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Long-term underperformance of public versus rights offering firms

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Abstract

The authors compare the post-issue stock and operating performance of rights issue versus public offer firms using Korean data. The authors find that the stock returns of rights issue firms are less negative than those of public offering firms during the three years subsequent to the seasoned equity offering. The authors further find that the profitability of rights offering firms is superior to those of public offering firms and that the ratio of sales to assets for rights issue firms is much higher over the post-issue period. The results substantiate Heinkel and Schwartz's (1986) and Eckbo and Masulis' (1992) theoretical models that posit firms with better quality tend to select the rights issue rather than public offer method when issuing seasoned equity.

Keywords Seasoned equity offering, Rights issue, Public offer, Long-term performance

Paper type Research paper

1. Introduction

The long-term underperformance of firms making seasoned equity offerings (SEOs) is well documented in the literature. Several explanations have been advanced for the stock and operating performance after SEOs [1]. However, whether the choice of SEO method, public versus rights offering, affects the post-issue performance is rarely examined because in most countries one SEO method dominates. For instance, public offers are recently common in the US, Japan and Canada, while rights issues are still dominant in many countries such as Italy, India and Australia. That is, the intra-market analysis on the effect of SEO method on the post-issue performance is difficult due to data limitation. South Korea provides a rare opportunity where such analysis can be done, both types of SEO flotation method co-existing in approximately equal proportions since year 2000. This paper employs the data to document valuable empirical evidence regarding the post-SEO performance of issuing firms by type – namely, that rights offering firms outperform public issuers in the long run.

In their seminal paper on corporate financing and investment decisions, Myers and Majluf (1984) assume that firm managers seek to maximize the wealth of its existing shareholders in the long run. Focusing on equity issues and based on adverse selection, Heinkel and Schwartz (1986) propose that the highest quality firms choose standby rights offers, intermediate quality firms choose uninsured rights offers and signal their true value through the subscription price, and low-quality firms employ fully underwritten public offers. Eckbo and Masulis (1992) argue in their take-up model that managers and shareholders possess asymmetric information about firm value, which influences expectations about the

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willingness to participate in equity offerings and accordingly the method of flotation. The model posits that standby offerings with certification of underwriters are optimal for a sufficiently low level of shareholder take-up (k) because the wealth transfer costs of uninsured rights offers increase as k decreases, and rights offers should be avoided as k approaches zero. These theoretical models suggest that firms with better quality and less information asymmetry select rights issues, while firms with worse quality and more information asymmetry select public offers in SEOs.

In this research, we investigate whether the post-issue performance of public versus rights offering firms substantiates those expectations of the quality of issuing firms using Korean data. Different from other countries, the number of rights issues and public offers is quite evenly distributed in the 21st century in Korea, which presents an ideal setting for the investigation [2]. We begin collecting SEO data in 2000 because listed firms in Korean stock markets have rarely used public offers in their SEOs before then. We use a sample of 2,076 SEOs over the period of 2000–2015 for our analyses of which consist of 1,095 rights issues (53%) and 981 public offers (47%) [3]. The data extend to 2018 to analyze the long-term stock and operating performance of the SEO firms.

We first find that the mean (median) buy-and-hold abnormal return (BHAR) for rights issue firms is −3.9% (−38.1%) measured over a 36-month horizon following the SEO, while that for public offer firms is −11.5% (−54.1%). The differences are statistically significant. The long-run underperformance of SEO firms on average is consistent with the previous literature (for instance, Loughran and Ritter, 1995; Brav *et al.*, 2000). Our results suggest that rights issue firms earn relatively less negative returns than public offering firms during the three years after the issue.

We also find that a significantly higher proportion of public issue firms delist from exchanges over the post-issuance period compared to rights issue firms. The proportion of public offering firms that delist within 12 months of the issuance is 11.7%, compared to a much lower percentage of 3.3% for rights issuers. This difference continues to grow with measurement horizon – 36.4% of firms that float equity publicly delist within 36 months of the issuance, compared to only 13.4% of those choosing rights issues. We also test differences according to market and by information asymmetry (proxied by existence of rated bonds). Although indicators of firm quality and the proportion of delistings are significantly related, the classification by issuance method is statistically much more significant than comparisons by market (KOSPI versus KOSDAQ) or by having rated debt or not.

