering) is estimated with the regression reported in Appendix C. \*, \*\*, and \*\*\* denote statistical significance at (respectively) the 10%, 5%, and 1% level.

		Dependent variable = trading		
		(1)	(2)	(3)
Firm	Log assets	0.726*	0.548***	0.295***
		(1.915)	(8.168)	(17.391)
	Market-to-book	1.216*	0.840***	0.335***
		(1.729)	(6.897)	(9.545)
	Block >25%	-0.04	-0.025***	-0.001
		(-1.466)	(-2.999)	(-0.209)
	% held (>25%)	1.042	0.644*	0
		(1.324)	(1.673)	(0)
	ROA	0.259	0.697***	0.697***
		(1.345)	(5.57)	(5.57)
	Amihud	-1783.181**		
		(-2.02)		
	# Analysts	0		
		(-0.228)		
	Forecast STD	-0.003		
	(-0.426)			
Run-up	0.088***			
	(3.079)			
Leverage	-0.017			
	(-0.198)			
Interest coverage	0.096***			
	(2.886)			
Crisis	-0.180**			
	(-2.126)			
Transaction	% sold	0.750***		
		(4.585)		
	Discount	0.435**		
		(2.388)		
Governance	Anti-director		-0.807***	
			(-2.702)	
	Accounting		0.027	
			(0.452)	
	Governance (AEFM)		-0.078	
			(-0.021)	
Country	Log GDP/capita		-0.342**	
			(-2.115)	
	Real interest		0.031	
			(1.161)	
	Debt/GDP		0.013	
			(1.21)	
	Market/GDP		-0.004***	
			(-2.807)	
	FDI inflow/GDP		0.009	
			(0.706)	
Heckman	Mills	-33.699	-22.745***	-7.335***
		(-1.576)	(-6.792)	(-10.719)
Constant		7.82	14.090***	0.218
		(1.257)	(3.213)	(0.789)
Fixed effects	Country	Yes		Yes
	Year	Yes	Yes	Yes
Control variables	Availability of interest	Yes		
	Availability of Gov.		Yes	
N		2,045	1,357	2,820

**Table VI. Subsequent performance**

This table shows the results of switching regressions (columns 1-3) and an OLS regression (column 4) in which the dependent variable is the growth in ROA from the year prior to the announcement to the first (second, third) year after the effective date. In the switching regressions (columns 1-3), the regime (trading versus not trading) is estimated with the regression reported in column 3 of Table V. For these regressions, the table reports coefficients with  $z$ -statistics underneath and the  $p$ -value for equality between the coefficients in the two regimes. Column 3 reports coefficients and  $t$ -statistics of OLS regressions; the inverse Mills ratio (for selection into a rights offering) is estimated with the regression reported in Appendix C. \*, \*\*, and \*\*\* denote statistical significance at (respectively) the 10%, 5%, and 1% level.

