A TEST OF SEMI-STRONG FORM MARKET EFFICIENCY: EFFECTS OF SEASONED EQUITY OFFERING ON STOCK PRICES IN HoSE IN 2010

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Studying effects of seasoned equity offering on stock prices is one of the trends in testing the semi-strong form of the efficient market hypothesis. Researches worldwide have produced remarkable results but no research on this aspect in Vietnam is found. This paper presents results of a pilot research in HCMC stock market in 2010: issues of seasoned equity on the HoSE make the stock prices fall drastically two-four days before the ex-rights (XR) day, especially the issue of subscription rights. The prices also fall remarkably within two or three days after the XR day, especially in case of issue of shares as payments for dividends or bonuses. Moreover, the stock prices rose strongly on the XR day for most fields, except for realty and agricultural businesses. After the issues, number of stocks enjoying lower degrees of risk is equal to the number of stocks facing higher degrees of risk.

Keywords: seasoned equity offering, risk of price fluctuation, abnormal return, efficient market hypothesis

Issuing seasoned equity is one of the ways to mobilize more capital and modify structure of capital and of shareholders. In spite of its minor role, the seasoned equity issues account for 5% of the volume of capital to mobilize by listed companies in developed markets. This subject has been explored widely from various aspects in both developed and emerging markets as one of methods of testing the semi-strong form of efficient market hypothesis. However, there is no study of this aspect of the Vietnamese stock market in recent years in particular.

This paper examines effects of seasoned equity issues on prices of stocks listed on the HoSE in 2010 and comprises four sections: (1) seasoned equity offering; (2) literature review; (3) methodology and data set; and (4) analysis results.

1. Seasoned equity offering

Seasoned equity offering (SEO) refers to all issues of shares carried out by a company after IPO. Various goals are put forward when carrying out such issues: securing fund for a new project, paying dividend to shareholders, giving shares as bonuses, conversing convertible bonds

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companies during merger or acquisition, etc. Increasing the working capital can also be done

by individual issues. In Vietnam, in addition to those goals, issuers may mention such purposes as issuing shares to strategic shareholders and their employees, and attracting the talented, etc. In Vietnam, however, issues of shares to serve merger, acquisition, and conversion of bonds are not common. Most issues aim at mobilizing more capital, or paying dividend and bonus.

Effects of seasoned equity offering on secondary markets depend on underwriting modes. This paper classifies issuing methods according to their purposes: providing free shares (as dividend or bonus payment) or issuing subscription rights because the underwriting mode in Vietnam is not clearly defined.

A seasoned equity issue usually includes various steps that are taken in many days with important stages such as announcement, ex-rights (XR) day, deadline for subscription, and extra listing day, etc. Most Western studies consider the issue announcement day as the benchmark. For Vietnam, we choose the XR day because the announcement day is usually 10 days (from 6 to eight trading sessions) before the XR day, while the deadline for subscription (the point when investors have to decide whether to pursue the issue or not) is the second day after the issue. Because the T+3 rule is applied in Vietnam, one day or two before the XR day is the time investors should buy or sell. In this research, the selected period for observation is from the day -15 to the day +14. This time frame includes all important days mentioned above, i.e. announcement day, XR day, and the deadline for subscription.

2. Literature review

Seasoned equity offering has been examined closely for decades. Since the establishment of the market efficiency theory, studying the SEO is considered as one of methods of demonstrating semi-strong form market efficiency. Of 19 problems with SEO listed in "Seasoned Equity Offerings: A Survey" by B. E. Eckbo and R. W Masulis (1994), the most important are choice between reinvesting the retained profit and conducting public offerings, effects of SEO methods, effects of underwriting methods, current economic background and issue costs. Many researches have focused on effects of SEO on the stock price. In other words, these researches examined "announcement of issue" to understand how investors interpret such announcement and whether it makes the stock price rise or fall. For research purpose, researches on this aspect will be analyzed more carefully.

