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Seasoned Equity Offerings: Stock Market Liquidity and the Rights Offer Paradox

Edith Ginglinger, Laure Matsoukis and Fabrice Riva^a

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Abstract

This paper examines the impact of market liquidity on seasoned equity offerings (SEO) characteristics in France. We find that, besides blockholders' take-up, liquidity is an important determinant of SEO flotation method choice. We document higher direct equity offering flotation costs, but also improved stock market liquidity after public offerings and standby rights relative to uninsured rights. After controlling for endogeneity in the choice of SEO flotation method, we find that pure public offerings and standby rights are comparable in terms of direct costs and liquidity improvement. Our results provide new insights as to why firms choose public offerings despite apparently higher costs.

Keywords: Seasoned equity offering, SEO, flotation method, flotation costs, rights issues, public offerings, liquidity, bid-ask spread

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Seasoned Equity Offerings: Stock Market Liquidity and the Rights Offer Paradox

Abstract

This paper examines the impact of market liquidity on seasoned equity offerings (SEO) characteristics in France. We find that, besides blockholders' takeup, liquidity is an important determinant of SEO flotation method choice. We document higher direct equity offering flotation costs, but also improved stock market liquidity after public offerings and standby rights relative to uninsured rights. After controlling for endogeneity in the choice of SEO flotation method, we find that pure public offerings and standby rights are comparable in terms of direct costs and liquidity improvement. Our results provide new insights as to why firms choose public offerings despite apparently higher costs.

Keywords: Security offering, SEO, flotation method, flotation costs, rights issues, public offerings, liquidity, bid-ask spread

1. Introduction

The rights offer paradox, first observed by Smith (1977), highlights that large U.S. firms use the more costly underwritten flotation method rather than rights offerings to conduct SEOs. This observation is not restricted to U.S. offerings. Several authors document a trend away from rights in other countries (Eckbo, Masulis and Norli, 2007). However, even if their direct costs are by far the lowest, rights issues may incur indirect costs that could make their total costs larger for some issuers.¹ In this paper, we focus on illiquidity as an indirect cost of rights issues. We study the French market where firms can choose among two major SEO flotation methods: rights issues and public offerings. In France, preemption rights accrue to shareholders, and they cannot be permanently waived by means of charter amendment. In a rights offering, the offer price discount is large, but shareholders can sell the right on the market if they do not want to exercise it. The issuing firm can choose to use an underwriter (standby rights) or not (uninsured rights). In a public offering, shares are sold to the public, but firms can offer a purchase priority, not transferable, to current shareholders. We call pure public offerings the issues that are totally offered to external investors and mixed public offerings the issues that offer a purchase priority to current shareholders. We examine interactions between market liquidity, flotation costs and the flotation method choice. We make two contributions to the literature on SEOs. First, we observe liquidity improvements after SEOs vary according to flotation method, and find that uninsured rights issues have the least favorable effect on liquidity, whereas pure public offerings have the most favorable

¹Indirect costs include capital gains taxes (Smith, 1977), differences in prior share ownership (Hansen and Pinkerton, 1982), shareholder selling costs (Hansen, 1988) and adverse selection costs (Eckbo and Masulis, 1992).

effect on liquidity. Second, we find that besides blockholders' take-up, liquidity is a major determinant of the flotation method choice. Firms with the most liquid market issue either standby rights or, in the case large blockholders intend not to subscribe, pure public offerings.

Liquidity is an important factor for investors and managers investment decisions. Illiquid assets must deliver higher returns to compensate investors for the higher trading costs they incur (Amihud and Mendelson, 1986). The empirical evidence confirms that firms' required rates of return significantly relate to various liquidity proxies, such as spreads (Chalmers and Kadlec, 1998), turnover rates (Datar et al., 1998), and adverse selection costs (Brennan and Subrahmanyam, 1996). In addition, a recent strand of the literature (Acharya and Pedersen, 2005, Pastor and Stambaugh, 2003) argues that liquidity itself is a source of risk. To the extent that liquidity is reflected in prices, liquidity is also an important determinant of the cost of capital (Amihud and Mendelson, 1986, 1989). Butler, Grullon and Weston (2005) find that SEO investment bank fees are substantially lower for firms with more liquid stocks.

We examine whether the lack of liquidity that leads to an inefficient rights market and a lesser improvement in liquidity after the SEOs may be an indirect cost of rights issues. Several U.S. papers have studied the effect of fully underwritten offerings on stocks' secondary market liquidity.² None of these studies investigate whether the impact of SEOs on liquidity depends on flotation method, but Kothare (1997) documents that bid-ask spreads widen after rights issues and narrow after public offerings, effects she ascribes to the fact that ownership becomes more diffuse after public offerings and more concentrated after rights

² Lease, Masulis, and Page (1993) find significant increases in trading volume and the daily number of trades and decreases in bid-ask spreads following equity offerings and Denis and Kadlec (1994) find significant increases in share turnover, the daily number of trades, and the fraction of days with trading of shares. Tripathy and Rao (1992) find that bid-ask spreads narrow after equity offerings, but the degree of reduction and the timing differ depending on firm size.

issues. However, her results may be driven by the large proportion of financially-distressed firms in her sample. Qian (2011) compares liquidity changes associated with public offerings to liquidity changes after private placements on the NYSE, Amex and Nasdaq. He finds that the stock of issuing firms becomes more liquid after a public offering, whereas there is no change in liquidity after a private placement. Outside the U.S., Gardängen (2006) analyzes the effect of rights issues on stock liquidity on the Stockholm Stock Exchange where rights are predominant and finds no evidence of a change in liquidity after rights issues. In the U.K., Barnes and Walker (2006) do not find support for liquidity being a strong driver of issue method choice. Armitage (2007) argues that there are substantial transaction costs in rights offerings for blockholders who do not wish to subscribe to new shares. Further Armitage (2010) documents that it is mainly the largest U.K. firms that still use rights issues, because rights issues require a liquid market for the issuer's shares and rights, in order to keep transaction costs low.

We argue that, in addition to blockholdings and current shareholders' takeover, ex ante liquidity is a major determinant of the flotation method choice in France. Myers and Majluf (1984) and Eckbo and Masulis (1992) argue that firms decide to issue equity when the net present value of investment exceeds the cost of issuing equity. A low liquidity firm that chooses a pure public offering will incur large costs because market making is costly for underwriters. Underwriters will be more cautious in assessing the demand for the stock and more reluctant to underwrite the issue. If the flotation costs prove to be too high, managers will cancel the issue. The probability and cost of a SEO cancellation are important components of expected flotation costs. We argue that when a flotation method is expected to be too costly, managers may shift to another one, that is more cost effective for the firm.

Kothare (1997) does not directly examine the impact of liquidity on the choice of a flotation method. However, in her Table 1, although rights offering firms are benchmarked to public offering firms with closest market capitalization in the same year, the proportionate spread is 0.1131 for rights issuance whereas the proportionate spread is 0.0719 for public offering firms. Thus, the pre-SEO liquidity differs between firms using rights versus public offerings.

In this paper, we argue that liquidity affects the costs and benefits analysis of flotation method and affects the flotation method choice. Thus, we re-examine the rights offer paradox after accounting for the endogeneity of the issuing firm's choice regarding flotation methods. We study whether flotation cost differences and changes in post SEO liquidity are still significantly different among the flotation methods, using 2SLS regression analysis and controlling for ownership structure and current shareholders' takeover.

We use a hand collected dataset containing 178 SEOs by French firms over the period 1995 to 2006. The dataset includes information on SEO characteristics, abnormal announcement returns, flotation costs, and measures of intraday liquidity. We compare standby rights issues, uninsured rights, pure public offerings and mixed public offerings.³ The French institutional setting is appropriate for these tests for several reasons. First, French firms have the freedom to choose among different flotation methods. We can therefore compare the effects of ex ante liquidity on the choice of a flotation method as well as the consequences of this choice on post SEO liquidity, which has rarely been done in previous work. Second, whereas in the U.S., utilities, closed-end funds, REITS, and more recently

³ As pre-emption rights accrue to shareholders in French firms, the choice of a public offering requires clearance by shareholders.

financial distressed firms are the primary users of rights offerings (Heron and Lie, 2004, and Ursel, 2006), in France large publicly traded corporations frequently choose standby rights. Third, a distinctive feature of French firms is the high concentration in ownership (Faccio and Lang, 2002). In the case where current shareholders renounce subscription to the newly issued shares, SEOs will dilute blockholder ownership and increase trading, whatever issuance method is chosen.