Model Dependent variable Window	(1) Switching regressions Change in ROA			(2) Switching regressions Change in ROA			(3) Switching regressions Change in ROA			(4) OLS Change in ROA
	Year 1 post minus pre offering			Year 2 post minus pre offering			Year 3 post minus pre offering			Year 1 post minus previous
	No	Yes	Difference ( $p$ -value)	No	Yes	Difference ( $p$ -value)	No	Yes	Difference ( $p$ -value)	Both
Constant	-0.149 (-1.175)	0.091*** (6.32)	-0.231*** (0.0037)	-0.131 (-1.128)	0.418*** (6.618)	-0.548*** (0.0005)	-0.370*** (-2.928)	0.461*** (6.2)	-0.831*** (0)	0.005 (0.068)
Trading										0.044** (2.477)
Log assets	0.043*** (4.669)	-0.016*** (-3.985)	0.053*** (0)	0.042*** (4.739)	-0.022*** (-5.145)	0.062*** (0)	0.035*** (4.01)	-0.020*** (-4.092)	0.055*** (0)	0.037*** (7.857)
Block > 25%	0.093 (0.763)	0.002 (0.039)	0.091 (0.5838)	-0.045 (-0.356)	0.052 (0.833)	-0.097 (0.5755)	0.218** (2.335)	0.066 (1.001)	0.152 (0.1447)	0.145*** (2.649)
% held (25%)	-0.002 (-0.874)	0 (0.011)	-0.002 (0.5171)	0 (0.116)	0 (-0.194)	0 (0.8782)	-0.003* (-1.904)	0 (-0.435)	-0.003 (0.1106)	-0.002*** (-2.753)
Change in free float	0.006 (0.664)	0 (0.126)	0.006 (0.513)	0.003** (2.221)	0.001 (0.962)	0.002 (0.5644)	0.003 (0.848)	0 (0.803)	0.003 (0.4876)	0.005*** (3.535)
Crisis	-0.02 (-1.18)	-0.034** (-2.327)	0.014 (0.5194)	-0.007 (-0.445)	-0.030** (-2.398)	0.023 (0.2852)	0.090** (2.425)	-0.018 (-1.3)	0.1*** (0.0063)	-0.069*** (-3.026)
Cross-listed	-0.006 (-0.421)	-0.01 (-0.97)	0.004 (0.8332)	-0.019 (-1.104)	-0.01 (-0.883)	-0.009 (0.6689)	-0.058 (-1.591)	-0.017 (-1.328)	-0.041 (0.2882)	-0.049*** (-3.482)
Discount	0.043 (0.697)	-0.055** (-2.146)	0.098 (0.1467)	0.039 (0.677)	-0.067*** (-2.606)	0.106* (0.0977)	-0.184* (-1.785)	-0.038 (-1.298)	-0.146 (0.1719)	-0.103** (-2.288)
% sold	-0.03 (-0.937)	-0.009 (-0.352)	-0.021 (0.6223)	-0.038 (-1.001)	-0.035 (-1.322)	-0.003 (0.941)	-0.092 (-1.038)	-0.03 (-1.025)	-0.062 (0.5038)	-0.053 (-1.443)
Rights below PCP		-0.01 (-0.507)			-0.02 (-1.597)			-0.012 (-0.467)		-0.063* (-1.746)
Past rights offers	0.006 (1.09)	0 (0.126)	0.006 (0.4018)	0.003 (0.608)	0.007 (1.414)	-0.004 (0.6524)	-0.023 (-1.624)	0.002 (0.581)	-0.025* (0.0867)	-0.004 (-0.768)
ROA (pre offering)	-0.514*** (-4.667)	-0.833*** (-14.13)	0.319** (0.0478)	-0.515*** (-5.217)	-0.879*** (-15.464)	0.364** (0.0139)	-0.889*** (-10.797)	-0.880*** (-12.915)	-0.009 (0.9291)	-0.470*** (-7.87)
CAPEX/Sales	-0.036* (-1.83)	-0.047*** (-4.208)	0.011 (0.6154)	0.001 (0.023)	-0.045** (-2.561)	0.046 (0.2497)	-0.134** (-2.221)	-0.058*** (-3.447)	-0.076 (0.2267)	-0.02 (-0.878)
Leverage	0.02 (1.094)	0.034*** (2.903)	-0.014 (0.5221)	0.037** (2.115)	0.037*** (2.863)	0 (0.982)	0.015 (0.426)	0.016 (1.265)	-0.001 (0.9754)	0.049*** (2.971)
Market-to-book	0.041 (1.601)	-0.037*** (-2.883)	0.078** (0.0323)	0.037 (1.578)	-0.037*** (-2.712)	0.074** (0.0345)	-0.059*** (-2.714)	-0.052*** (-3.353)	-0.007 (0.7864)	-0.01 (-0.827)
Year F.E. Mills	Yes	Yes		Yes	Yes		Yes	Yes		Yes -0.954*** (-5.595)
$N$		2,176			2,069			1,945		2,176

**Table VII. Announcement returns**

Panel A shows the average cumulative abnormal announcement returns in windows of (-1,1) and (-5,5) days around the announcement. Panel B presents the averages from regressions reported by the works cited compared to average announcement returns in the respective countries in our sample. Panel C displays the results of regressions in which the dependent variable is the cumulative announcement returns during both the (-1,1) and the (-5,5) window of days around announcement. In the switching regressions (columns 1-2), the regime (trading versus not trading) is estimated with the regression reported in column 3 of Table V. For these regressions, the table reports coefficients with  $z$ -statistics underneath and the  $p$ -value for equality between the coefficients in the two regimes. Column 3 reports coefficients and  $t$ -statistics of OLS regressions; the inverse Mills ratio (for selection into a rights offering) is estimated with the regression reported in Appendix C. \*, \*\*, and \*\*\* denote statistical significance at (respectively) the 10%, 5%, and 1% levels.