Price fluctuations caused by SEO: Generally, if the price rises before the announcement, it will fall after the announcement. This has been proved in such developed markets as the U.S. and the U.K. If the announcement day is considered as the day 0, the stock price falls as observed by Hansen (1989), and Eckbo & Masulis (1992) in the US market. In the UK, price fall within two days is by -1.3% (Levis, 1995) and -1.88% (Slovin, 2000). Reverse results, however, are seen when SEO is conducted through issue of rights in such emerging markets as Malaysia (Salamudin, 1999), South Korea (Kang, 1990 and Dhatt, 1996), Japan (Kang and Stulz, 1996), Greece (Tsangarakis, 1996) and Singapore (Tan, 2002).

C. Chen & X. Chen (2007), for example, examine 205 rights issues in China and conclude that the market reacts negatively around the issue day and reacts positively after the issue (from 10 to 20 days before the subscription right expires). In Singapore, the price rose before announcement of right issue, but it tended to fall after the announcement (Ariff & Finn, 1989; and Srinivasan & See, 1990). Researches on Malaysian market produced reverse results during pre-announcement period. Phoon (1990) proved an increase in price while Annuar & Shamsher (1993) discovered a fall in abnormal return during a month before the announcement.

The influences of issue on stock price: Due to differences in development levels, many researches show that announcement of SEO produces negative effects in most developing markets, but it has positive effects in several

emerging markets. More precisely, SEO affects negatively the price during economic recession in all countries and positively during growing period in several emerging markets (Kim & Lee, 1990).

Explanation for this fact is as follows: During economic booms, the stock prices stay high and volume of shares to issue is relatively small, issuing costs are therefore lower and effects of price dilution causes by new issues on investors are less serious. Moreover, there are more effective investment projects to choose from during boom periods, investors are saved from worry about use of capital after the issue, and therefore falls in price are smaller in comparison with a recession period (Mayers and Majluf, 1984). During economic recession, contrarily, only high-quality projects are approved while others are postponed until a more promising period. Researches also show that probability of SEO is affected by general economic conditions and has a highly positive relationship with current state of stock exchanges (Bayless and Chaplinsky, 1996).

3. Methodology and data set

a. Measuring average abnormal return (AAR) on the XR day:

Event study method is used for measuring responses of stock prices when more shares are issued. This method was developed by Ball and Brown (1968), and Fama et al. (1969), and improved by Brown and Warner (1985). With this method, abnormal return of the stock A_{it} is defined as the difference between actual and expected rates of return:

$A_{it} = R_{it} - E(R_{it})$

where A_{it} is abnormal return of the stock i on the day t; t is the day when the event is measured; R_{it} is the actual return of the stock i on the day t; and $E(R_{it})$ is the expected return of the stock i on the day t.

The expected return may be the average return of the stock in question or return of one or many benchmarks on the market. In this research, the model is used with the assumption that the expected return of the stock i on the day t equals the return of the market portfolio and measured by the VN-Index.

The AAR at t is defined as:

$$AAR = \frac{1}{N}\sum_{i=1}^{N} A_{it}$$

where N is seasoned equity issues treated as samples and A_{it} is abnormal return of the issue i^{th} during period t. Cumulative abnormal return is expressed as $CAR_{(K,L)}$ and equal to the sum of average abnormal return during the observed period from day K to day L according to the formula:

$$CAR_{(K,L)} = \sum_{t=K}^{L} AAR_t$$

[For more details of measuring methods, see N. Salamudin, M. Ariff & A. Md. Nassir (1999), "Economic Influence on Rights Issue Announcement Behavior in Malaysia", *Pacific Basin Financial Journal*, 7(1999), p.405-427]

The Z test as shown below is used to determine whether the average abnormal return at t is different from zero or not:

$$z = \frac{\overline{AR_t} - 0}{\frac{\sigma}{\sqrt{N}}}$$

And the following formula is used for determine whether the abnormal return accumulated from day K to day L is different from zero or not:

$$t = \frac{CAR_t}{\sqrt{T} * S(\overline{AR_t})}$$

where $S(\overline{AR_t})$ is standard deviation of abnormal return in the surveyed period; and T is number of days from the K as the first day to L as the last (including both of them) of the period selected for examination of CAR (see Doukas and Travlos, 1988)

b. Risk measuring method:

Risk degree of each stock is measured in two periods, before and after the seasoned equity issue, within two time frames, [-50; -1] and [0; +49] with XR day as the day 0. The risk is defined as standard deviation of actual return on a daily basis. Return rate on the XR day is based on adjusted price on the day 0 and actual price on the day -1 to prevent an extremely negative rate

of return from appearing in series of rates of return.