After controlling for other characteristics of firms and offerings, we find liquidity improves significantly after standby rights and after pure public offerings. Further, we document that, in addition to blockholders' take-up, *ex ante* liquidity is an important determinant of flotation method choice. Firms with blockholders choose between rights and public offerings depending on the willingness of the blockholders to subscribe to new shares and the firm's stock liquidity. When blockholders totally (partially) renounce subscription to the new shares, firms prefer pure (mixed) public offerings. When blockholders choose to subscribe, the rights offering method is preferred and the size of blockholdings and liquidity drive the choice between standby and uninsured rights. Firms with large blockholders (which have in general low liquidity) choose uninsured rights whereas firms with average blockholders and high liquidity opt for standby rights; bankers agree to underwrite rights offerings if there is sufficient liquidity for them to be a market maker. By controlling for endogeneity via 2SLS methodology, we are able to take into account these determinants of the flotation method choice. We find that uninsured rights are the least expensive flotation method, but generate the smallest improvement in market liquidity. However, when rights offerings are accompanied by an underwriting contract, they become as expensive as public offerings. Both standby rights offerings and public offerings improve post-SEO liquidity. Our

results confirm that liquidity is an important factor for the resolution of the rights offer paradox.

The remainder of the paper is organized as follows. Section 2 develops the institutional setting and our hypotheses. Section 3 discusses the sample construction and our data. Section 4 presents our empirical results. Section 5 concludes.

2. Institutional environment and hypotheses

a. SEOs institutional framework

French firms can choose between rights issues, which are underwritten (standby rights) or not (uninsured rights), and public offerings with or without purchase priority for current shareholders. Preemption rights are a mechanism to protect shareholders' wealth and control. Rights offerings are the predominant flotation method in France, although French firms select the public offering method more frequently than in other closely held markets.

Rights issues

In a rights issue, current shareholders can exercise preemption rights to purchase new shares in proportion of their holdings at an exercise price set at a discount to the pre-announcement share price. The subscription period is at least 5 trading days since 2004 and was at least 10 trading days before 2004. If current shareholders do not wish to exercise their rights, they can sell them on the market to investors who will exercise them. The rights that are not exercised at the end of the subscription period can either be freely distributed by the

board if they represent less than 3% of the total number of rights, or they can be attributed to shareholders proportionally to their subscription of the new shares. An underwriter can guarantee in a standby agreement that all shares of the rights offering will be sold at the offer price.

Public offerings

As pre-emption rights accrue to shareholders, the choice of a public offering requires clearance by shareholders at an extraordinary general meeting. Pre-emptive rights cannot be permanently waived by means of charter amendment. The French institutional setting for public offerings differs from the U.S.. A purchase priority can be offered on a pro rata basis to current shareholders over an average three-day period. In contrast to rights, which are always tradable in France, this purchase priority cannot be traded. Further, in most offerings, shares are simultaneously sold to the public with a clawback option. In case purchase priority is offered, the French public offering method is similar to the open offer in the U.K. We call these offers “mixed public offerings” as opposed to issues that are totally offered to external investors which we call “pure public offerings”.

The offer price in French public offerings (whether pure or mixed offers) is set before the announcement of the SEO according to the following rules. Until February 2005, the minimum offer price had to be as large as the average price over a period of 10 consecutive trading days selected among the 20 days preceding the issuing date. Since 2005, it must be at least equal to the average price over the 3-day period preceding the offer and the maximum discount is 5%.

b. Hypotheses

Market liquidity increases more after public offerings compared to rights

An equity offering involves changes in trading volume, volatility and information asymmetry, which in turn impact liquidity. We examine the effects on liquidity of different flotation methods. As previous literature has shown, public offerings and rights issues may have different effects on free float due to differences in blockholding reduction. The choice of flotation method is directly linked to ownership structure and to shareholder take-up. Bohren, Eckbo and Michalsen (1997), Cronqvist and Nilsson (2005) and Slovin, Sushka and Lai (2000) report that rights issues are more likely to be selected by issuers with a greater current shareholder take-up. Gajewski and Ginglinger (2002) find that shareholder take-up in France is much larger for rights issues than for public offerings.

French firms are characterized by a high degree of ownership concentration, leading to limited share availability, fewer investors, and low trading frequency. In a closely held firm, the amount of information available is limited and blockholders are more likely to trade on their private information. For these reasons we expect liquidity to decrease with blockholdings. Heflin and Shaw (2000) for the U.S. and Ginglinger and Hamon (2012) for France report a positive relationship between spreads and block ownership. However, results for the U.S. where blockholders are mainly institutional investors are mixed. Since institutions prefer more liquid stocks, empirical investigations need to take into account endogeneity between liquidity and institutional holdings. For example, Rubin (2007) reports that liquidity is positively related to total institutional holdings but negatively related to institutional blockholdings since these investors are more likely to have private information.

Blockholdings in France are mainly insider blocks (management, families). Therefore, we expect liquidity to improve with the reduction in the relative size of these blocks. For a sample of Nasdaq issuing firms, Kothare (1997) finds that bid-ask spreads decrease after public offerings as ownership becomes more diffuse, whereas they increase after rights issues since the latter lead to more concentrated ownership. However, her results relate to the special characteristics of U.S. rights issuers, given that rights issues are rare in the U.S., especially outside of the utility sector. Kothare's (1997) Table 1 shows that the average stock price of rights issuers is particularly low (near \$5 to compare to a \$19.54 average offer price for SEOs on Nasdaq firms in Corwin, 2003). The minimum tick size and the fact that the new shares are sold at a discount may partly explain Kothare's results. Further, a considerable proportion of U.S. rights issuers are in financial distress. Ursel (2006) reports that at least 28% of sample rights firms have declared bankruptcy within the sample period. Therefore, the fraction of the issue subscribed to by outside investors is limited, resulting in an increase in initial blockholdings.

In contrast, in France, current shareholders have to choose between public offerings and rights offerings. In a public offering, current shareholders may buy the new shares if they are given a priority to subscribe (mixed public offerings). Pure public offerings are subscribed to by outside investors – mainly institutional investors. Therefore, these offerings are characterized by a reduction in current insider blockholdings. In a rights offering, shareholders may use their rights to subscribe to new shares or renounce subscription and sell their rights. Current blockholders indicate in the registration statement whether they intend to subscribe or renounce their share allocation. Therefore, the post issue ownership structure will

remain unchanged, if all current shareholders subscribe to their allocation, or become more dispersed with an increase in the number of shareholders, either individual or institutional.

Our hypothesis is that pure public offerings lead to a stronger improvement in post-SEO liquidity relative to rights offerings and to mixed public offerings, due to an increase in dispersion of ownership. We measure the reduction in current blockholdings by the sum of previous free float and the proportion of the new issue that is offered to outside investors scaled by the market value of the firm.

Liquidity is an important determinant of the choice of a flotation method

The choice of a flotation method depends on the characteristics of the firm. Eckbo and Masulis (1992) argue that the main driver of the flotation method choice is the shareholder takeover, k . While Myers and Majluf (1984) argue that firms issue new equity as long as the net present value of the investment undertaken is higher than the expected wealth transfer to outside investors, Eckbo and Masulis (1992) add direct costs to the wealth transfer costs. When current shareholders subscribe to the entire offering, managers choose the lowest direct costs method, uninsured rights, but as k decreases, the wealth transfer cost increases, eventually making it optimal to add quality certification through a standby offering, despite higher direct costs. As k approaches zero, firms prefer public offerings. Bohren, Eckbo and Michalsen (1997) for Norway, and Gajewski and Ginglinger (2002) for France provide evidence supporting these predictions.

We introduce liquidity as another important determinant of the flotation method in a Myers and Majluf setting, in addition to ownership structure and blockholders' takeover. A low liquidity firm choosing a public offering will incur large costs, because market making is

costly for underwriters. On the other hand, large current shareholders of a low liquidity firm not willing to subscribe to new shares will incur large transaction costs when selling their rights. Korteweg and Renneboog (2002) find that U.K. issuers with less liquid shares are more likely to choose an open offer, due to potentially depressed rights prices. Armitage (2007) finds that the cost of selling blocks of rights is substantial in the case of less liquid shares and represents a hidden cost of the rights issue method.