Panel A: Univariate comparison of announcement returns

Announcement return window	(1)	(2)
	(-1,1)	(-5,5)
All right offers	1.83% ***	3.89% ***
Trading (choice country)	1.48% ***	3.67% ***
Not trading (choice country)	-0.52%	-1.20% ***
Trading (mandatory trading country)	-0.01%	1.03% **
Trading minus Not trading (choice country)	2.00% ***	4.86% ***
$t$ -stat	(3.96)	(4.86)
Choice trading minus Mandatory trading	1.50% ***	2.64% ***
$t$ -stat	(4.2)	(3.61)

Panel B: Comparison with existing studies of rights offer announcement returns

Country	Literature Study	N	Sample period	AR	Bloomberg sample (1995-2008)	
					N	AR (-5,5)
US	Eckbo and Masulis (1992)	53 (uninsured)	1963-81	-0.59%	332	-0.8% ***
		128 (standby)		-0.70% ***		
	Hansen (1988)	102	1964-86	-2.4% ***		
	Singh (1997)	63	1963-85	-1.07% ***		
	Heron and Lie (2004)	56	1980-98	-1.1%		
UK	Slovin, Sushka, and Lai (2000)	200 (standby)	1986-94	-2.9% ***	1354	-5.2% ***
		20 (uninsured)		-4.96% ***		
Australia	Balachandran et al (2008)	636	1995-2005	-1.74% ***	1272	-0.6%
Japan	Kang and Stulz (1996)	28	1985-91	2.21% ***	52	-0.9% ***
Hong Kong	Wu and Wang (2006)	180	1989-97	-3.37% ***	416	-9.0% ***
Korea	Kang (1990)	89	1984-88	0.95%	879	4.9% ***

Panel C: Determinants of announcement returns

Model Window	(1) Switching regressions (-1,1)			(2) Switching regressions (-5,5)			(3) OLS (-1,1)
	No	Yes	Difference (p-value)	No	Yes	Difference (p-value)	Both
Trading							
Constant	0.038 (1.28)	0.245*** (11)	-0.207*** (0)	0.159*** (3.527)	0.472*** (9.435)	-0.313*** (0)	0.197*** (7.294)
Trading							0.022*** (4.055)
Log assets	-0.007 (-0.972)	-0.012*** (-7.241)	0.005 (0.5546)	-0.030*** (-6.568)	-0.021*** (-6.358)	-0.009 (0.1303)	-0.005*** (-3.578)
Block > 25%	0.067 (1.54)	0.017 (0.678)	0.05 (0.2991)	0.007 (0.089)	0.005 (0.098)	0.002 (0.9832)	0.031 (1.403)
% held (25%)	-0.001 (-1.634)	-0.001** (-2.309)	0 (0.625)	0 (0.118)	-0.001 (-1.356)	0.001 (0.3979)	-0.001*** (-2.961)
Crisis	-0.01 (-1.067)	-0.033*** (-3.81)	0.023* (0.0635)	-0.024 (-1.61)	-0.090*** (-5.449)	0.066*** (0.0035)	-0.023*** (-3.578)
Cross-listed	0.005 (0.616)	-0.018*** (-2.875)	0.023** (0.0215)	0.009 (0.731)	-0.050*** (-3.93)	0.059*** (0.0011)	-0.014*** (-2.679)
Discount	-0.029 (-1.21)	-0.146*** (-9.024)	0.117*** (0.0001)	-0.093** (-2.549)	-0.340*** (-10.812)	0.247*** (0)	-0.112*** (-8.96)
% sold	0.02 (1.049)	-0.01 (-0.628)	0.03 (0.2285)	-0.012 (-0.394)	0.028 (0.881)	-0.04 (0.365)	-0.01 (-0.871)
Past rights offers	-0.001 (-0.597)	-0.007*** (-4.568)	0.006* (0.0546)	-0.006 (-1.628)	-0.013*** (-4.712)	0.007 (0.1844)	-0.005*** (-3.239)
Rights below PCP		0.032 (1.531)			0.032 (0.762)		0.014 (1.123)
ROA	-0.026 (-1.188)	0.032 (1.531)	-0.058** (0.0495)	-0.01 (-0.284)	0.032 (0.762)	-0.042 (0.4085)	0.014 (1.123)
Run-up	0.006* (1.825)	0.009*** (2.923)	-0.003 (0.4875)	0.007 (1.3)	0.016*** (2.689)	-0.009 (0.2528)	0.007*** (3.447)
Interest coverage	0.001** (2.27)	0 (-0.377)	0.001** (0.0214)	0.001 (0.515)	0 (-0.528)	0.001 (0.5536)	0 (0.037)
Year F.E.	Yes	Yes		Yes	Yes		Yes
Mills							-0.204*** (-3.608)
N		2,214			2,214		2,214

**Table VIII. Fama–MacBeth regressions**

This table reports the results of Fama-MacBeth regressions in which the dependent variable is the average monthly return in the 12, 18, or 24 months beginning one month after the effective date. \*, \*\*, and \*\*\* denote statistical significance at (respectively) the 10%, 5%, and 1% level.

