Investor recognition, liquidity, and post-issue performance following rights offerings: Evidence from a frontier market

Eswaran Velayutham
School of Commerce, University of Southern Queensland, Australia

Abstract

This paper examines changes in investor recognition and liquidity around rights offerings in a frontier market, viz., Sri Lanka. We find that offer characteristics such as issue proceeds and offer price discounts improve investor recognition. We find that larger offer price discounts and offer proceeds are associated with increases in investor recognition. Further, we find that announcements of rights issues reduce information asymmetry and as a result, liquidity improves in the post rights issue announcement period. In addition, we find a strong positive association between liquidity improvements and increases in investor recognition. Finally, we find that greater investor recognition is negatively associated with contemporaneous and post-issue abnormal stock returns, whereas increases in liquidity are positively associated with post-issue abnormal returns. Overall, we show that rights issues in a frontier market affect both investor recognition and liquidity

Keywords - *Investor recognition, stock market liquidity, post-issue performance, rights offerings*

1. Introduction

Merton (1987) posits that investors know only about a fraction of available securities and that investors use incomplete information when they make investment decisions. Therefore, they do not include stocks with a lack of information in their portfolios. Hence, they require an expected return premium as compensation for bearing this source of idiosyncratic risk. Merton terms this as a shadow cost of incomplete information, which is inversely related to the degree of investor recognition for a particular security. Autore and Kovacs (2014) study changes in investor recognition around seasoned equity offerings (SEOs) and find that investor recognition improves for issues that pay higher underwriting costs. We contribute to this literature by examining the changes in investor recognition around rights offerings in a frontier market.

Prior work based on the US market suggests that investment banks provide marketing services for firms making SEOs and that the level of marketing service provided is higher for firms paying higher underwriting costs. Thus after issuing SEOs firms experience a decrease in shadow cost of incomplete information resulting in increased awareness. We contribute to the literature by examining the rights issues of equity. To the best of our knowledge, no prior studies have considered the impact of rights issues on investor awareness. While SEO sare associated with an explicit marketing mandate, rights issues are not accompanied by a concomitant marketing effort. This is because rights offers are targeted at existing shareholders and not new shareholders as in SEOs. We argue that although rights offers are not associated with marketing campaigns, they nevertheless increase investor awareness. This is due to two factors. First, most firms advertise rights issues through newspapers. One of the outcomes of advertising is to increase the awareness of non-shareholders. The second factor that results in increasing the awareness of investors is the offer price discount. deeper discounts provide investors an opportunity to purchase the shares at a price below the current market price. This attractive prospect triggers investor research resulting in an eventual increase in investor awareness.

Extant research provides evidence consistent with the view that liquidity increases in the post-SEO issuance period due to the reduction in information asymmetry and the expansion of the trading base. He, Wang and John (2014) conduct a comprehensive study of liquidity changes following SEOs in the US market and find evidence confirming the improvement in liquidity following SEO events. Bilinski, Liu and Strong (2012) study the sources of liquidity improvements following SEOs and observe that analyst following and institutional shareholding increase after SEO events. We extend this work to a frontier market setting in the context of rights issues.

Frontier markets are less developed than emerging markets and are relatively small and illiquid (Marshall, Nguyen & Visaltanachoti 2013). Further, they have low integration with the world market and offer diversification benefits through risk-reducing potential (Berger, Pukthuanthong & Yang 2013; Berger, Pukthuanthong & Jimmy Yang 2011). Extending earlier work to a frontier market setting is our primary contribution. Firstly, we investigate whether firm's rights offer

characteristics are associated with investor recognition. Secondly, we compare pre to post rights offering announcements stock market liquidity. Thirdly, find the determinants of improvement of stock market liquidity. Finally, we examine the impact of increases (decreases) in investor recognition and stock market liquidity on post-announcement abnormal returns.

The rest of the research is structured as follows. In the next section, we briefly preview the literature and provide testable hypotheses. Section 3 describes the data and the measurement of variables. In section 4, we discuss our empirical results. Our concluding comments are provided in the last part.

2. Hypothesis Development

A number of existing studies provide empirical evidence regarding the impact of SEO issuance on investor recognition and liquidity. Autore and Kovacs (2014) suggest that investment banks provide marketing services for firms making SEOs and that the level of marketing service provided is higher for firms paying higher underwriting costs. Since SEOs are associated with an explicit marketing mandate, after issuing SEOs firms are expected to experience an increase in investor awareness. Richardson, Sloan and Haifeng (2012) find a positive association between equity offering investment and investor recognition. Pinto (2015) examines the role of investor recognition around seasoned equity offerings' outcomes. Author uses news articles and third-party volume of newswires as a proxy for investor recognition. He finds that investor recognitionis positively and significantly associated with firms' offer price discounts. However, rights issues are not accompanied by a concomitant marketing effort as they are targeted at existing shareholders and not new shareholders. We argue that rights offerings increase investor awareness. First, firms issuing rights offers advertise the issuance in newspapers, increasing the awareness of non-shareholders. Second, offer price discounts, especially deep discounts provide investors an opportunity to purchase the shares at a price below the current market price. This attractive feature of rights issues triggers investor research resulting in an eventual increase in investor awareness. In line with our arguments, we therefore posit:

H1: Rights issues are associated with increases in investor recognition.