Our hypothesis is that, in the French context, low liquidity firms with large blockholders' take up prefer uninsured rights to avoid large underwriting fees. The largest firms with the most liquid market issue standby rights. Small liquid firms, in which large shareholders intend not to subscribe, choose pure public offerings. Low liquidity firms, in which large blockholders intend to subscribe only partially, choose mixed public offerings because they are not liquid enough to organize a market for rights, and blockholders want to keep the possibility to subscribe.

Endogeneity, costs and liquidity

We hypothesize that firms weight the (direct) cost of the chosen flotation method with its associated (indirect) gains in terms of future liquidity.⁴ If firms actually choose the flotation method that leads to the lowest costs for them, flotation method choice variables may not be exogenous, as most previous literature on SEO flotation costs assumes. We will thus estimate the link between flotation costs and post SEO liquidity improvement taking into account the endogeneity of the issuing firm's choices regarding flotation methods.

Summary of our predictions

H1. We expect liquidity to increase after a SEO, more so after a pure public offering than after an uninsured rights issue or a mixed public offering.

H2. We expect liquidity, besides shareholders' takeover, to be a determinant of the choice of a flotation method.

H2a. Low liquidity firms choose either uninsured rights or mixed public offerings. The choice between these two flotation methods depends on blockholders' takeover. Firms with large blockholders' takeover prefer uninsured rights.

H2b. High liquidity firms choose either standby rights or pure public offerings. Large firms prefer standby rights, whereas small firms opt for pure public offerings.

⁴ A question that arises is whether the magnitude of future liquidity gains from selecting a costly but liquidity-improving flotation method is sufficient to offset its large direct-cost disadvantage. Recent evidence (e.g. Asparouhova et al., 2010) suggests that illiquidity is a priced characteristic and that illiquid stocks must deliver higher expected returns. For example, the results in Asparouhova et al. (Table 7, column WLS) imply that a 10% decrease in the Amihud illiquidity ratio on NASDAQ stocks over the period 1983-2000 is associated with a .5% decrease in annual expected returns. Interestingly, their findings suggest that the sensitivity of expected returns to the illiquidity ratio increases with the illiquidity of the market: it is higher both on earlier periods and for NASDAQ stocks. To the extent that our sample includes highly illiquid firms, there is ample reason to believe that the expected gains from choosing a liquidity-enhancing procedure could have a significant impact on future expected returns.

3. Data

a. Sample selection

Our initial sample consists of the universe of 274 seasoned equity offerings listed in the annual reports of the AMF⁵ over the period 1995-2006. Our sample period starts in 1995 because intraday data to calculate bid-ask spreads are not available prior to 1995. The final sample excludes all issues that involve more than a single type of security (thus units of common stock and warrant offerings are excluded), and issues that do not have 30 returns available over the period (-180,-30) prior to the announcement date.

These selection criteria leave us with a sample of 178 offerings, described in Table 1. This sample includes 132 rights issues (61 uninsured rights issues, and 71 standby rights issues) and 46 public offerings (24 pure public offerings and 22 mixed public offerings)

[Insert Table 1]

b. Liquidity measure

Data are obtained from the Euronext intraday database over the period January 1995 to December 2006. These data include transaction prices, trading volume, and the best limits of the order book (bid and ask prices and depths), as well as market capitalization. All data are stamped to the nearest second.

⁵The AMF (Autorité des Marchés Financiers) plays the same role as the SEC in the U.S.

Our measure of liquidity at the time of the issue relies on the synthetic liquidity index proposed by Butler et al. (2005). The advantage of this index is that it allows aggregating various measures into a single variable that captures liquidity across its various dimensions. The computation of the index is based on the following six variables.

- The relative quoted bid-ask spread, which is defined as the difference between the ask and the bid price divided by the quote midpoint. This measure captures the cost of immediacy.
- The relative effective bid ask spread, which we compute using Roll's (1984) estimator. This measure captures the effective cost for trades (possibly large in scale) that are not necessarily completed at the best price limits.
- The relative spread + cost measure of Lesmond et al. (1999) which estimates the general cost of trading including, but not restricted to, the bid-ask spread.
- The trading volume in euros, which captures the ease with which investors can turn around their position (Chordia, Subrahmanyam and Anshuman, 2001).
- The turnover rate (traded volume in euros / market value of the firm), which measures the average investors' holding period. Constantinides (1986) proves theoretically that investors react to higher trading costs by reducing the frequency and volume of their trades. The turnover ratio thus allows capturing average trading costs over the cross-section of trade sizes.
- The Amihud ratio (absolute daily return / trading volume) which captures the price impact of a trade. The intuition for this measure is that liquid securities can accommodate large trading volumes with small price concessions. Since the Amihud ratio often exhibits

extreme values, we use a rescaled version suggested by Hasbrouck (2005), which is defined as the average of the square root of daily ratios.

Following Butler et al. (2005), we compute the liquidity index L_i for firm $i=1, \dots, N$ as:

$$L_i = \left(\frac{1}{N}\right) \left(\frac{1}{K}\right) \sum_{k=1}^K Rank_k(X_{i,k})$$

where $X_{i,k}$, $k = 1, \dots, 6$ is the k th liquidity measure for firm i in the sample.

Change in liquidity

To compute the change in liquidity based on Butler et al.'s index we proceed as follows. For each of our six liquidity measures, we stack the values we observe on both the pre- and post-issuing periods to form six series of $2 \times N$ observations. We then compute the liquidity index of each of the $2 \times N$ observations as:

$$L'_i = \left(\frac{1}{2N}\right) \left(\frac{1}{K}\right) \sum_{k=1}^K Rank_k(X_{i,k})$$

Note that each firm has two liquidity indices which we denote $L'_{i,pre}$ and $L'_{i,post}$. $L'_{i,pre}$ corresponds to firm i liquidity index computed from its pre-SEO liquidity characteristics whereas $L'_{i,post}$ is firm i liquidity index computed from its post-SEO liquidity characteristics. If firm i liquidity improves after the SEO its post-SEO liquidity index over

the stacked observations will be higher than its pre-SEO index and $L'_{i,post} - L'_{i,pre}$ captures the size of the improvement.

c. SEOs characteristics

We hand collect most data from the registration statements filed with the AMF.⁶ Each filing covers the proceeds from the offer, the subscription price, the number of current shares, the underwriters' name, the firm's ownership structure, and flotation costs as estimated by the company. The announcement dates are checked with Lexis-Nexis. Accounting data are collected from Thomson Financial.

Table 2 reports descriptive statistics categorized according to flotation method.

[Insert Table 2]

Panel A presents statistics for the issuing firms' general and governance characteristics. Firms that use standby rights issuance tend to be the largest in terms of market value of equity whereas firms that use mixed or pure public offerings are the smallest.⁷ The average Debt/assets ratio is equal to 30.53% and is lower for pure public offerings (23.30%) compared to uninsured rights (31.84%) and mixed public offerings (33.70%). Median market-to-book ratios are larger for pure public offers compared to rights issues and mixed public

⁶ Thomson New Issues databases for France report only part of the SEOs. We double checked our sample with their data. We find that New Issues databases report one third of our sample, with several missing data and mistakes, but report several repurchases and bought deals classified as SEOs.

⁷ The type of firms using public offerings dramatically changed over time. In Gajewski and Ginglinger (2002)'s study over the period 1986-1996, the largest firms chose public offerings, to have access to international markets and institutional investors and enlarge their float. More recently, rights offerings rebounded especially for large firms, guided by control motivation. For firms fearing tender offers and hostile entry in their capital, it may be optimal to use standby rights. For the period 2003-2006, Armitage (2010) documents that pure rights issues in the U.K. are also much larger than the other types of offer, because they are carried out by larger companies. For the period 1996-2007, Capstaff and Fletcher (2011) find that rights offers and placings are comparable in size.

offers. The stock market price before the offering is on average 56.49 euros and is lowest for uninsured rights (33.44 euros). The average value of distressed, a dummy variable equal to one when the stock price is lower than 5 euros, is 0.19 for the total sample, 0.31 for uninsured rights and 0.04 for pure public offerings.

The average percentage of shares held by the main shareholder is lower for standby rights offerings (33.50%) compared to uninsured rights (47.08%) and mixed public offerings (51.05%). The average percentage of shares held by all blockholders (holding more than 5% of the shares at the date of the issue) lies between 47.05% for standby rights issues and 66.77% for uninsured rights offerings. At the 20% threshold, firms are controlled by a family (33%), another corporation (25%), a financial institution (15%) and 25% are widely held.