	(1)	(2)	(3)	(4)	(5)	(6)
	All	All	All	All	Not trading	Trading
Period (months)	12	18	24	12	12	12
Fama-French factors	Global	Global	Global	Local	Global	Global
Trading	-0.006 (-0.321)	0.088 (1.124)	0.13 (1.047)	0.005 (0.82)		
Right below PCP	0.003 (0.273)	-0.015* (-1.693)	-0.005 (-1.123)	0.005 (0.611)		0.037 (0.602)
Discount	-0.041* (-1.7)	-0.039 (-1.283)	-0.031 (-0.938)	-0.045** (-1.995)	-0.028* (-1.73)	-0.18 (-1.055)
% sold	0.014** (2.121)	0.014** (2.223)	0.016** (1.987)	0.01 (1.624)	0.008 (0.312)	-0.035 (-0.805)
Cross-listed	-0.003 (-0.563)	-0.018 (-1.108)	-0.032 (-1.325)	-0.006 (-0.993)	-0.004 (-0.279)	-0.011* (-1.877)
ROA	0.02 (1.372)	0.053 (1.616)	0.062 (1.204)	0.01 (0.556)	0.017 (1.217)	0.099 (1.05)
Log assets	0.005* (1.688)	0.004 (1.248)	0.004 (1.166)	0 (0.132)	0.004 (1.087)	0 (-0.039)
Interest coverage	0 (0.304)	-0.002 (-1.484)	-0.002 (-1.601)	0 (-0.362)	0.004 (1.11)	0.016 (1.118)
Past rights offers	-0.001 (-0.177)	0.002 (1.171)	0.004** (2.006)	0.001 (0.445)	0.008 (0.947)	-0.005 (-1.142)
Change in Free float	-0.006 (-1.042)	0.003 (0.272)	0.01 (0.857)	-0.005 (-0.885)	-0.013 (-1.203)	-0.032 (-1.277)
Crisis	0.005 (1.011)	0.015 (1.558)	0.019 (1.271)	0.013** (2.054)	0.02 (1.574)	0 (0.072)
Block > 25%	-0.015 (-0.97)	-0.002 (-0.242)	-0.008 (-0.968)	-0.009 (-0.672)	-0.03 (-0.562)	-0.009 (-0.44)
% held (25%)	0 (1.346)	0 (-0.543)	-0.001 (-0.806)	0 (0.721)	0 (0.27)	0.002 (1.129)
Index returns	-0.027 (-0.52)	-0.089 (-1.35)	-0.075 (-1.263)	0.034 (0.188)	-0.205** (-1.994)	0.041 (0.178)
SMB	0.001 (0.276)	0.008 (1.071)	0.01 (0.898)	-0.194 (-1.208)	0.006 (1.289)	-0.002 (-0.526)
HML	-0.003 (-0.557)	0.021 (1.126)	0.031 (1.044)	-0.11 (-1.122)	-0.006 (-0.737)	-0.004 (-0.516)
UMD	0 (-0.197)	0.001 (0.27)	0.003 (0.505)	-0.195 (-1.293)	0.003 (0.672)	0.014 (0.914)
Constant	-0.067 (-1.369)	-0.02 (-0.238)	0.05 (0.402)	0.015 (0.504)	-0.078 (-1.377)	0.046 (0.472)
Country F.E.	Yes	Yes	Yes	Yes	Yes	Yes
N	26,752	41,412	56,120	25,900	11,525	15,227

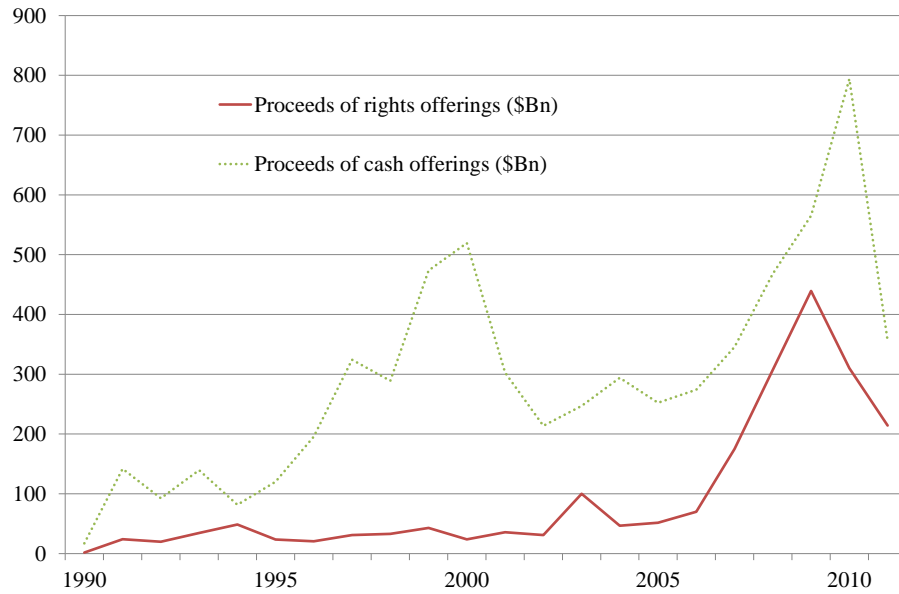
**Table IX. Calendar-time portfolio returns**