H2: Higher offer price discounts are associated with greater increases in investor recognition, ceteris paribus.

Ding and Hou (2014) argue that when

individual investors actively search for a firm using Google, they acquire more relevant information about that firm, which mitigates information asymmetry. As a result, liquidity improves for this stock with better investor recognition. The extent of information asymmetry is greater in frontier markets than in developed markets. Since prospectus is issued in rights offerings, which provide more information about the firm information asymmetry problem is mitigated, generating more trading activity. If active investors buy the stock and subscribe to the rights issue liquidity is expected to increase.

We therefore hypothesize:

H3: The announcement of rights offering improves stock market liquidity, ceteris paribus.

Bodnaruk and Ostberg (2009) find that firms with low levels of investor recognition offer significantly larger returns than high-investor recognition firms using Swedish firms. Using Merton's (1987) investor recognition model, Lehavy and Sloan (2008) show that a positive relationship between security value and investor recognition changes whereas a negative association between future stock returns and investor recognition changes. Pinto (2015) finds that investor changes in recognition are negatively and significantly related to cumulative abnormal returns around offerings. Hence, we expect:

H4: Increases (decreases) in investor recognition have a negative (positive) impact on contemporaneous and post announcement abnormal stock returns.

These hypotheses are tested in a frontier market viz., Sri Lanka.

3. Data and measurement of variables

3.1 The Stock Market in Sri Lanka

The stock exchange in Sri Lanka has a long history. The Colombo Share Brokers Association was started by the British in 1896 in order to finance tea plantations. The current Colombo Stock Exchange was incorporated in 1990 (Deyshappriya 2014). FTSE, MSCI, Standard & Poor, Dow Jones, Russell, classify the Sri Lankan stock market as a frontier market. Frontier markets are a subgroup of frontier markets, which have lower market capitalization and liquidity as compared to the more developed frontier markets (Armitage, Brzeszczyński & Serdyuk 2014). Sri Lanka is characterized by a lack of analyst forecast data and institutional traders leading to high information asymmetry.

3.2 Rights Issues in Sri Lanka

Public firms listed on Colombo Stock Exchange (CSE) raise money by issuing shares to existing shareholders by way of rights issue and capitalization of reserves. In U.S. rights offering are disappearing but in frontier markets, particularly Sri Lanka, rights offering is a key method to raise finance. A rights offering is one of the seasoned equity methods in Sri Lanka. In a rights offering, firms give existing shareholders the right to buy new shares at a specified price on a pro rata basis. In a capitalization of reserves issue, firms convert their retained earnings to capital, which involves issuing shares to existing shareholders by their existing shareholding, similar to a rights issue. We use rights offerings and capitalization of reserves interchangeably with rights offerings or rights issues. Shareholder approval for the rights offerings of shares must be obtained at a General Meeting. The CSE listing rules require that public announcement by a firm of right offerings must first be made to the CSE. The announcement of rights offerings by a firm listed on the CSE must contain the following information about the issues.

(i) The number of shares to be issued
(ii) The proportion in which the shares are to be offered
(iii) The consideration for which the shares are to be issued
(iv) At the General Meeting, the issuing firm must get approval from its shareholders to list and issue shares.

Usually, rights offerings are valuable because the subscription price for rights offering shares is set at a discount to the current market price.

3.3 Sample selection and data

Rights issue announcements are collected from the CSE Data Library database and the CSE website. Share price data is adjusted for dividends. Data on CSE all ordinary share indexes, security prices, volume, ask price, bid price, market values, and all other liquidity proxies are collected from the DataStream database. The number of shareholders is obtained from annual reports of respective companies and the annual reports are available on the CSE database, companies' websites and ORBIS Bureau van Dijk database. All other financial data are collected from the DataStream, ORBIS database, and companies' annual reports. We identify 129 rights offerings in public listed firms in Sri Lanka during 2008 to 2013 period.

3.4 Variable measurement

3.4.1 Investor recognition

Merton defines investor recognition of stock as the fraction of investors who know about the stock. It is hard to

observe how many investors know about a particular stock in the market. Following Autore and Kovacs (2014), we adopt the total number of shareholders post and pre-rights issue announcements as a shareholder base. Investor recognition around rights offering is measured using the idiosyncratic risk, relative market capitalization, and the number of total shareholders using the following equation. This equation provides a measure of changes in investor recognition.

$$\Delta\text{Investor recognition} = \left(\frac{IDYRISK_{post}*RELMKTCAP_{post}}{NSHOLDERS_{post}} - \frac{IDYRISK_{pre}*RELMKTCAP_{pre}}{NSHOLDERS_{pre}}\right) *1{,}000{,}000 \ldots (1)$$

IDYRISKpost is the idiosyncratic risk measured from daily returns over the period from day 1 to day 60 following the first fiscal year-end after the rights issue date, and IDYRISKpre is the idiosyncratic risk measured from daily returns over the period 60 days prior to the rights issue announcement date. RELMKTCAPpost denotes that the market capitalization of issuing firms divided by the sum of the market value of all stock available on CSE, calculated at the end of the first fiscal year-end following the rights issue. RELMKT CAPpost represents the firm's market capitalization divided by the sum of the market value of all stock available on CSE, calculated on the prior to the rights issue. NSHOLDERSpost and NSHOLDERSpre equal the total number of shareholders at the first fiscal year-end the rights offering date and the end of themost recent fiscal year prior to the rights offerings respectively. Due to the way it is measured, an increase (decrease) in ΔInvestor recognition is interpreted as lower (improved) investor recognition.