Table 2, Panel B describes offerings' characteristics. The four types of offerings differ in various ways. The mean (median) number of shares in a pure public offering scaled by the total number of outstanding shares after the issue is 12.64% (10.60%). This ratio is highest for uninsured rights (mean 31.61%, median 26.10%). The subscription price offers a mean (median) discount from the stock market price of 14.85% (13.85%). The mean discount for pure (mixed) public offerings is 5.20% (2.95%). The discount for standby rights (21.37%) exceeds the discount to uninsured rights (15.35%). It should be noted that public offerings and rights issues discounts are not comparable since rights discounts are to current shareholders. In pure public offerings, shares are mainly offered to raise funds for new investments, while 59.02% of uninsured rights, 45.45% of mixed public offerings and 39.44% of standby rights proceeds are used to repay debt.

There are subscription precommitments from blockholders, on average, to subscribe 34.71% of the offering. Pure public offerings significantly differ from other flotation methods as 99.07% of the gross proceeds are offered to outside investors. For uninsured rights, blockholder precommitments are at 52.32%. The mean (median) expected reduction in blockholdings equals 4.04% (2.20%) for the total sample. The largest reduction is observed for pure public offerings (6.76%) while the lowest is observed for standby rights issues (2.90%).

For each sample firm, we compute the abnormal stock runup over the (-180,-2) period before the SEO announcement date. The mean (median) long term stock runup is 14.14% (8.45%). We find a small mean runup prior to an uninsured rights offer announcement (1.75%), a positive runup prior to standby rights issues (17.78%) and to mixed public offerings (14.75%), and a larger positive runup prior to a pure public offer announcement (34.35%). This evidence supports Eckbo and Masulis (1992) prediction that there should be a limited runup before an offering with large blockholders precommitments, which are generally observed in uninsured rights issues. The abnormal stock returns at SEO announcement are computed as the cumulative abnormal return for the day preceding and the day of the announcement (days -1 and 0 in event time). The mean announcement returns are insignificantly negative for uninsured rights offerings (-0.76%) and mixed public offerings (-0.39%) and significantly negative for pure public offerings (-3.28%). We find a market reaction to standby rights offerings close to zero.

4. Empirical results

a. *Univariate analysis of flotation costs and market liquidity changes around SEOs*

Pure public offerings are more expensive than rights offerings. (Table 3, Panel A). The average cost of offerings as a percent of total issue proceeds is 4.57% for pure public offerings, 3.34% for mixed public offerings, 3% for standby rights and 2.55% for uninsured rights issues, confirming the low-cost status of the latter flotation method.⁸

We next examine whether liquidity improvement could favor public offerings. We first present univariate estimates of liquidity measures before SEOs (Table 3, panel B) and abnormal liquidity measures around SEOs (Table 3, panel C). We measure abnormal liquidity as the difference between the post SEO liquidity measures (period 30 to 180, where 0 is the end of the subscription period) and the normal liquidity calculated over the estimation period, (-180,-30). We choose to exclude the immediate post SEO period to avoid short term effects due to market making. As Altinkilic (2001) underlines, underwriters provide market making during the offer period and the following weeks. Typically in French underwritten contracts, market making can occur over 30 days after the beginning of the subscription period. Our post SEO period begins 30 days after the end of the subscription period, and therefore does not reflect market making activity.

[Insert Table 3]

⁸ For a review of evidence on flotation costs results, see Eckbo et al. (2007).

First, we observe striking differences in pre-SEO liquidity according to the flotation method. Firms using standby rights are the most liquid, whatever measure we use. They have the largest volume, turnover, and the lowest Amihud illiquidity measures. The average bid-ask spread is 1.36%, compared to 1.64% for pure public offerings, 3.14% for mixed public offerings and 3.64% for uninsured rights. The liquidity index, with an average of 0.482, lies between 0.596 for standby rights and 0.351 for uninsured rights. Overall, the most liquid firms choose standby rights, and the less liquid ones choose uninsured rights. The firms in-between choose mixed or pure public offerings.

Second, SEOs enhance liquidity. For the total sample, we observe an increase in volume and in the liquidity index and a decrease in bid-ask spreads, Amihud illiquidity measures, transaction cost estimates (LOT), and the Roll effective spread. The increase in volume is especially important and significant for rights issues. The median spread decreases for the four flotation methods. The liquidity index improves for pure public offerings and uninsured rights.

Our univariate results confirm the findings in the previous literature as to the hierarchy of our flotation methods as far as flotation costs are concerned. The results also establish that liquidity improves after SEOs. However, they do not account for the heterogeneity in the issue proceeds, the risk characteristics and the reduction in blockholdings. In the next subsections, we control for these factors in a multivariate setting.

b. Multivariate analysis of flotation costs and liquidity effects

We control for size, risk, ownership structure and test whether flotation methods have an effect on direct flotation costs and liquidity changes when controlling for issue characteristics. We include year dummies to control for the evolution of costs and liquidity over time.

Table 4 reports the estimation results from the following regressions.

$$\text{Flotation costs}_i = \alpha + \beta_0 \text{VOLAT}_i + \beta_1 \text{Gross proceeds}_i + \beta_2 \text{pre-SEO liquidity}_i + \beta_3 \text{takeup}_i + \beta_4 \text{blockholders}_i + \beta_5 \text{free_float_change}_i + \beta_6 \text{standby rights}_i + \beta_7 \text{pure public offerings}_i + \beta_8 \text{mixed public offerings}_i + \text{year dummies}_i + \varepsilon_i$$

$$\text{Liquidity change}_i = \alpha + \beta_0 \text{VOLAT}_i + \beta_1 \text{Gross proceeds}_i + \beta_2 \text{pre-SEO liquidity}_i + \beta_3 \text{takeup}_i + \beta_4 \text{free_float_change}_i + \beta_5 \text{standby rights}_i + \beta_6 \text{pure public offerings}_i + \beta_7 \text{mixed public offerings}_i + \text{year dummies}_i + \varepsilon_i$$

[Insert Table 4]

Results in Table 4 (Panel A. models 1 and 2) confirm that, when controlling for size, volatility, blockholders' holdings, takeup and pre-offering liquidity, direct flotation costs are larger for public offerings, whether pure or mixed, and standby rights compared to uninsured rights. We find a significant difference between standby rights and pure public offerings costs in the second model only (as the Wald test of the difference in the coefficients of the standby rights and public offerings method dummies coefficients indicates at the end of Table 4).

Flotation costs increase with volatility, and decrease with size and blockholder takeup and holdings.

We next turn to post-SEO liquidity analysis (Table 4, Panel B., models 3 and 4). Liquidity change_{*i*} is the dependent variable and is computed as the variation in our liquidity index. The size of the offering increases liquidity. Larger firms enjoy more analyst coverage, greater disclosure activity, and therefore reduced information asymmetry. Liquidity improves more for firms that are less liquid in the pre-event period. The impact of an increase in market value of the firm is more important for low liquidity firms. The dilution of blockholders does not impact the change in liquidity. We find that both standby rights and pure public offerings lead to improved post-SEO liquidity, compared to uninsured rights. Further, liquidity improvement is larger for pure public offerings compared to mixed public offerings, and in model 4, compared to standby rights.

c. Liquidity as a determinant of the flotation method

We estimate a multinomial logit of probability of a firm choosing either standby rights, pure public offerings or mixed public offerings over uninsured rights. The estimates are reported in Table 5.

[Insert Table 5]

Four variables explain the flotation method choice: the percentage of capital held by blockholders, *renounce*, a dummy equal to one when blockholders renounce subscribing the new shares⁹, *distressed*, a dummy equal to one when the price of the share is lower than 5 euros and *ex ante liquidity*. Firms with large blockholders choose between public offerings and uninsured rights. They opt for pure public offerings when blockholders renounce their share allocation and for mixed public offerings or uninsured rights when they decide to subscribe, at least partially. Firms we classify as distressed firms (those whose share price is lower than 5 euros) and which exhibit a large percentage of change in the number of shares, prefer uninsured rights rather than mixed public offerings. In this case, new shares are mainly subscribed by current shareholders.