Panels A and B report abnormal returns based on calendar-time portfolio regressions as described by Fama (1998). Excess returns are regressed against the MSCI World Index in Panel A and against the global Fama-French factors in Panel B; abnormal performance is measured by the intercept of this time-series regression. Panel C reports estimates for portfolios that short matching nonissuing firms. \*, \*\*, and \*\*\* denote statistical significance at (respectively) the 10%, 5%, and 1% level.

Return window	equally weighted			value-weighted		
	(0,6)	(0,12)	(0,24)	(0,6)	(0,12)	(0,24)
<b>Panel A: Calendar-time portfolio returns against the index</b>						
Trading (choice country)	-0.002 (-0.68)	-0.003 (-1.124)	-0.004* (-1.719)	-0.002 (-0.357)	-0.005 (-1.051)	-0.011** (-1.998)
Not trading (choice country)	-0.008 (-1.347)	-0.005 (-1.08)	-0.004 (-1.216)	-0.001 (-0.102)	-0.004 (-0.514)	0 (-0.071)
Trading (mandatory)	-0.013*** (-4.533)	-0.010*** (-3.562)	-0.010*** (-3.9)	-0.004 (-0.699)	-0.005 (-0.825)	-0.004 (-0.708)
Trading minus Not trading (choice country)	0.006 (1.025)	0.002 (0.431)	0 (0.003)	0 (-0.012)	-0.001 (-0.162)	-0.011 (-1.567)
Rights below minus above PCP (choice country)	0.002 (0.263)	-0.004 (-0.71)	-0.012** (-2.408)	0 (-0.044)	0.003 (0.327)	0.001 (0.079)
Block > 25% only: Trading minus Not trading (choice country)	0.01 (0.606)	0.004 (0.335)	0 (0.005)	0.003 (0.158)	0.003 (0.24)	0.002 (0.173)
Crisis only: Trading minus Not trading (choice country)	0.008 (0.579)	0.005 (0.54)	-0.003 (-0.505)	0.028 (1.245)	0.027 (1.505)	0.021* (1.792)
<b>Panel B: Calendar-time portfolio returns with global Fama-French factors</b>						
Trading (choice country)	-0.006** (-2.131)	-0.007*** (-2.866)	-0.008*** (-3.759)	-0.005 (-0.762)	-0.007 (-1.175)	-0.012** (-2.179)
Not trading (choice country)	-0.014** (-2.124)	-0.011** (-2.537)	-0.009*** (-2.85)	-0.008 (-0.885)	-0.012 (-1.403)	-0.007 (-1.021)
Trading minus Not trading (choice country)	0.007 (1.157)	0.004 (1.016)	0.002 (0.633)	0.004 (0.4)	0.005 (0.614)	-0.005 (-0.888)
<b>Panel C: Calendar-time portfolio returns against matched firms (and index)</b>						
Trading (choice country)	0.004 (1.284)	-0.001 (-0.31)	-0.003 (-1.111)	0.005 (0.55)	-0.007 (-0.995)	-0.007 (-1.126)
Not trading (choice country)	-0.004 (-0.541)	-0.002 (-0.345)	-0.001 (-0.19)	-0.002 (-0.181)	-0.004 (-0.379)	0.001 (0.128)
Trading minus Not trading (voluntary)	0.007 (1.017)	0.001 (0.151)	-0.002 (-0.733)	0.01 (0.679)	-0.003 (-0.269)	-0.008 (-0.86)

**Figure 1. Seasoned equity offerings over time**

Source: Securities Data Corporation.



**Figure 2. Long-term returns in excess of regional MSCI index: Trading versus not trading (choice countries only)**