Next, we compare the operating performance of rights issue versus public offer firms. In line with stock performance, the return on assets (ROA) of SEO firms continues to be negative over the period from year −1 to + 3 around the issuance regardless of the SEO method. We further find that the ROA of rights offering firms is superior to those of public offering firms in mean (or median) difference tests and panel regression setups controlling for industry and year fixed effects. Also, the ratio of sales to assets for rights issue firms is much higher over the period from year 0 to year +3 than that for public offer firms even though rights issue firms spend less money in R&D and fixed assets. The findings suggest that after controlling for growth opportunities, higher levels of investment by public offering firms in the post-issuance period do not lead to higher sales or profitability.

We contribute to the extant literature on the long run performance following SEOs by providing evidence that the stock and operating performance of rights issue firms is better than that of public offer firms around the stock issuance event, and that public offering firms continue to perform worse in the post-issuance period. Our results substantiate Heinkel and Schwartz's (1986) and Eckbo and Masulis' (1992) argument that firms with better quality tend to select rights issue rather than public offer method when they issue seasoned equity and show that these differences continue to persist subsequent to the SEO. Empirically, this work complements the results of Kim and Song (2020) who examine firm quality and short-term

announcement returns according to SEO method choice and conclude that firms that choose to issue rights are of better quality than those that opt to float equity publicly.

2. Related literature

The equity flotation choice is not random but a deliberate decision made by the firm's management. When only direct issuance costs are considered, public offerings incur higher costs of flotation than rights offerings, but direct costs are only a part of the picture. Information asymmetry is a fundamental problem facing a firm's insiders and outside investors, and the choice of equity issuance can act as a signaling device. Myers and Majluf (1984) posit that with information asymmetry, firms should use retained earnings first, issue debt next and float additional equity only as a last resort. In line with this model, our results show that the SEO firms in our sample underperform the market, the size-matched portfolio, a firm matched on industry, B/M ratio of equity and market capitalization.

Also in the vein of information asymmetry, rights offers should convey less negative information to the market compared to public offers, as insiders with more information are willing to take up additional shares in the firm. Thus, Heinkel and Schwartz (1986) conjecture that firms with the highest quality will choose standby rights offers, intermediate quality firms will choose uninsured rights offers signaling their true value with the choice of subscription price, and low-quality firms will choose fully underwritten public offers. Information asymmetry is an important consideration in the take-up model of Eckbo and Masulis (1992) also, which predicts that firms will abandon the rights issues method as shareholder take-up approaches zero. Both theories predict that rights offering firms are superior in quality compared to public offering firms, and we directly test this prediction with long-term performance indicators.

The long-term underperformance of SEO firms has been previously documented in the literature. Loughran and Ritter (1995) document that in the US, issuers of equity (both initial and seasoned) underperform non-issuers of comparable size by 44% in the 5-year window post issuance. Spiess and Affleck-Graves (1995) also examine 3- and 5-year holding period returns following SEOs and arrive at similar conclusions. Outside the US, comparable evidence has been documented in Japan by Cai and Loughran (1998), and in Hong Kong by Mathew (2002). However, the mentioned works do not compare firm performance across SEO type as this paper does. In a work that does, Capstaff and Fletcher (2011) study a sample of UK firms during 1996–2007 and conclude that rights offering firms are not of lesser quality than other offering methods. Our results not only support this conclusion but also add stronger conjectures – we find ample evidence of rights offering firms outperforming public offering firms in the long run.

This paper also joins the strand of literature on long-term post-SEO analysis of Korean firms. Dhatt *et al.* (1996) study a sample of Korean rights issuers and refute earlier works that conclude that the mentioned firms have positive abnormal returns post announcement. Both Kim and Byun (1998) and Yoon (1999) document negative long-term performance of SEO firms during a data period that precedes our study. Kim and Gong (2000) find that 3-year stock returns and operating performance following SEOs are inferior to those of non-SEO control firms. Mathew (2002) examines a sample of Korean SEOs to conclude that 36-month abnormal returns are insignificant with data from 1977 to 1992. Kim and Byun (2016) examine SEOs from 2001 to 2013 to find a positive relation between the change in largest shareholder ownership and 3-month BHARs. None of the cited work provides a detailed analysis between firms that employ rights issues from those choosing public offerings, which is a novel contribution of our research. This paper also complements the findings of Kim and Song (2020) who study the SEO method choice and short-term announcement returns according to flotation type, with long-run results corroborating their conclusion that rights issuers are of better quality than public offering firms.