3.4.2 Measuring liquidity

We adopt two liquidity proxies such as bid-ask spread, and proportion of no-trading days.

Bid-ask spread

We estimate the proportion of bid-ask spread using equation (2).

$$\text{Bid-ask spread} = (Ask_{i,t} - Bid_{i,t})/((Ask_{i,t} - Bid_{i,t})/2) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where Aski, t daily ask price of a particular stock, Bidi, t daily bid price of a particular stock.

Proportion of no-trading days

The ratio of no-trading days is another liquidity measure, which is more

frequently used liquidity proxy in illiquid markets. The ratio of no-trading days is defined as the ratio of the number of days with notrading days over a given period (Armitage, Brzeszczyński & Serdyuk 2014). We measure the proportion of no-trading days using equation (3).

$$\text{Proportion of no-trading days} = \frac{Number\ of\ no\text{-}trading\ days}{Number\ of\ trading\ days} \quad \ldots\ldots(3)$$

3.4.3 Contemporaneous abnormal stock returns

We estimate the contemporaneous abnormal stock returns using the market model over the period between the rights issue announcement date to the rights issue ex-date.

3.4.4 Post abnormal stock returns

We measure the post abnormal stock returns over one-year using buy-and-hold returns (BAHR) from the rights issue ex-date to one year after.

4. Empirical Results

We winsorize all the continuous variables at the 1st and 99th percentiles to alleviate potential problems associated with extreme outliers. In Table 1, we compare stock market liquidity proxies, shadow cost of incomplete information, the number of shareholders between pre-and post-rights issue announcement periods. The liquidity proxies, effective bid-ask spread and proportion of no-trading days, are widely used in the existing literature in emerging markets (Armitage, Brzeszczyński & Serdyuk 2014; Marshall, Nguyen & Visaltanachoti 2013; Kang & Zhang 2014). Our comparisons indicate statistically significant reductions in mean and median of effective bid-ask spread measure. The Wilcoxon matched -pair signed-ranks (WSR) non-parametric test statistics point out that difference is statistically significant at the 1% level for all time horizons. We find the same effect for the other liquidity measure, the proportion of no-trading days. We also find that shadow cost of incomplete information for pre-and post-rights issue announcements are statistically significant at the 1% level. The decline in shadow cost in the post-announcement period implies an improvement in investor recognition. This finding supports hypotheses H1 and H3.

Table 1: Pre-versus post comparisons around rights issue

		Pre announcement one year before	Post Announcement one year after	WSR test
BIDASK	Mean%	7.43	5.85	3.78***
	Median%	5.56	5.21	
Proportion of no-trading days	Mean%	21.34	14.14	6.23***
	Median%	13.85	10.00	
Shadow cost of incomplete information	Mean%	5.19	3.94	3.67***
	Median%	1.37	1.12	
Number of shareholders	Mean	3652	4147	6.25***
	Median	1850	2521	

Table 2 provides comparisons pre-to post rights issue announcement of bid-ask spread and no-trading days over a given period. BIDASK is the percentage of average daily bid and ask closing price over a one year period. Proportion of no-trading days is the percentage of average number of zero-trading days over a one year period. Shadow cost of incomplete information is calculated as ((IDYRISK*RELMKTCAP)/NSHOLDERS)*1000,000. .***, **, * indicate significance at the 1%, 5% and 10% levels respectively.

Table 2 reports the descriptive statistics of the variables used in this study. We provide mean and median values of all sample firms categorized based on changes in investor recognition scores obtained by using equation (1). Firms with an investor recognition score lower than themedianare classified as high investor recognition and those with a score higher than the median are the low investor recognition group. We perform Mann-Whitney non-parametrictest to check the statistical significance of median differences between the two groups of firms. It is observed that firms with an investor recognition score lower than the median (high investor recognition firms) have higher issue price, offer proceeds, and offer price discount and lower stock return volatility, turnover, and relative size, as compared to the firms with low investor recognition. Mann-Whitney (MW) non-paramet ric test shows that all variables except run-up differ significantly between two groups of firms.