Low liquidity firms have a preference for uninsured rights or mixed public offerings. As underwriting contracts, either standby or firm commitment, may be too costly for them, they will choose the less expensive uninsured rights. Firms will therefore balance underwriter fees and blockholder decisions. Liquidity will be especially important for firms with a large part of the issue offered to outside investors, due to small initial blockholders, which characterize standby rights, or current blockholder renouncement of their allocation, a feature of pure public offerings. In certain circumstances, low liquidity firms may prefer mixed public offerings rather than uninsured rights. Especially, if blockholders partly renounce their allocation, the transaction costs incurred by current shareholders selling their rights and the wealth transfer costs may be larger than the fees an underwriter would charge for a mixed

⁹ Results remain qualitatively unchanged if we introduce current blockholders takeup in the model. However, current shareholder takeup may be low because the block they own is small or because they decide to renounce to subscribe to their allocation in the new issue. Our two variables, *blockholders* and *renounce*, capture this information.

public offering. Further, we perform a test to check whether the coefficient on liquidity in the standby rights choice is identical to the corresponding coefficient in the pure/mixed public offering choice. We find that pre-offer liquidity significantly affects the choice between standby rights and mixed public offerings: a high pre-offer liquidity index reduces the probability of issuing a mixed public offering ($p = 0.053$). Similarly, liquid firms prefer pure public offerings over mixed public offerings ($p = 0.085$). In contrast, pre-SEO liquidity does not affect the choice between standby rights and pure public offers. Banks require a liquid market to accept to underwrite a rights issue or a public offering that is totally offered to external investors.

d. *2SLS analysis of flotation costs, abnormal returns and liquidity effects*

Models explaining direct costs and liquidity effects in Table 4 are estimated on the implicit assumption that the flotation method choice variables are exogenous. However, as Table 5 shows, this is unlikely to be the case and OLS estimates for the coefficients of endogenous method dummies may thus be inconsistent. Firms that may pay the higher flotation costs when opting for an underwritten offering are likely to prefer uninsured rights. Therefore, we employ two-stage least-squares regressions to account for endogeneity. The first stage is the multinomial logit estimated in Table 5, model 3. The results of the second stage are reported in Table 6.

[Insert Table 6]

Controlling for endogeneity, we find that standby rights and pure public offerings are more expensive than uninsured rights, whereas costs of mixed public offerings are comparable to those of uninsured rights. The Wald test at the end of Table 6 documents that at

the 10% significance level, standby rights and public offerings costs are comparable. Finally, we find that the liquidity index is more improved after public offerings and standby rights, compared to uninsured rights. Once flotation method choice is treated as endogenous, flotation costs and liquidity improvements are comparable for public offerings, whether pure or mixed issues, and standby rights. Uninsured rights are still a good low cost choice for firms that are not seeking improved market liquidity. Our results highlight that firms choose the optimal flotation method, given their characteristics and needs at the date of the SEO.

5. Conclusion

This paper extends the earlier tests of the rights offer paradox by including liquidity effects in the costs and benefits of a given flotation method. We study four major SEO offer methods: uninsured rights, standby rights, pure public offerings and mixed public offerings. Our study investigates how market liquidity affects the flotation method choice, and whether liquidity improves after SEOs.

We document higher direct flotation costs, but also improved stock market liquidity after public offerings and standby rights relative to uninsured rights. We find that market liquidity and blockholder renouncement to subscribe to the new shares are important determinants of the flotation method choice. Low liquidity firms prefer uninsured rights or mixed public offerings, whereas high liquidity firms choose between standby rights and pure public offerings. When large blockholders decide not to subscribe to the new offering, firms opt for pure public offerings. When controlling for the characteristics of the offerings, direct costs and liquidity improvements are comparable for public offerings and standby rights. Uninsured rights incur reduced flotation costs, but limited market liquidity improvement although it may

still be the best method for firms with large blockholders subscribing to the new shares and distressed firms. Our results help to understand why firms choose public offerings despite higher apparent costs and therefore contribute to the resolution of the rights offer paradox. Our study provides insights to help issuing firms and investment bankers to better understand the costs and benefits of the different flotation methods used for SEOs.

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Table 1. Seasoned equity offerings in France from 1995 to 2006

<i>Year</i>	<i>All offerings</i>		<i>Standby rights issues</i>		<i>Uninsured rights issues</i>		<i>Mixed public offerings</i>		<i>Pure public offerings</i>	
	<i>Number</i>	<i>Proceeds</i>	<i>Number</i>	<i>Proceeds</i>	<i>Number</i>	<i>Proceeds</i>	<i>Number</i>	<i>Proceeds</i>	<i>Number</i>	<i>Proceeds</i>
1995	1	134	1	134	-	-	-	-	-	-
1996	9	1 146	7	1 106	1	34	1	6	-	-
1997	11	2 461	8	698	2	1 683	1	79	-	-
1998	7	1 552	4	1 176	-	0	3	375	-	-
1999	10	1 488	7	1 473	3	15	-	-	-	-
2000	33	6 636	11	5 550	7	148	6	204	9	735
2001	18	2 684	8	2 354	3	80	-	-	7	250
2002	15	3 038	4	1 033	8	1 829	2	119	1	57
2003	18	4 238	3	1 435	13	2 794	2	9	-	-
2004	17	1 285	5	1 207	9	58	3	20	-	-
2005	20	4 024	7	3 514	6	82	4	108	3	320
2006	19	20 336	6	9 728	9	9 934	-	-	4	674
Total	178	49 023	71	29 410	61	16 656	22	920	24	2 036

The sample consists of 178 share issues executed between January 1, 1995 and December 31, 2006 by firms listed on Euronext (Eurolist) Paris. This table classifies the offerings by flotation method; proceeds is the sum of gross proceeds (Euro m); standby rights are rights issues with standby underwriting; uninsured rights issues are rights offerings without standby underwriting; mixed public offerings are equity issues without rights but with a purchase priority for current shareholders; pure public offerings are equity offerings without rights and without purchase priority.

Table 2. Descriptive statistics

Mean Median	All offerings	Standby rights issues (SR)	Uninsured rights issues (R)	Mixed public offerings (MPO)	Pure public offerings (PPO)	p-value for mean median difference SR vs R	p-value for mean median difference SR vs MPO	p-value for mean median difference PPO vs MPO	p-value for mean median difference SR vs PPO	p-value for mean median difference R vs MPO	p-value for mean median difference R vs PPO
Panel A. Firms' general and governance characteristics											
Size	2 779.92 128.77	4 440.80 362.31	2 535.08 42.88	211.95 71.32	842.75 439.56	0.322 0.000 ***	0.003 *** 0.003 ***	0.034 ** 0.002 ***	0.011 ** 0.915	0.092 * 0.237	0.225 0.000 ***
Debt	30.53% 29.30%	30.82% 32.10%	31.84% 29.30%	33.70% 29.30%	23.30% 24.75%	0.807 0.668	0.510 0.879	0.052 * 0.065 *	0.086 * 0.065 *	0.718 0.454	0.097 * 0.160
M/B	4.44 1.74	6.69 1.75	2.23 1.47	3.31 1.79	4.45 3.49	0.305 0.075 *	0.412 0.953	0.335 0.090 *	0.583 0.020 **	0.572 0.188	0.226 0.003 ***
Stock price	56.45 26.19	78.13 35.14	33.44 15.09	56.41 29.53	50.86 41.83	0.013 ** 0.005 ***	0.332 0.946	0.738 0.465	0.136 0.546	0.156 0.028 **	0.063 * 0.006 ***
Distressed	0.19 0.00	0.17 0.00	0.31 0.00	0.09 0.00	0.04 0.00	0.059 * 0.056	0.316 0.377	0.517 0.520	0.041 ** 0.120	0.014 ** 0.043 **	0.000 *** 0.009 ***
Main shareholder	40.94% 40.55%	33.50% 27.70%	47.08% 47.60%	51.05% 51.00%	38.11% 36.80%	0.001 *** 0.001 ***	0.002 *** 0.002 ***	0.067 * 0.095 *	0.442 0.342	0.471 0.486	0.143 0.226
Blockholders	57.11% 61.85%	47.05% 44.30%	66.77% 67.00%	64.62% 64.85%	55.44% 57.25%	0.000 *** 0.000 ***	0.001 *** 0.003 ***	0.146 0.166	0.145 0.141	0.641 0.418	0.043 ** 0.017 **
Family control	0.33 0.00	0.24 0.00	0.30 0.00	0.68 1.00	0.38 0.00	0.476 0.474	0.000 *** 0.000 ***	0.038 ** 0.041 **	0.239 0.202	0.002 *** 0.002 ***	0.498 0.483
Corporate control	0.25 0.00	0.15 0.00	0.43 0.00	0.09 0.00	0.25 0.00	0.001 *** 0.001 ***	0.405 0.456	0.156 0.165	0.349 0.299	0.000 *** 0.005 ***	0.118 0.135
Financial control	0.15 0.00	0.21 0.00	0.13 0.00	0.18 0.00	0.00 0.00	0.223 0.229	0.764 0.771	0.042 ** 0.032 **	0.000 *** 0.015 **	0.597 0.570	0.004 *** 0.065 *
Widely held firms	0.25 0.00	0.39 0.00	0.13 0.00	0.05 0.00	0.33 0.00	0.000 *** 0.001 ***	0.000 *** 0.002 ***	0.012 ** 0.016 **	0.596 0.600	0.179 0.275	0.069 * 0.033 **