3. Data

In Korea, firms deciding to float additional equity must disclose such information immediately after the board decision in the Data Analysis, Retrieval and Transfer System (DART) as stipulated by the Financial Supervisory Service (FSS). The information provided includes the issuance size and proposed issuance price (both of which may change during the offering process), the type of offering (public, rights or private), the planned use of proceeds etc. After the initial issue announcement, additional reports follow that list the actual number of shares issued, the issue price and the issue date. We hand-collect data on the SEOs (1,095 rights issues and 981 public offers) from September 2000 to December 2015 after we exclude financial firms and private placements from the sample [4]. Financial firms are heavily regulated by the government and private placements are done by regulatory requirements for distressed firms and thus are involuntary. To the hand-collected SEO data of the sample firms, we add stock return data and industry classification from FnGuide [5].

Monthly return data are used to calculate buy-and-hold-returns (BHRs) and relative returns in excess of various benchmarks. Monthly return data for individual stocks and the Korea Composite Stock Price Index (KOSPI) and Korean Securities Dealers Automated Quotations (KOSDAQ) are available from the FnGuide. The BHR is calculated from the month following the seasoned equity issuance, over 12-, 24- and 36-month horizons. The market-adjusted BHR is the BHR of the SEO firm less the return on its relevant index over the same measurement period. In computing the size-adjusted BHR, we compare the raw BHR to the corresponding period's return of a size-matched portfolio following Jegadeesh (2000) – the benchmark portfolio containing 10 firms closest to the SEO firm in terms of market capitalization at the end of the month preceding the additional equity flotation. We also measure matching-firm adjusted returns after Lyon *et al.* (1999) – the matching firm belongs to the same industry as the SEO firm and has the closest book-to-market ratio of equity from the set of firms that have 70%–130% of equity market capitalization of the SEO firm in the issuance year.

We also obtain other financial data needed in our study from the FnGuide. To control for industry effects, 2-digit Korea Standard Industry Code (KSIC) are used. *ROA*, our measure of profitability, is operating profits over total assets, adjusted for industry median values by fiscal year. *Sales/Assets*, the proportion of sales to total assets, is used to measure operating efficiency. *Investment* is the sum of R&D and cash flows from investment activities scaled by total assets, [6] *MB* (market-to-book ratio) is the market value of assets scaled by its book value measured at the beginning of the SEO year, and both variables are adjusted for industry-year medians. *IssueAmount* is the log of total issuance proceeds, and *FirmSize* is the log of total assets.

4. Empirical findings

We first present the descriptive statistics of the sample in Table 1. Panel A presents the number of SEOs by year and type, and Panel B exhibits the characteristics of the variables of interest. During the sample period of 2010–2015, the number of rights and public offers of seasoned equity are quite evenly distributed, which makes the Korean sample ideal to compare post-issue long-term performance of rights versus public offers. It is also interesting to see that the number of SEOs grew rapidly by 2009 and has experienced some slowdown subsequently. Specifically, the method of public offer was rarely used in 20th century, but it has been popular since 2000 [7]. In Panel B, we present the mean, standard deviation (SD), 25th percentile (Q1), median and 75th percentile (Q3) of each variable. All the variables are measured at the end of fiscal year before the seasoned equity issue, and market-to-book, investment and ROA are adjusted for their industry medians. SEO firms tend to have slightly higher market-to-book and investment ratios compared to industry medians, but they have lower ROA.