Table: 2 Descriptive statistics

		All Firms	ΔInvestor recognition		MW test
			High (low scores)	Low (High Scores)	
ISSUE PRICE	Mean	43.24	55.78	30.50	3.30***
	Median	20.00	40.00	15.00	
PROCEEDS (in million Sri Lankan Rupees)	Mean	797.40	1124.22	465.48	2.27**
	Median	299.79	365.40	246.17	
RATIO	Mean	0.70	0.64	0.75	2.28**
	Median	0.33	0.25	0.40	
DISC	Mean%	42.67	48.35	36.90	2.07**
	Median%	38.20	42.31	35.09	
RUNUP	Mean%	68.40	67.88	68.93	0.07
	Median%	64.93	57.77	74.96	

STDV	Mean% Median%	14.38 13.33	12.61 11.34	16.17 13.69	2.67***
TURNOVER	Mean% Median%	30.09 10.80	20.93 6.99	39.53 24.73	3.63***
Contemporaneous abnormal stock returns	Mean% Median%	-12.47 -13.61	-13.89 -11.87	-11.02 -15.93	0.10
Daily contemporaneous abnormal stock returns	Mean% Median%	-0.27 -0.27	-0.29 -0.24	-0.24 -0.31	0.05
BAHR (year - 1)	Mean% Median%	30.20 -2.83	3.36 -10.71	57.46 10.98	2.97***

Table 1 reports descriptive statistics. ISSUE PRICE is the price at which the rights issue shares are offered to shareholders. PROCCEDS is the size of the rights issue measured by number of shares issued multiplied by rights issue price. RATIO is the allocation of new shares relative to the old shares. DISC is the offer price discount, defined as (1 – rights issue price/ share price two days prior to the rights issue announcement date).RUNUP is the raw return for the one-year period prior to the announcement date (return from -260 to day -2). STDV is the standard deviation of return for the one-year period prior to the announcement date (return from -260 to day -2).TURNOVER is the daily volume is divided by number shareholders for one –year period to the announcement date.Contemporaneous abnormal stock returns is calculated as using market model over the period between the rights issue announcement date to the rights issue ex-date. Daily contemporaneous abnormal stock returns is calculated as using market model over the period between the rights issue announcement date to the rights issue ex-date and divided by number of days between two dates. BAHR (year -1) is the buy-and hold returns over one year period from rights issue effective date and one year after. .***, **, * indicate significance at the 1%, 5% and 10% levels respectively.

Table 3: The effect of rights issue characteristics on investor recognition

Model	**1**	**2**	**3**	**4**	**5**
Constant	0.0448 (1.22)	0.0829 (2.26)**	0.0714 (1.97)*	0.0453 (1.35)	0.0329 (0.93)
LNPRICE	-0.0037 (-0.78)	0.0003 (0.06)	0.0017 (0.36)	-0.0004 (-0.10)	-0.0001 (-0.03)
LNPROCEEDS	-0.0057 (-1.26)	-0.0123 (-2.58)***	-0.0103 (-2.23)**	-0.0084 (-1.99)**	-0.0062 (-1.43)
RATIO	0.0014 (0.22)	0.0127 (1.82)*	0.0059 (0.93)	0.0091 (1.48)	0.0038 (0.62)
DISC	-0.0859 (-3.95)***	-0.0702 (-3.30)***	-0.0738 (-3.46)***	-0.0621 (-3.01)***	-0.0655 (-3.02)***
RUNUP	0.0018 (0.16)	0.0002 (0.02)	-0.0040 (-0.34)	0.0021 (0.19)	-0.0059 (-0.51)
STDV	0.1576 (2.08)**	0.1976 (2.69)***	0.1903 (2.57)**	0.1526 (2.19)**	0.2185 (2.91)***
TURNOVER	0.0104 (0.84)	0.0011 (0.09)	0.0051 (0.43)	0.0017 (0.15)	0.0086 (0.73)
BIDASK (year-1)		-0.3675 (-3.42)***			
Proportion of no-trading days (year -1)			-0.1098 (-3.08)***		
ΔBIDASK				0.7771 (4.62)***	
ΔProportion of no-trading days					0.0013 (3.30)***
Year fixed effect	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.1224	0.2015	0.1861	0.2613	0.1960
F-statistics	1.93	2.60	2.45	3.25	2.55
P-value	0.0184	0.0009	0.0017	0.0000	0.0011
N	129	129	129	129	129

This table provides the results for the multiple regression analysis. The dependent variable for all models ischanges in investor recognition. Dependent variables:LNPRICE is the logarithm of rights issue share price. LNPROCEEDS is natural logarithm of offer proceed in million rupees.RATIO is the allocation of new shares

relative to the old shares. DISC is the offer price discount, defined as (1 – rights issue price/ share price two days prior to the rights issue announcement date). RUNUP is the raw return for the one-year period prior to the announcement date (return from -260 to day -2). STDV is the standard deviation of return for the one-year period prior to the announcement date (return from -260 to day -2). TURNOVER is the daily volume is divided by number shareholders for one –year period to the announcement date. BIDASK (year -1) is proportionate of bid-ask spread forone-year period prior to the announcement date. Proportion of no-trading days (year – 1) is measured as the proportion of the number of days with zero days to the total number of trading days for the one-year period prior to the announcement date. ΔBIDASK is the post-to pre issue change in the ratios of average daily bid and ask closing price over a one year period. ΔProportion of no-trading days is post minus proportion of no-trading days the over one year periods.***, **, * indicate significance at the 1%, 5% and 10% levels respectively.