Table 2. Continued

Mean <i>Median</i>	All offerings	Standby rights issues (SR)	Uninsured rights issues (R)	Mixed public offerings (MPO)	Pure public offerings (PPO)	p-value for mean <i>median</i> difference SR vs R	p-value for mean <i>median</i> difference SR vs MPO	p-value for mean <i>median</i> difference PPO vs MPO	p-value for mean <i>median</i> difference SR vs PPO	p-value for mean <i>median</i> difference R vs MPO	p-value for mean <i>median</i> difference R vs PPO
Panel B. Offerings' characteristics											
Change in shares (%)	24.30% <i>19.55%</i>	23.02% <i>18.20%</i>	31.61% <i>26.10%</i>	20.91% <i>18.10%</i>	12.64% <i>10.60%</i>	0.005 *** <i>0.001 ***</i>	0.462 <i>0.878</i>	0.002 *** <i>0.000 ***</i>	0.000 *** <i>0.001 ***</i>	0.001 *** <i>0.009 ***</i>	0.000 *** <i>0.000 ***</i>
Offer price	47.30 <i>24.20</i>	60.76 <i>27.00</i>	29.17 <i>13.72</i>	53.51 <i>29.60</i>	47.86 <i>41.00</i>	0.025 ** <i>0.014 **</i>	0.698 <i>0.668</i>	0.708 <i>0.567</i>	0.380 <i>0.234</i>	0.098 * <i>0.011 **</i>	0.030 ** <i>0.003 ***</i>
Discount	14.85% <i>13.85%</i>	21.37% <i>20.50%</i>	15.35% <i>14.40%</i>	2.95% <i>3.60%</i>	5.20% <i>4.10%</i>	0.010 *** <i>0.001 ***</i>	0.000 *** <i>0.000 ***</i>	0.094 * <i>0.166</i>	0.000 *** <i>0.000 ***</i>	0.000 *** <i>0.000 ***</i>	0.000 *** <i>0.000 ***</i>
Proceeds	275.41 <i>31.29</i>	414.22 <i>90.58</i>	273.06 <i>11.21</i>	41.82 <i>18.55</i>	84.84 <i>48.76</i>	0.356 <i>0.000 ***</i>	0.000 <i>0.002 ***</i>	0.128 <i>0.028 **</i>	0.001 *** <i>0.135</i>	0.057 * <i>0.706</i>	0.123 <i>0.007 ***</i>
Acquisition financing	28.09% <i>0.00%</i>	33.80% <i>0.00%</i>	21.31% <i>0.00%</i>	27.27% <i>0.00%</i>	29.17% <i>0.00%</i>	0.109 <i>0.113</i>	0.565 <i>0.573</i>	0.890 <i>0.899</i>	0.677 <i>0.681</i>	0.593 <i>0.575</i>	0.474 <i>0.449</i>
Investment financing	26.97% <i>0.00%</i>	26.76% <i>0.00%</i>	19.67% <i>0.00%</i>	27.27% <i>0.00%</i>	45.83% <i>0.00%</i>	0.338 <i>0.342</i>	0.963 <i>0.967</i>	0.199 <i>0.202</i>	0.111 <i>0.085 *</i>	0.494 <i>0.465</i>	0.030 ** <i>0.015 **</i>
Capital structure	44.94% <i>0.00%</i>	39.44% <i>0.00%</i>	59.02% <i>100.00%</i>	45.45% <i>0.00%</i>	25.00% <i>0.00%</i>	0.025 <i>0.026 **</i>	0.629 <i>0.622</i>	0.155 <i>0.154</i>	0.186 <i>0.206</i>	0.288 <i>0.278</i>	0.003 *** <i>0.005 ***</i>
Takeup	34.71% <i>32.00%</i>	30.53% <i>26.60%</i>	52.32% <i>54.70%</i>	36.23% <i>39.30%</i>	0.93% <i>0.00%</i>	0.000 *** <i>0.000 ***</i>	0.459 <i>0.546</i>	0.000 *** <i>0.000 ***</i>	0.000 *** <i>0.000 ***</i>	0.049 ** <i>0.043 **</i>	0.000 *** <i>0.000 ***</i>
Renounce	27.53% <i>0.00%</i>	18.31% <i>0.00%</i>	11.48% <i>0.00%</i>	31.82% <i>0.00%</i>	91.67% <i>100.00%</i>	0.271 <i>0.278</i>	0.236 <i>0.182</i>	0.000 *** <i>0.000 ***</i>	0.000 *** <i>0.000 ***</i>	0.074 * <i>0.031 **</i>	0.000 *** <i>0.000 ***</i>
Free float expected variation	4.04% <i>2.20%</i>	2.90% <i>0.90%</i>	3.67% <i>1.30%</i>	5.80% <i>4.50%</i>	6.76% <i>5.80%</i>	0.454 <i>0.961</i>	0.063 * <i>0.090 *</i>	0.605 <i>0.243</i>	0.006 *** <i>0.000 ***</i>	0.210 <i>0.123</i>	0.044 ** <i>0.000 ***</i>
Abnormal runup [-180,-2]	14.14% <i>8.45%</i>	17.78% <i>6.60%</i>	1.75% <i>7.10%</i>	14.75% <i>3.60%</i>	34.35% <i>25.65%</i>	0.005 *** <i>0.010 **</i>	0.781 <i>0.793</i>	0.255 <i>0.141</i>	0.297 <i>0.134</i>	0.239 <i>0.461</i>	0.046 ** <i>0.029 **</i>
CAR [-1,0]	-0.73% <i>-1.00%</i>	0.09% <i>-1.15%</i>	-0.76% <i>-0.70%</i>	-0.39% <i>0.20%</i>	-3.28% <i>-2.10%</i>	0.487 <i>0.843</i>	0.674 <i>0.375</i>	0.070 * <i>0.106</i>	0.057 * <i>0.150</i>	0.696 <i>0.267</i>	0.123 <i>0.260</i>

The sample includes 178 share issues held on the French Stock Exchange over the 1995-2006 period. For the debt variable, we have only 162 observations. This table reports the mean and the median of each variable and the significance for the differences in means and medians between standby rights issues, rights issues, mixed public offerings and pure public offerings. In Panel A., size is market value (Euro m); debt is the debt on assets ratio at year end before the issue, M/B is the market to book ratio at year end before the issue; stock price is the stock price prior to the issue date, distressed is a dummy equal to 1 if the stock price is less than 5 euros, main shareholder is the percentage of the shares held by the main shareholder; blockholders is the percentage of the shares owned by the shareholders whose names are included in the registration statement filed with the AMF; family control, corporate control, financial control are dummies equal to one if the firm is controlled by a family, a corporate or a financial firm respectively; widely held firms is a dummy equal to one if the main shareholder holds less than 20% of the shares. In Panel B., percentage of change in the number of shares is number of shares issued at number of shares after the issue; discount is offer price less stock price at stock price; proceeds is gross proceeds (Euro m); acquisition financing, investment financing and capital structure are dummies equal to 1 if the funds raised are used to finance a specific acquisition, global non specific investments or capital structure issues respectively; external is % of the issue not taken up by blockholders; takeup is % of the issue taken up by blockholders; free float expected variation is the difference between free float after the issue and free float before the issue where free float after the issue is measured by the following ratio: $(\text{market value} * \text{free float before the issue} + \text{gross proceeds} * \text{percentage of the issue offered to external investors}) / (\text{gross proceeds} + \text{market value})$; abnormal runup is CAR [-180,-2] days relative to announcement date, CAR [-1,0] are cumulated abnormal stock returns computed at the announcement date (days -1 and 0 in event time). *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 3. Univariate results around seasoned equity offerings