Panel A: Number of rights and public offerings by year

Year	Rights		Public		Total
2000	18	95%	1	5%	19
2001	72	85%	13	15%	85
2002	54	83%	11	17%	65
2003	94	70%	40	30%	134
2004	82	63%	48	37%	130
2005	136	59%	95	41%	231
2006	90	61%	57	39%	147
2007	112	61%	72	39%	184
2008	88	38%	145	62%	233
2009	101	35%	185	65%	286
2010	57	40%	87	60%	144
2011	37	34%	72	66%	109
2012	36	44%	45	56%	81
2013	41	53%	36	47%	77
2014	38	48%	42	53%	80
2015	39	55%	32	45%	71
Total	1,095	53%	981	47%	2,076

Panel B: Descriptive statistics

	N	Mean	SD	Q1	Median	Q3
Issue amount (KRW Billions)	2,076	13.49	34.61	1.90	5.05	11.47
Total assets (KRW Billions)	2,048	166.0	587.5	21.9	38.7	72.1
MB (*t*-1)	2,051	0.10	0.76	−0.27	−0.03	0.28
Investment (*t*-1)	2,055	0.06	0.29	−0.07	0.02	0.16
ROA (*t*-1)	2,057	−0.13	0.24	−0.18	−0.07	0
Sales/Assets (*t*-1)	2,056	0.84	0.65	0.42	0.72	1.07

Note(s): MB, investment and ROA are adjusted for their industry-year medians. Panel A reports the number of SEOs for the Rights and Public offering methods by year. Panel B presents characteristics of Rights and Public offerings of seasoned equity. *IssueAmount* and *TotalAssets* are in KRW billions and represent the sizes of the seasoned equity offering and the firm respectively. *MB* is the market-to-book ratio measured at the beginning of the SEO year, and *Investment* is the sum of R&D and cash flow from investment activities, scaled by total assets. *ROA* is operating profit scaled by total assets, and *Sales/Assets* is sales over total assets. The data cover SEOs from September 2000 to December 2015

Table 1.
SEOs sample overview

Stock return is one of the most important indicators of firm performance, which we investigate according to SEO type and report the results in Table 2. For alternative windows of 12, 24 and 36 months following the SEO month, we document that stock returns for both types are negative or underperform various benchmarks in Panel A, which is in line with prior evidence in the literature. The mean size-adjusted BHR for rights offering firms over 36 months after the issue is −14.7% while that for public offer firms is −42.2%. Our novel contribution is to show the significant difference between rights and public offering firms in Panel B – the stock returns of rights offering firms outperform those of public offering firms regardless of measurement horizon, whether the returns are benchmark adjusted or not. The mean size-adjusted return difference between the two types of firms over a 36-month window is 27.5%, and the difference in the mean market-adjusted BHR is 31.1%. The mean and median differences in the long-term stock returns after SEOs between the two subsamples are all significantly different at the 1% significance level.

The proportion of delisting firms subsequent to a seasoned equity offering is presented in Table 3 [8]. As presented in Panel A, we find that 149 firms are delisted within 12 months, 346 within 24 months and 498 within 36 months after the SEO, out of 2,057 sample firms. Panel B

Table 2.
Returns by SEO type and horizon

Panel A: Total sample

Offering type		*N*	12-Month		24-Month		36-Month	
			Mean	Median	Mean	Median	Mean	Median
Rights	BHR	1,090	−7.3%	−25.8%	−9.2%	−38.1%	−14.8%	−50.8%
	Market-Adjusted BHR		−9.9%	−23.7%	−16.8%	−39.6%	−23.9%	−46.8%
	Size-Adjusted BHR		−7.3%	−25.6%	−9.2%	−38.2%	−14.7%	−50.5%
Public	BHR	967	−22.2%	−45.2%	−28.6%	−71.6%	−42.3%	−85.2%
	Market-Adjusted BHR		−28.8%	−47.4%	−39.6%	−69.4%	−54.9%	−78.9%
	Size-Adjusted BHR		−22.2%	−45.3%	−28.5%	−71.3%	−42.2%	−84.9%

Panel B: Test of differences (rights-public)

	12-Month		24-Month		36-Month	
	Mean diff (*t*-value)	Median diff (*Z*-score)	Mean diff (*t*-value)	Median diff (*Z*-score)	Mean diff (*t*-value)	Median diff (*Z*-score)
BHR	14.9%*** (3.76)	19.4%*** (8.37)	19.3%*** (3.66)	33.5%*** (10.33)	27.5%*** (5.16)	34.4%*** (11.19)
Market-Adjusted BHR	18.9%*** (4.91)	23.7%*** (9.87)	22.7%*** (4.44)	29.8%*** (10.64)	31.1%*** (5.92)	32.1%*** (11.31)
Size-Adjusted BHR	14.9%*** (3.75)	19.7%*** (8.39)	19.3%*** (3.66)	33.1%*** (10.40)	27.5%*** (5.16)	34.4%*** (11.27)