Table 3 reports the results of multiple regressions of the explanatory variables of rights issue characteristics and other variables on the changes in investor recognition. We also include the year and industry fixed effects to control for the possibility of the year and industry-specific patterns. In model 1, we examine the impact of rights offering characteristics on changes in investor recognition. More specifically, we find that the coefficient of the offer price discount is negative and significant, indicating that firms that offer larger rights offerprice discounts experience significant increases in investor recognition. This finding supports hypothesis H2. We also find a significant positive coefficient of the stock return volatility. It suggests that firms with lower risk are more likely to experience increases in investor recognition. In models 2 to 5, we investigate the stock market liquidity effects on investor recognition. We find a negative and significant coefficient of both stock market liquidity proxies of the effective bid-ask spread and the proportion of no-trading days prior to the rights offering for a period of one year. It implies that firms with improved liquidity enjoy significantly improved investor recognition. These results are consistent with previous findings of Autore and Kovacs (2014) and Ding and Hou (2014).

Table 4 presents the results of the determinants of improvement in liquidity. Larger offer price discounts are associated with improved stock market liquidity. This finding suggests that rights issue firms offering larger price discounts experience improved liquidity.

Table 4: The determinants of changes in of liquidity

	ΔBIDASK	ΔZERO
Constant	-0.0593 (-0.03)	8.9172 (1.07)
LNPRICE	-0.4126 (-1.67)	-2.6276 (-2.46)**
LNPROCEEDS	0.3444 (1.44)	0.3642 (0.35)
RATIO	-0.9972 (-2.94)***	-1.8245 (-1.25)
DISC	-3.0628 (-2.69)***	-15.2095 (-3.09)***
RUNUP	-0.0298 (-0.05)	5.7716 (2.15)**
STDV	0.6427 (0.16)	-45.3599 (-2.64)***
TURNOVER	1.1275 (1.74)	1.3302 (0.48)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
Adjusted R^2	0.2266	0.1808
F-statistics	2.96	2.47
P-value	0.0002	0.0018
N	129	129

This table provides the results for the multiple regression analysis. The dependent variables for models 1 and 3: the contemporaneous abnormal stock returns using market model over the period between the rights issue announcement date to the rights issue ex-date. Models 2 and 4: the daily contemporaneous abnormal stock returns using market model over the period between the rights issue announcement date to the rights issue ex-date divided by the number of days between announcement dates to ex-date.Dependent variables:LNPRICE is the logarithm of rights issue share price. LNPROCEEDS is natural logarithm of offer proceed in million rupees.RATIO is the allocation of new shares relative to the old shares. DISC is the offer price discount, defined as (1 – rights issue price/ share price two days prior to the rights issue announcement date).RUNUP is the raw return for the one-year period prior to the announcement date (return from -260 to day -2). STDV is the standard deviation of return for the one-year period prior to the announcement date (return from -260 to day -2). TURNOVER is the daily volume is divided by number shareholders for one –year period to the announcement date. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively

In Table 5, we present results of regressing contemporaneous stock returns on changes in investor recognition and other control variables. We find a significant positive effect of changes in investor recognition on contemporaneous returns. This finding implies that increases in investor recognition lead to lower contemporaneous stock returns around the rights offering. These results are consistent with Merton (1987) and Autore and Kovacs (2014) who suggest improved investor recognition as a partial explanation for the SEO stock underperformance anomaly. This finding offers empirical support for hypothesis H4.

Table 5: Seemingly unrelated regressions (SUR)

	ΔInvestor recognition	ΔProportion of no-trading days
Constant	0.0229 (0.71)	3.2668 (0.45)
ΔProportion of no-trading days	0.0025 (6.90)***	
ΔInvestor recognition		126.0239 (6.90)***
LNPRICE	0.0028 (0.66)	-2.1671 (-2.32)**
LNPROCEDDS	-0.0066 (-1.66)*	1.0870 (1.19)
RATIO	0.0059 (1.03)	-2.0010 (-1.56)
DISC	-0.0486 (-2.46)**	-4.3805 (-0.95)
RUNUP	-0.0123 (-1.17)	5.5397 (2.36)**
STDV	0.2690 (3.93)***	-65.2267 (-4.25)***
TURNOVER	0.0072 (0.66)	0.0158 (0.01)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
R2	0.2750	0.3232
Chi2	95.61	109.07
P-value	0.0000	0.0000
N	129	129

This table provides the results for the seemingly unrelated regression. The dependent variables are ΔInvestor recognition and ΔProportion of no-trading days. Independent variables:ΔInvestor recognition is changes in investor recognition. ΔProportion of no-trading days is post minus proportion of no-trading days the over one year periods.LNPRICE is the logarithm of rights issue share price. LNPROCEEDS is natural logarithm of offer proceed in million rupees. RATIO is the allocation of new shares relative to the old shares. DISC is the offer price discount, defined as (1 – rights issue price/ share price two days prior to the rights issue announcement date. RUNUP is the raw return for the one-year period prior to the announcement date (return from -260 to day -2). STDV is the standard deviation of return for the one-year period prior to the announcement date (return from -260 to day -2). TURNOVER is the daily volume is divided by number shareholders for one –year period to the announcement date. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively.