Mean Median	All offerings	Standby rights issues (SR)	Uninsured rights issues (R)	Mixed public offerings (MPO)	Pure public offerings (PPO)	p-value for mean median difference SR vs R	p-value for mean median difference MPO vs PPO	p-value for mean median difference SR vs MPO	p-value for mean median difference SR vs PPO	p-value for mean median difference R vs MPO	p-value for mean median difference R vs PPO		
Panel A. Flotation costs													
Flotation costs	3.13%	3.00%	2.55%	3.34%	4.57%	0.157	0.133	0.656	0.002	***	0.330	0.000	***
Panel B. Estimation period - Liquidity measures													
Volume	9 481 <i>144</i>	16 199 <i>602</i>	7 252 <i>33</i>	155 <i>34</i>	3 820 <i>775</i>	<i>0.184</i> 0.000 ***	<i>0.129</i> 0.000 ***	<i>0.002</i> 0.000 ***	<i>0.028</i> 0.834	**	<i>0.114</i> 0.922	<i>0.494</i> 0.000	***
Turnover*10²	0.255 <i>0.134</i>	0.310 <i>0.234</i>	0.216 <i>0.097</i>	0.093 <i>0.078</i>	0.335 <i>0.160</i>	0.217 <i>0.000</i> ***	0.001 <i>0.000</i> ***	0.000 <i>0.000</i> ***	0.731 <i>0.659</i>	*	0.078 <i>0.203</i>	0.196 <i>0.002</i>	***
Spread*10²	2.402 <i>1.813</i>	1.362 <i>0.950</i>	3.644 <i>2.928</i>	3.144 <i>2.178</i>	1.643 <i>1.576</i>	0.000 <i>0.000</i> ***	0.028 <i>0.014</i> **	0.009 <i>0.000</i> ***	0.315 <i>0.126</i>	***	0.499 <i>0.259</i>	0.000 <i>0.000</i>	***
RescaledAmihud *10⁵	138.95 <i>52.00</i>	83.35 <i>22.21</i>	197.12 <i>138.96</i>	253.44 <i>95.47</i>	50.64 <i>26.57</i>	0.001 <i>0.000</i> ***	0.016 <i>0.000</i> ***	0.042 <i>0.000</i> ***	0.202 <i>0.581</i>	**	0.497 <i>0.914</i>	0.000 <i>0.000</i>	***
LOT	0.020 <i>0.010</i>	0.010 <i>0.006</i>	0.036 <i>0.016</i>	0.020 <i>0.009</i>	0.011 <i>0.008</i>	0.039 <i>0.000</i> **	0.121 <i>0.279</i> ***	0.078 <i>0.020</i> **	0.676 <i>0.232</i>	*	0.220 <i>0.162</i>	0.048 <i>0.005</i>	**
Roll	0.044 <i>0.038</i>	0.034 <i>0.027</i>	0.055 <i>0.045</i>	0.042 <i>0.037</i>	0.049 <i>0.044</i>	0.000 <i>0.000</i> ***	0.352 <i>0.187</i> ***	0.160 <i>0.164</i>	0.005 <i>0.001</i> ***	***	0.094 <i>0.081</i> *	0.381 <i>0.969</i>	
Liquidity index	0.482 <i>0.442</i>	0.596 <i>0.617</i>	0.351 <i>0.312</i>	0.369 <i>0.427</i>	0.532 <i>0.583</i>	0.000 <i>0.000</i> ***	0.015 <i>0.032</i> **	0.000 <i>0.000</i> ***	0.087 <i>0.117</i>	***	0.967 <i>0.692</i>	0.001 <i>0.000</i>	***

Table 3. Continued

Mean Median	All offerings		Standby rights issues (SR)		Uninsured rights issues (R)		Mixed public offerings (MPO)		Pure public offerings (PPO)		p-value for mean median difference SR vs R		p-value for mean median difference MPO vs PPO		p-value for mean median difference SR vs MPO		p-value for mean median difference SR vs PPO		p-value for mean median difference R vs MPO		p-value for mean median difference R vs PPO	
Panel C. Abnormal liquidity measures																						
Volume	3 121	***	6 288	**	1 274		88		802		0.073	*	0.275		0.017	**	0.040	**	0.277		0.707	
	23	***	129	***	10	***	11	***	-24		0.020	**	0.521		0.077	*	0.052	*	0.817		0.430	
Turnover *10³	0.037		0.120		-0.224		0.244		0.213		0.485		0.945		0.772		0.802		0.390		0.385	
	-0.003		0.167		-0.061		-0.009		0.387		0.254		0.464		0.866		0.732		0.308		0.189	
Spread*10²	-0.230	**	-0.109		-0.264		-0.676	**	-0.088		0.627		0.127		0.102		0.923		0.353		0.628	
	-0.121	***	-0.045	*	-0.318	*	-0.188	**	-0.266	*	0.222		0.727		0.134		0.204		0.861		0.584	
Rescaled Amihud *10³	-0.183		-0.177		-0.106		-0.553	**	-0.033		0.856		0.021	**	0.127		0.319		0.289		0.844	
	-0.036	***	-0.015	***	-0.130		-0.166	***	-0.011		0.314		0.037	**	0.042	**	0.650		0.364		0.268	
LOT*10²	-0.157		-0.111		-0.238		-0.075		-0.189		0.608		0.796		0.926		0.777		0.701		0.881	
	-0.090	*	-0.051		-0.093		-0.004		-0.262		0.571		0.361		0.844		0.231		0.488		0.597	
Roll*10²	-0.487	**	-0.110		-1.097	***	-0.096		-0.578		0.017	**	0.628		0.988		0.422		0.274		0.397	
	-0.426	***	-0.169		-0.890	***	-0.463		-0.668	***	0.005	***	0.411		0.330		0.026	**	0.254		0.881	
Liquidity index	0.039	***	0.023		0.050	***	0.043		0.057	**	0.227		0.709		0.511		0.231		0.826		0.827	
	0.032	***	0.014		0.057	***	0.037		0.046	**	0.172		0.640		0.450		0.147		0.820		0.859	

This table reports univariate results of flotation costs and liquidity measures. In Panel A., flotation costs are the sum of banking, legal and administrative fees on gross proceeds. In Panel B., liquidity measures are given for the estimation period [-180,-30] where date 0 is the announcement date. In Panel C., abnormal liquidity measures are estimated as the difference between observed liquidity over the post subscription period ([+30,+180] after the issue) and its average value over the estimation period; volume is the daily number of shares traded multiplied by the average daily trading price (in Euro k); turnover is the ratio of the euro trading volume divided by the market value; spread is the difference between the ask and bid prices divided by the spread midpoint; rescaled Amihud illiquidity ratio is the average of the square root of daily Amihud ratios (Amihud illiquidity ratio is $1/N \sum (|R_t|/|VOL_t|)$ where N is the number of non-zero trading volume days, $|R_t|$ is the absolute return on date t and VOL_t is the euro trading volume on day t); LOT is Lesmond et al. (1999) estimate of transaction costs; Roll is Roll (1984) estimate of effective spread, liquidity index is the synthetic liquidity index proposed by Butler et al. (2005) and is based on the 6 above mentioned liquidity proxies. *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 4. Multivariate analysis of flotation costs and change in liquidity

	Panel A. Flotation costs				Panel B. Change in liquidity			
	Model 1		Model 2		Model 3		Model 4	
Year dummies	Yes		Yes		Yes		Yes	
Constant	0.048 *** <i>0.000</i>		0.066 *** <i>0.000</i>		-0.048 <i>0.469</i>		-0.080 <i>0.207</i>	
Standby rights	0.009 *** <i>0.010</i>		0.009 ** <i>0.009</i>		0.049 ** <i>0.030</i>		0.055 ** <i>0.015</i>	
Mixed public offerings	0.009 * <i>0.081</i>		0.010 ** <i>0.043</i>		0.010 <i>0.709</i>		0.013 <i>0.627</i>	
Pure public offerings	0.010 * <i>0.059</i>		0.017 *** <i>0.002</i>		0.088 *** <i>0.003</i>		0.104 *** <i>0.001</i>	
Pre-SEO liquidity	0.007 0.455		-0.004 0.738		-0.457 *** 0.000		-0.408 *** 0.000	
Proceeds	-0.004 *** <i>0.001</i>		-0.004 *** <i>0.001</i>		0.033 *** <i>0.000</i>		0.030 *** <i>0.000</i>	
Volatility	0.017 *** <i>0.000</i>		0.015 *** <i>0.000</i>		0.020 <i>0.485</i>		0.027 <i>0.350</i>	
Takeup	-0.026 *** <i>0.000</i>				-0.056 * <i>0.074</i>			
Free float variation			0.057 ** <i>0.037</i>				0.131 <i>0.447</i>	
Blockholders			-0.039 *** <i>0.000</i>					
Adjusted R²	42.95%		43.19%		37.70%		36.80%	
Wald test mixed public /standby	0.005 <i>0.945</i>		0.065 <i>0.798</i>		2.106 <i>0.149</i>		2.408 <i>0.123</i>	
Wald test pure public /standby	0.027 <i>0.870</i>		4.043 ** <i>0.046</i>		2.105 <i>0.149</i>		3.457 * <i>0.065</i>	
Wald test pure public /mixed public	0.034 <i>0.854</i>		1.905 <i>0.170</i>		5.226 ** <i>0.024</i>		7.429 *** <i>0.007</i>	