Note(s): *** indicates statistical significance at the 1% level. This table reports the returns of SEO firms by offering type (Rights versus Public). BHR is measured from monthly returns, starting from the month subsequent to the SEO. The market-adjusted BHR is the BHR of the SEO firm less the return on its relevant index (KOSPI or KOSDAQ) over the same measurement period. The size-adjusted BHR is the raw BHR less the corresponding period's return of a size-matched portfolio after Jegadeesh (2000). The data cover SEOs from September 2000 to December 2015

Panel A: Total number of SEOs and delistings

Total number of SEOs	Number of delistings		% Delisted
2,057	Within 12 months	149	7.2%
	Within 24 months	346	16.8%
	Within 36 months	498	24.2%

Panel B: By offering type

Offering type	Number of SEOs	Number of delistings		% Delisted	Diff. in proportion test (*Z*-score)
Rights	1,090	Within 12 months	36	3.3%	
		Within 24 months	93	8.5%	
		Within 36 months	146	13.4%	
Public	967	Within 12 months	113	11.7%	7.32***
		Within 24 months	253	26.2%	10.67***
		Within 36 months	352	36.4%	12.16***

Panel C: By market

Market	Number of SEOs	Number of delistings		% Delisted	Diff. in proportion test (*Z*-score)
KOSPI	430	Within 12 months	22	5.1%	
		Within 24 months	52	12.1%	
		Within 36 months	66	15.4%	
KOSDAQ	1,627	Within 12 months	127	7.8%	1.91*
		Within 24 months	294	18.1%	2.95***
		Within 36 months	432	26.6%	4.82***

Panel D: By bond rating

Bond rating	Number of SEOs	Number of delistings		% Delisted	Diff. in proportion test (*Z*-score)
Rated	281	Within 12 months	3	1.1%	
		Within 24 months	25	8.9%	
		Within 36 months	33	11.7%	
Not Rated	1,776	Within 12 months	165	9.3%	4.68***
		Within 24 months	340	19.1%	4.18***
		Within 36 months	484	27.3%	5.57***

Table 3.
Number of delistings by SEO type and horizon

Note(s): * and *** indicate the statistical significance level at 10% and 1%. This table reports the number of SEOs for the Rights and Public offering methods, and the number of delistings by horizon and market. The data cover SEOs from September 2000 to December 2015

reports the test results of difference in proportions of delistings after rights versus public offers. We find that the percentage of firms delisted following a public offering is significantly higher than following a rights issue, with the numbers almost triple over all windows we check. This is consistent with our hypothesis and the findings in Kim and Song (2020) that higher quality issuers choose rights over public offerings. The differences according to market type are presented in Panel C, which is as expected since listing requirements for KOSPI present higher hurdles than those for KOSDAQ firms, but the divergence is not as striking as those between rights and public offerings. Panel D compares firms with and without rated debt, as bond credit ratings are an important source of information to the investor and can proxy for the degree of information asymmetry. In our sample firms, only a small fraction of firms have bond ratings (281 out of 2,057 firms), and the percentage of firms that delist are much lower than those without rated debt for all horizons we examine.

Although the subsample analyses show significant differences for each classification, the differences in the proportion of firms delisted are greatest for the rights/public issuance method. Within 36 months of issuance, 36.4% of public offering firms delist, compared to only 13.4% for rights issuers. Over the same period, 26.6% of KOSDAQ firms delist compared to 15.4% of KOSPI firms, and 27.3% of firms without rated debt delist whereas 11.7% with rated debt do. The size and statistical significance of differences is greatest for the classification according to equity flotation method, again providing evidence of the qualitative differences between the two types of SEO firms.