Table 6 provides results of the impact of changes in investor recognition and liquidity on the post-issue abnormal returns. We find a significant positive co efficient of changes in investor recognition. It implies that higher increases in investor recognition lead to lower post-announcement abnormal stock return around rights offering. These results are consistent with Merton (1987) and Autore and Kovacs (2014). Moreover, we find that the coefficient of

the proportion of no-trading days is negative and significant suggesting that rights offering firms with greater liquidity experience an increase in post-announcementabnormal stock returns.

Table 6: Changes in investor recognition on contemporaneous abnormal stock return

Model	1	2	3	4
Constant	-0.1921 (-1.54)	-0.0053 (-2.07)**	-0.0333 (-0.24)	-0.0015 (-0.55)
ΔInvestorrecognition	1.3255 (3.12)***	0.0302 (3.48)***	0.9475 (2.41)**	0.0213 (2.72)***
Δproportion of no-trading days	-0.0042 (-2.27)**	-0.0001 (-2.25)**	-0.0022 (-1.31)	-0.0001 (-1.55)
LNPRICE	0.0551 (2.88)***	0.0011 (2.79)***	0.0544 (2.89)***	0.0011 (2.83)***
LNPROCEEDS	-0.0145 (-0.77)	-0.0001 (-0.37)	-0.0165 (-0.93)	-0.0003 (-0.76)
RATIO	0.0396 (1.47)	0.0006 (1.00)	0.0437 (1.74)*	0.0006 (1.27)
DISC	-0.0116 (-0.12)	0.0007 (0.36)	0.0273 (0.30)	0.0010 (0.54)
RUNUP	-0.0418 (-1.15)	-0.0008 (-1.06)	-0.1860 (-3.98)***	-0.0035 (-3.75)***
STDV	-0.0472 (-0.14)	0.0000 (0.00)	0.2938 (0.94)	0.0079 (1.27)
TURNOVER	-0.0699 (-1.30)	-0.0009 (-0.85)	-0.0801 (-1.67)*	-0.0012 (-1.24)
Year fixed effect	No	No	Yes	Yes
Industry fixed effect	No	No	Yes	Yes
Adjusted R^2	0.1452	0.1345	0.3398	0.3505
F-statistics	3.40	3.19	4.27	4.43
P-value	0.0010	0.0017	0.0000	0.0000
N	128	128	128	128

This table provides the results for the multiple regression analysis. The dependent variables for model 1 and 3: the contemporaneous abnormal stock returns using market model over the period between the rights issue announcement date to the rights issue ex-date, model 2 and for the daily contemporaneous abnormal stock returns using market model over the period between the rights issue announcement date to the rights issue ex-date divided by the number of days between announcement date to ex-date. Independent variables:LNPRICE is the logarithm of rights issue share price. LNPROCEEDS is natural logarithm of offer proceed in million rupees. RATIO is the allocation of new shares relative to the old shares. DISC is the offer price discount, defined as (1 – rights issue price/ share price two days prior to the rights issue announcement date. RUNUP is the raw return for the one-year period prior to the announcement date (return from -260 to day -2). STDV is the standard deviation of return for the one-year period prior to the announcement date (return from -260 to day -2). TURNOVER is the daily volume is divided by number shareholders for one –year period to the announcement date. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively.

Robustness test

To account for the fact that changes in investor recognition and changes in liquidity may be driven by common factors, we perform seemingly unrelated regression using the following equations:

$$\Delta\text{Investor recognition}_{i,t} = \beta_0 + \beta_1\Delta\text{Proportion of no-trading days}_{i,} + \beta_2 LNPRICE_{i,t} + \beta_3 LNPROCEEDS_{i,t} + \beta_4 RATIO_{i,t} + \beta_5 DISC_{i,t} + \beta_6 RUNUP_{i,t} + \beta_7 STDV_{i,t} + \beta_8 TURNOVER_{i,t} + \beta_9 \Sigma year + \beta_{10} \Sigma industry + \varepsilon_{i,t} \quad \ldots\ldots(4)$$

$$\Delta\text{Proportion of no-trading days}_{i,t}\beta_0 + \beta_1\Delta\text{Investor recognition}_{i,t} + \beta_2 LNPRICE_{i,t} + \beta_3 LNPROCEEDS_{i,t} + \beta_4 RATIO_{i,t} + \beta_5 DISC_{i,t} + \beta_6 RUNUP_{i,t} + \beta_7 STDV_{i,t} + \beta_8 TURNOVER_{i,t} + \beta_9 \Sigma year + \beta_{10} \Sigma industry + \varepsilon_{i,t} \quad \ldots\ldots(5)$$

Table 7: Changes in investor recognition and liquidity on post-issue abnormal returns