The table reports OLS regression results of flotation costs and change in liquidity. In Panel A, the dependent variable is flotation costs on gross proceeds. In Panel B, the dependent variable is the abnormal liquidity index measure. The explanatory variables are year dummies; takeup defined as the % of the issue taken up by blockholders; volatility computed over the [-10,-5] period before the subscription period; pre-SEO liquidity is the liquidity index over the estimation period as defined by Butler et al. (2005); proceeds defined as log of gross proceeds (in Euro m); free float expected variation defined as the difference between free float after the issue and free float before the issue where free float after the issue is measured by the following ratio : (market value*free float before the issue + gross proceeds*percentage of the issue offered to external investors)/(gross proceeds +market value); blockholders defined as the % of shares owned by blockholders, pure public offerings, mixed public offerings and standby rights issues dummies. Wald test reports the value of the Wald statistic for the equality of the coefficients on mixed public offerings and standby rights, pure public offerings and standby rights as well as pure public offerings and mixed public offerings. Heteroscedastic-consistent; p-values are in italic; *, **, *** represent the significance level of 10%, 5%, and 1% respectively.

Table 5. Multinomial logit analysis of the flotation method choice

	<i>Standby rights issues</i>	<i>Mixed public offerings</i>	<i>Pure public offerings</i>	<i>Standby rights issues</i>	<i>Mixed public offerings</i>	<i>Pure public offerings</i>	<i>Standby rights issues</i>	<i>Mixed public offerings</i>	<i>Pure public offerings</i>
	Model 1			Model 2			Model 3		
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	3.796 <i>0.112</i>	2.356 <i>0.365</i>	-9.689 <i>0.109</i>	4.591 * <i>0.053</i>	4.046 <i>0.131</i>	-8.075 <i>0.196</i>	4.997 ** <i>0.043</i>	4.376 <i>0.120</i>	-6.710 <i>0.234</i>
Change in shares	-2.745 ** <i>0.048</i>	-6.064 *** <i>0.007</i>	-23.424 *** <i>0.001</i>	-2.280 <i>0.132</i>	-5.590 ** <i>0.016</i>	-23.486 *** <i>0.001</i>	-0.901 <i>0.606</i>	-6.114 *** <i>0.009</i>	-24.677 *** <i>0.007</i>
Proceeds	0.252 <i>0.129</i>	-0.131 <i>0.870</i>	-0.389 <i>0.386</i>	0.191 <i>0.253</i>	-0.274 <i>0.138</i>	-0.459 <i>0.315</i>	-0.172 <i>0.508</i>	-0.185 <i>0.479</i>	-1.350 * <i>0.056</i>
Renounce	-0.431 <i>0.526</i>	0.952 <i>0.275</i>	4.372 *** <i>0.000</i>	-0.467 <i>0.486</i>	0.876 <i>0.292</i>	4.316 *** <i>0.000</i>	-0.240 <i>0.726</i>	0.778 <i>0.367</i>	4.960 *** <i>0.000</i>
Blockholders	-5.205 *** <i>0.000</i>	-0.255 <i>0.870</i>	-0.189 <i>0.952</i>	-5.644 *** <i>0.000</i>	-0.918 <i>0.570</i>	-0.523 <i>0.868</i>	-3.869 ** <i>0.019</i>	-1.720 <i>0.474</i>	4.048 <i>0.336</i>
Distressed				-0.668 <i>0.354</i>	-1.591 ** <i>0.038</i>	-1.435 <i>0.383</i>	-0.652 <i>0.371</i>	-1.695 ** <i>0.025</i>	-1.630 <i>0.322</i>
Pre-SEO liquidity							4.770 * <i>0.094</i>	-1.607 <i>0.602</i>	10.580 * <i>0.091</i>
Pseudo-R²		43.65%			44.55%			46.22%	
LR test (Chi2)		178.62***			182.29***			188.66***	

This table estimates a multinomial logit of the probability of a firm choosing any of alternative issues (mixed public offerings, pure public offerings, standby rights offerings) rather than an uninsured rights issue. The explanatory variables are % of change in the number of shares defined as the number of shares issued at number of shares after the issue; pre-SEO liquidity is the liquidity index over the estimation period as defined by Butler et al. (2005); proceeds is log of gross proceeds (in Euro m); renounce (take up renouncement) a dummy equal to 1 if 100% of the issue is offered to external investors; blockholders defined as the % of the shares owned by blockholders, distressed a dummy equal to 1 if the stock price prior to the issue is less than 5 euros; p-values are in italic; *, **, *** represent the significance level of 10%, 5%, and 1% respectively.

Table 6. 2SLS analysis of flotation costs and change in liquidity

	Panel A. Flotation costs		Panel B. Change in liquidity	
	Model 1	Model 2	Model 3	Model 4
Year dummies	Yes	Yes	Yes	Yes
Constant	0.011 <i>0.734</i>	0.024 <i>0.540</i>	-0.305 <i>0.117</i>	-0.245 * <i>0.051</i>
Standby rights	0.051 * <i>0.072</i>	0.044 <i>0.124</i>	0.291 * <i>0.078</i>	0.241 ** <i>0.023</i>
Mixed public offerings	0.016 <i>0.251</i>	0.021 * <i>0.079</i>	0.182 ** <i>0.055</i>	0.161 * <i>0.053</i>
Pure public offerings	0.040 * <i>0.076</i>	0.043 ** <i>0.029</i>	0.325 ** <i>0.018</i>	0.278 *** <i>0.001</i>
Pre-SEO liquidity	-0.028 <i>0.324</i>	-0.028 <i>0.273</i>	-0.623 *** <i>0.000</i>	-0.606 *** <i>0.000</i>
Proceeds	-0.003 <i>0.142</i>	-0.003 <i>0.110</i>	0.038 *** <i>0.002</i>	0.038 *** <i>0.000</i>
Volatility	0.023 *** <i>0.002</i>	0.021 <i>0.003</i>	0.062 <i>0.123</i>	0.052 <i>0.116</i>
Takeup	-0.013 <i>0.285</i>		0.042 <i>0.563</i>	
Free float variation		0.027 0.418		-0.021 0.939
Blockholders		-0.021 0.289		
Wald test mixed public /standby	2.108 <i>0.149</i>	0.745 <i>0.390</i>	0.665 <i>0.416</i>	0.556 <i>0.457</i>
Wald test pure public /standby	0.913 <i>0.341</i>	0.019 <i>0.890</i>	0.478 <i>0.490</i>	0.706 <i>0.402</i>
Wald test pure public /mixed public	1.369 <i>0.244</i>	1.157 <i>0.284</i>	1.588 <i>0.210</i>	1.571 <i>0.212</i>

The table reports the 2-stage least square regression results of flotation costs and change in liquidity (the first stage is reported in table 5 model 3). In Panel A, the dependant variable is flotation costs on gross proceeds. In Panel B, the dependent variable is the abnormal liquidity index measure. The explanatory variables are year dummies; takeup defined as the % of the issue taken up by blockholders; volatility computed over the [-10,-5] period before the subscription period; pre-SEO liquidity is the liquidity index over the estimation period as defined by Butler et al. (2005); proceeds is log of gross proceeds (in Euro m); blockholders defined as the percentage of shares held by blockholders; free float expected variation is the difference between free float after the issue and free float before the issue where free float after the issue is measured by the following ratio: (market value*free float before the issue + gross proceeds*percentage of the issue offered to external investors)/(gross proceeds +market value); mixed public offerings, pure public offerings and standby rights issues dummies. Wald test reports the value of the Wald statistic for the equality of the coefficients on mixed public offerings and standby rights; pure public offerings and standby rights and pure public offerings and mixed public offerings. Heteroscedastic-consistent; p-values are in italic; *,**,*** represent the significance level of 10%, 5%, and 1% respectively.