Where do the differences in stock performance stem from? Taking clues from the literature related to the operating performance of seasoned equity offering firms (e.g. Fu (2010)), we conduct mean and median difference tests for key variables – *Investment, ROA* and *Sales/Assets*, the two former variables adjusted for their industry-year medians (industry is defined with 2-digit KSIC codes). Table 4 tabulates the results, showing that there exist significant differences between firms choosing to float their equity through rights issues compared to those choosing public offers. While rights issue firms invest less (as a proportion of their assets) up to 3 years after the SEO, they outperform public offering firms in terms of *ROA* over all horizons that we investigate. Rights offering firms also show consistently higher ratio of sales to assets, suggesting that public offering firms invest more aggressively than rights offering firms but are not so efficient at turning them into sales and profitability.

To check the validity of this supposition, we follow with regression analyses in Table 5. Controlling for industry and year fixed effects, we find that the indicator variable *Rights* has statistically significant positive coefficients in all regressions with *ROA* as the dependent variable, supporting our conjecture that rights offering firms show better operating

Year relative to SEO	Rights		Public		Mean diff.	Median diff.
	Mean	Median	Mean	Median	(*t*-value)	(*Z*-score)
Panel A: Investment						
−1	0.0396	0.0095	0.0794	0.0242	−0.0399*** (−3.07)	−0.0147* (−1.92)
0	0.0942	0.0323	0.1263	0.0339	−0.0321** (−2.33)	−0.0016 (−0.31)
+1	0.0344	0	0.0772	0.0170	−0.0428*** (−3.32)	−0.0170*** (−2.83)
+2	0.0268	−0.0006	0.0514	0.0112	−0.0246* (−1.92)	−0.0118** (−1.99)
+3	0.0201	−0.0017	0.0541	0	−0.0340*** (−2.66)	−0.0017 (−1.32)
Panel B: ROA						
−1	−0.1064	−0.0440	−0.1603	−0.0929	0.0539*** (5.21)	0.0489*** (7.97)
0	−0.1084	−0.0500	−0.1768	−0.1057	0.0684*** (6.43)	0.0557*** (8.79)
+1	−0.1076	−0.0432	−0.1671	−0.0875	0.0594*** (4.83)	0.0443*** (6.22)
+2	−0.0922	−0.0391	−0.1177	−0.0733	0.0255*** (2.72)	0.0342*** (5.39)
+3	−0.0880	−0.0287	−0.1207	−0.0637	0.0327*** (2.63)	0.0350*** (5.46)
Panel C: Sales/Assets						
−1	0.8997	0.8126	0.7378	0.6124	0.1619*** (6.51)	0.2002*** (8.22)
0	0.7923	0.7251	0.6419	0.5262	0.1504*** (6.78)	0.1989*** (7.99)
+1	0.7974	0.7232	0.6482	0.5266	0.1493*** (6.22)	0.1966*** (7.00)
+2	0.7911	0.6928	0.6743	0.5653	0.1168*** (4.52)	0.1275*** (5.00)
+3	0.7998	0.7034	0.707	0.5602	0.0928*** (3.23)	0.1432*** (3.87)

Note(s): *, ** and *** indicate the statistical significance level at 10%, 5% and 1%. This table reports means and medians of selected variables for Rights and Public offers of seasoned equity, and tests of their differences. *Investment* is the sum of R&D and cash flow from investment activities, scaled by total assets. *ROA* is operating profit scaled by total assets, and *Sales/Assets* is sales over total assets. *Investment* and *ROA* are industry-median adjusted, where industry is classified by 2-digit KSIC (Korea Standard Industry Code). The data cover SEOs from September 2000 to December 2015

Table 4.
Mean and median difference tests

Table 5.
ROA and sales/assets regressions

Panel A: *ROA*

			ROA[*t*,*t*+3]			*ROA*(*t*+1)	*ROA*(*t*+2)	*ROA*(*t*+3)
Rights	0.098*** (5.04)	0.096*** (4.84)	0.098*** (5.29)	0.096*** (5.07)	0.057*** (2.78)	0.030*** (2.82)	0.016** (2.30)	0.024* (1.86)
MB		0.003 (0.21)		0.006 (0.38)	0.007 (0.50)	0.008 (1.08)	0.003 (0.42)	0.005 (0.68)
Investment			−0.040 (−0.96)	−0.044 (−0.90)	0.016 (0.33)	0.009 (0.19)	−0.034* (−1.69)	0.010 (0.69)
IssueAmount					0.005 (0.62)	−0.001 (−0.12)	0.006 (1.36)	0.000 (0.09)
FirmSize					0.021** (1.99)	0.014*** (2.85)	0.004 (0.73)	0.013*** (2.62)
ROA(t-1)					0.315*** (4.58)	0.235*** (4.28)	0.125*** (4.16)	0.063 (1.63)
Constant	−0.265*** (−30.52)	−0.264*** (−28.68)	−0.262*** (−35.03)	−0.261*** (−33.19)	−0.851*** (−5.08)	−0.433*** (−5.19)	−0.320*** (−2.84)	−0.416*** (−3.66)
Adj. *R*-Sq	0.105	0.105	0.109	0.109	0.182	0.154	0.069	0.046
N	1,225	1,221	1,221	1,217	1,217	1,244	1,232	1,219