Model	1	2	3	4
Constant	0.3723 (3.23)***	0.2254 (1.81)*	0.9625 (1.49)	0.8181 (1.06)
ΔInvestorrecognition	5.2822 (2.68)***	6.8524 (3.41)***	5.2137 (2.37)**	4.4248 (2.10)**
Δproportion of no-trading days		-0.0233 (-2.72)***	-0.0248 (-2.61)***	-0.0180 (-1.94)*
LNPRICE			-0.0665 (-0.67)	-0.0057 (-0.06)
LNPROCEEDS			-0.1086 (-1.11)	-0.0751 (-0.78)
RATIO			-0.2081 (-1.49)	-0.1556 (-1.14)
DISC			-0.8125 (-1.68)*	-0.8463 (-1.72)*
RUNUP			0.2994 (1.59)	0.3486 (1.38)
STDV			2.5674 (1.52)	2.1296 (1.25)
TURNOVER			-0.1190 (-0.43)	-0.1657 (-0.64)
Year fixed effect	No	No	No	Yes
Industry fixed effect	No	No	No	Yes
Adjusted R^2	0.0460	0.0918	0.1187	0.2677
F-statistics	7.17	7.47	2.90	3.21
P-value	0.0084	0.0009	0.0039	0.0000
N	129	129	129	129

This table provides the results for the multiple regression analysis. The dependent variables for all models are buy-and-hold returns (BAHR) calculated for a one year period from rights issue ex-date to one year after. Independent variables:ΔInvestor recognition is changes in investor recognition. ΔProportion of no-trading days is post minus proportion of no-trading days the over one year periods.LNPRICE is the logarithm of rights issue share price.

LNPROCEEDS is natural logarithm of offer proceed in million rupees. RATIO is the allocation of new shares relative to the old shares. DISC is the offer price discount, defined as (1 – rights issue price/ share price two days prior to the rights issue announcement date. RUNUP is the raw return for the one-year period prior to the announcement date (return from -260 to day -2). STDV is the standard deviation of return for the one-year period prior to the announcement date (return from -260 to day -2). TURNOVER is the daily volume is divided by number shareholders for one –year period to the announcement date. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively

Table 7 reports the results of seemingly unrelated regression. We regress Δinvestor recognition on offer characteristics in the first equation. We regress Δproportion of no-trading days on offer characteristics in the second equation. In the first regression, we find that the coefficient on the offer price discount is negative and significant, suggesting that firms that offer higher price discounts are associated with greater investor recognition even after correcting for potential endogeneity.

Table 8: Three-stage least squares regression (3SLS)

Dependent variable				
	First-stage	**Second-stage**	**First-stage**	**Second-stage**
Constant	-0.2637 (-2.38)**	0.5918 (1.32)	-0.0058 (-2.62)***	0.5815 (1.29)
ΔInvestor recognition	1.1422 (3.11)***	4.5518 (2.39)**	0.0251 (3.43)***	4.5198 (2.37)**
ΔProportion of no-trading days	-0.0031 (-1.96)**	-0.0183 (-2.20)**	-0.0001 (-2.16)**	-0.0181 (-2.19)**
LNPRICE	0.0589 (3.46)***	-0.0097 (-0.12)	0.0012 (3.52)***	-0.0110 (-0.13)
LNPROCEDDS	-0.0042 (-0.26)		-0.0001 (-0.30)	
RATIO		-0.2102 (-1.88)*		-0.2050 (-1.83)*
DISC	0.0597 (0.69)	-0.7042 (-1.63)	0.0016 (0.92)	-0.7068 (-1.63)
RUNUP	-0.1251 (-3.22)***	0.2951 (1.33)	-0.0023 (-2.98)***	0.2825 (1.27)
STDV	0.5172 (1.82)*	2.4338 (1.62)	0.0116 (2.05)**	2.4032 (1.60)
TURNOVER	-0.0510 (-1.15)		-0.0007 (-0.83)	
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
R2	0.3995	0.3811	0.4237	0.3811
Chi2	85.16	78.95	94.12	78.67
P-value	0.0000	0.0000	0.0000	0.0000
N	128	128	128	128

This table provides a three-stage least squares regression. The dependent variables are ΔInvestor recognition and ΔProportion of no-trading days for first-stage and second-stage respectively. Independent variables:ΔInvestor recognition is changes in investor recognition. ΔProportion of no-trading days is post minus proportion of no-trading days the over one year periods.LNPRICE is the logarithm of rights issue share price. LNPROCEEDS is natural logarithm of

offer proceed in million rupees. RATIO is the allocation of new shares relative to the old shares. DISC is the offer price discount, defined as (1 – rights issue price/ share price two days prior to the rights issue announcement date. RUNUP is the raw return for the one-year period prior to the announcement date (return from -260 to day -2). STDV is the standard deviation of return for the one-year period prior to the announcement date (return from -260 to day -2). TURNOVER is the daily volume is divided by number shareholders for one –year period to the announcement date. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively.