Panel B: *Sales/Assets*

			Sales/Assets[*t*,*t*+3]			*S/A*(*t*+1)	*S/A*(*t*+2)	*S/A*(*t*+3)
Rights	0.281** (2.23)	0.300** (2.45)	0.279** (2.31)	0.299** (2.54)	0.376*** (3.33)	0.150*** (4.23)	0.126*** (3.89)	0.104** (2.01)
MB		−0.228*** (−3.92)		−0.217*** (−3.22)	−0.186** (−2.56)	−0.053*** (−2.58)	−0.053*** (−2.68)	−0.082** (−2.30)
Investment			−0.349** (−1.97)	−0.218 (−1.06)	−0.076 (−0.43)	−0.039 (−0.53)	−0.009 (−0.14)	−0.052 (−0.97)
IssueAmount					−0.088* (−1.95)	−0.043*** (−2.92)	−0.024 (−1.40)	−0.009 (−0.44)
FirmSize					0.119* (1.86)	0.050** (2.19)	0.034* (1.94)	0.030 (1.45)
Constant	2.229*** (34.64)	2.239*** (36.56)	2.252*** (44.07)	2.249*** (46.20)	1.217 (1.04)	0.433 (0.82)	0.411 (1.22)	0.235 (0.54)
Adj. *R*-Sq	0.154	0.165	0.152	0.162	0.165	0.134	0.139	0.143
N	1,224	1,220	1,220	1,216	1,216	1,243	1,232	1,219

Note(s): *, ** and *** indicate the statistical significance level at 10%, 5% and 1%. This table reports regression results of industry-median adjusted *ROA* (operating profit over total assets) and *Sales/Assets* (sales over total assets) during year [*t*,*t*+3] with regard to the seasoned equity offering year. *Rights* is an indicator variable that equals 1 if the SEO type is a rights offering, and 0 otherwise. *MB* is market-to-book ratio of assets, *Investment* is the sum of R&D and cash flow from investment activities scaled by total assets, *IssueAmount* is the log of SEO proceeds, and *FirmSize* is the log of total assets. *MB* and *Investment* are adjusted for industry medians, where industry is classified by 2-digit KSIC (Korea Standard Industry Code). The data covers SEOs from September 2000 to December 2015. Industry and year fixed effects are included, and double-clustered *t*-statistics are reported beneath the coefficients in parentheses

performance following SEOs than public offering firms. Controls include *FirmSize* and *IssueAmount*, *MB* and *Investment*. To control for initial differences in profit generating ability, lagged *ROA* is also included. The coefficients for *Rights* are also all positive for those regressions with *Sales/Assets* as the dependent variable in a similar setup.

Last, but not least, we address the selection issue of firms choosing a certain method over another in their seasoned equity flotation decision. Following the matching methodology of Lyon *et al.* (1999), we choose a control firm in the same industry as the SEO firm. KSIC 1-digit codes are used in this analysis to increase the number of firms being matched. The control firm has the closest book-to-market ratio of equity from the set of firms that have equity market capitalization of more than 70% and less than 130% than that of the SEO firm at the beginning of the issuance year. Measuring cumulative returns over 12-, 24- or 36-month windows, we adjust the stock returns of SEO firms by the corresponding period's matching firm returns.

Comparisons of matching-firm adjusted returns between rights offering firms and public issuance firms are shown in Table 6. Panel A presents results for the entire sample and again confirms the overall picture of SEO firms that float equity through rights offerings showing superior (or less negative) benchmark-adjusted returns compared to those that float their equity publicly. Mean and median difference tests are statistically significant for all measurement windows that we check. Panel B and Panel C show results by subsets of KOSPI and KOSDAQ firms, respectively, and confirm that the results are not driven by a particular

SEO type	Number of SEOs	Return period	*N*	Mean	Median	Mean Diff. (*t*-stat)	Median Diff. (*Z*-score)
Panel A: Total sample							
Rights	1,090	12 months	994	−24.4%	−22.8%		
		24 months		−46.6%	−33.7%		
		36 months		−62.2%	−39.9%		
Public	967	12 months	818	−44.7%	−43.4%	20.2%*** (4.64)	20.6%*** (5.70)
		24 months		−61.4%	−55.3%	14.8%** (2.24)	21.6%*** (4.05)
		36 months		−80.1%	−52.1%	17.8%** (2.28)	12.2%*** (2.94)
Panel B: KOSPI							
Rights	277	12 months	249	−10.4%	−18.0%		
		24 months		−34.3%	−31.5%		
		36 months		−52.6%	−29.1%		
Public	153	12 months	140	−48.2%	−46.9%	37.8%*** (3.68)	28.9%*** (3.74)
		24 months		−64.6%	−67.1%	30.2%** (1.97)	35.6%*** (3.02)
		36 months		−70.2%	−64.9%	17.6% (0.98)	35.9%** (2.21)
Panel C: KOSDAQ							
Rights	814	12 months	745	−29.3%	−26.4%		
		24 months		−50.7%	−33.9%		
		36 months		−65.4%	−42.3%		
Public	813	12 months	678	−44.0%	−43.3%	14.7%*** (3.07)	16.9%*** (4.34)
		24 months		−60.7%	−52.8%	10.0% (1.37)	18.8%*** (2.87)
		36 months		−82.1%	−48.9%	16.7%* (1.91)	6.6%** (1.98)

Note(s): *, ** and *** indicate the statistical significance level at 10%, 5% and 1%. This table reports the matching-firm adjusted returns of SEO firms by offering type (Rights versus Public). Matching firms are selected following Lyon *et al.* (1999) as a firm that has the closest B/M ratio of equity with market equity capitalization of 70–130% of the SEO firm in the issuance year. The matching firm belongs to the same industry as the SEO firm as classified by 1-digit KSIC (Korea Standard Industry Code). Panel A presents mean and median tests of return differences for the whole sample, Panel B for KOSPI firms and Panel C for KOSDAQ firms. The data cover SEOs from September 2000 to December 2015

Table 6. Matching-firm adjusted returns by SEO type and horizon

market. However, the sizes of the differences are larger in the KOSPI subsample than in the KOSDAQ subsample.

5. Conclusion

We present new evidence on the differences between long-term performance of seasoned equity offering firms choosing the rights or public offering methods. In line with existing models that stipulate that better quality firms choose rights offerings, we document that stock returns of public offering firms are inferior to those of rights offering firms, which is robust to controlling for market, a size-based portfolio or matching firm returns. A larger proportion of public offering firms delist subsequent to floating additional equity, and the difference in proportions by offering method is greater than when tested by market or degree of information asymmetry. In addition, we show operating performance following SEOs for rights offering firms are superior to those of public offering firms. Although the proportion of investment to assets is higher for public offering firms than for rights offering firms, post-issuance performance measured by ROA and Sales/Assets is higher for the latter group, suggesting that public offering firms are not very efficient at turning investment into profitability or sales.

Notes

1. Refer to Ritter (2003) for the summary of literature on securities issuance.
2. For details regarding the SEO process and short-term announcement returns, refer to Kim and Song (2020).
3. We lose some observations when measuring return, which reduces our sample size to 2,057 (1,090 rights issues and 967 public offers).
4. The Korean sample is used in the study of short-term announcement effects of SEOs by Kim and Song (2020).
5. FnGuide is the leading provider of financial market data in South Korea.
6. We take the negative of cash flows from investment (a positive number indicates cash inflow, and a negative number indicates investment expense) and add to R&D expenses when calculating this variable.
7. Refer to Kim and Song (2020).
8. A stock is considered delisted if price data are discontinued in FnGuide.

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