Three stage equations:

$$\text{Contemporaneous abnormal returns} = \beta_0 + \beta_1 \Delta\text{Investor recognition} + \beta_2 \Delta\text{Proportion of no-trading days} + \beta_3 LNPRICE_{i,t} + \beta_4 LNPROCEEDS_{i,t} + \beta_5 DISC_{i,t} + \beta_6 RUNUP_{i,t} + \beta_7 STDV_{i,t} + \beta_8 TURNOVER_{i,t} + \beta_9 \Sigma year + \beta_{10} \Sigma industry + \varepsilon_{i,t} \quad \ldots\ldots(5)$$

$$\text{Post-issue abnormal returns} = \beta_0 + \beta_1 \Delta\text{Investor recognition} + \beta_2 \Delta\text{Proportion of no-trading days} + \beta_3 LNPRICE_{i,t} + \beta_4 RATIO_{i,t} + \beta_5 DISC_{i,t} + \beta_6 RUNUP_{i,t} + \beta_7 STDV_{i,t} + \beta_8 \Sigma year + \beta_9 \Sigma industry + \varepsilon_{i,t} \quad \ldots\ldots(6)$$

In addition to that, we conduct a three-stage least squares simultaneous equations model to mitigate endogeneity concerns. The following equations are used to perform a three-stage least squares regression.

Overall, the results of seemingly unrelated regressions suggest that changes in investor recognition and liquidity are strongly related to each other. Our main results remain robust.

1.Summary and Conclusions

In this paper, we examine changes in investor recognition around rights offerings in a frontiermarket, viz., Sri Lanka and its effects on offer characteristics, liquidity and stock performance. We find five main results from the empirical analysis. Firstly, we find that higher rights offer price discounts are related to increases in investor recognition. Secondly, we document empirical evidence that firms are using rights issues as a way to mitigate information asymmetry in an illiquid market where high information asymmetry exists. When we compare post and pre-liquidity changes, we find that liquidity improves after rights offerings. Thirdly, higher offer price discounts are playing a vital role in improving theliquidity of firms' shares. Fourthly, abnormal stock returns around rights offerings are positively associated with increases in investor recognition whereas post-abnormal stock returns are negatively related to improvements in investor recognition. Finally, we find that post-issue abnormal stock returns are positively associated with changes in

liquidity, indicating that the stocks with improved enjoy positive abnormal stock returns.

References:

Armitage, S, et al. 2014, 'Liquidity Measures and Cost of Trading in an Illiquid Market', Journal of Emerging Market Finance, vol. 13, no. 2, pp. 155-196.

Autore, DM & Kovacs, T 2014, 'Investor Recognition and Seasoned Equity Offers', Journal of Corporate Finance, vol. 25, pp. 216-233.

Berger, D, et al. 2011, 'International Diversification with Frontier Markets', Journal of Financial Economics, vol. 101, no. 1, pp. 227-242.

Berger, D, et al. 2013, 'Is the Diversification Benefit of Frontier Markets Realizable by Mean-Variance Investors? The Evidence of Investable Funds',Journal of Portfolio Management, vol. 39, no. 4, pp. 36-48.

Bilinski, P, et al. 2012, 'Does Liquidity Risk Explain Low Firm Performance Following Seasoned Equity Offerings?', Journal of Banking & Finance, vol. 36, no. 10, pp. 2770-2785.

Bodnaruk, A & Ostberg, P 2009, 'Does Investor Recognition Predict Returns?', Journal of Financial Economics, vol. 91, no. 2, pp. 208-226.

Deyshappriya, NR 2014, 'An Empirical Investigation on Stock Market Anomalies: The Evidence from Colombo Stock Exchange in Sri Lanka', International Journal of Economics and Finance, vol. 6, no. 3, p. p177.

Ding, R & Hou, W 2014, 'Retail Investor Attention and Stock Liquidity', Available at SSRN 1786762.

He, Y, et al. 2014, 'A Comprehensive Study of Liquidity before and after Seos and Seo Underpricing', Journal of Financial Markets, vol. 20, no. 0, pp. 61-78.

Kang, W & Zhang, H 2014, 'Measuring Liquidity in Emerging Markets', Pacific-Basin Finance Journal, vol. 27, no. 0, pp. 49-71.

Lehavy, R & Sloan, R 2008, 'Investor Recognition and Stock Returns', Review of Accounting Studies, vol. 13, no. 2/3, pp. 327-361.

Marshall, BR, et al. 2013, 'Liquidity Measurement in Frontier Markets', Journal of International Financial Markets, Institutions and Money, vol. 27, no. 0, pp. 1-12.

Merton, RC 1987, 'A Simple Model of Capital Market Equilibrium with Incomplete Information', Journal of Finance, vol. 42, no. 3, pp. 483-510.

Pinto, CA 2015, 'The Effect of Investor Attention on the Pricing of Seasoned Equity Offerings', Available at SSRN 2561080.

Richardson, S, et al. 2012, 'What Makes Stock Prices Move? Fundamentals Vs. Investor Recognition', Financial Analysts Journal, vol. 68, no. 2, pp. 30-50.