F-test is used for test the hypothesis about parity between two population variances with the hypothesis H_0 that variance before and after the XR day remains unchanged, that is, risk degree 50 days before and after the XR day is the same.

$F=\frac{s_x^2}{s_y^2}$ (with assumption that $s_x^2 > s_y^2$, if no reverse one applies).

where

s_x^2 is variance of actual rate of return in period [-50;-1]

s_y^2 is variance of actual rate of return in period [0;+49]

To test significant level of stocks with return rate or risk degree increasing (or decreasing) following various items, the z-value test is used as follows:

$$z = \frac{(m - pn)}{\sqrt{p(1-p)n}}$$

where:

P: probability with assumption that the number of increased return rates (or risk degrees) is equal to that of decreased return rates (or risk degrees) [p=0.5]

N: sum of cases observed

M: actual cases of increased (decreased) return rates (or risk degrees).

(see Doukas and Travlos, 1988)

c. Data set:

The research covers only companies listed on the HoSE in 2010. Price of stocks are collected from SSC website and compared with data from HoSE website. Number of listed companies increased from 196 in early 2010 to 275 by the year end. This means that 79 companies were listed in 2010. The research observes 104 issues made by 94 companies, comprising 30 subscription rights issues, 60 issues of shares as payment for bonuses or dividends (bonus shares for short), and 14 issues of both bonus shares and subscription rights (the 14 cases are treated as issues of rights). Thus we have 44 issues of rights and 60 issues of bonus shares.

The issues are conducted in all months of the year, but 59 issues (57%) are carried out in the period from April to July. This situation comes from the fact that the fiscal year adopted by most companies is coincident with the calendar year, and audited financial statements should be publicized in 90 days after the end of the fiscal year. If the last day for publicizing the financial statement is March 30, the meeting of shareholders usually takes place in April and seasoned equity issues, if agreed upon, are carried out after the meeting, i.e., in such months as April, May, June and July. This research does not consider issues of small quantities of shares to issuer's employees (smaller than 5% of current shares) and single issues for strategic shareholders, along with two issues for merger between KDC and NKD, and between KMR and KMF.

Issuers are classified according to three criteria (market capitalization, issuing method, and industry). Capitalization value of the company is divided into three groups: companies with high, medium and low capitalization values based on standards suggested by MorningStar Corporation. Companies with high market capitalization are the biggest ones whose stock values account for 70% of the market capitalization; medium companies account for the next 20% and the small ones hold the remaining 10%. Time of classifying is Dec. 31, 2009 because the observed year is 2010. According to this classification, 15/25 blue chip (60%), 21/47 middle cap (45%) and 68/124 small cap (55%) stocks were issued in 2010. Regarding these percentages, it seems that issues by big companies are easier.

HoSE classification criteria and principles divide listed companies into 12 groups of industry (see http://www.hsx.org.vn), and they are re-divided into five groups in this research: (1) Real estate and construction; (2) Manufacturing industry (mining, processing, electricity production and distribution, natural gas, boiler,

steamer and air conditioner; (3) Service (wholesaling, retailing, repair of vehicles and engines, transport, warehousing, accommodating, food and drink supply, communication and information, scientific and professional services); (4) Financial-banking-insurance services; and (5) Agriculture, fishery and forestry.

4. Research results

a. AAR and CAR:

Table 1: AAR and CAR of the market

Day	N	AAR increased/ AAR decreased	AAR	CAR	t(AAR)	z (AAR increased/ AAR decreased)
-15	103	47/56	0.0007	0.0007	0.32	-0.887
-14	103	49/54	0.0008	0.0015	0.38	-0.493
-13	103	54/49	0.0016	0.0031	0.71	0.493
-12	103	46/57	(0.0017)	0.0013	-0.85	-1.084
-11	103	48/55	(0.0013)	0.0000	-0.57	-0.690
-10	103	55/48	0.0029	0.0029	1.34	0.690
-9	103	49/54	0.0014	0.0042	0.56	-0.493
-8	103	46/57	0.0010	0.0052	0.45	-1.084
-7	103	53/50	0.0003	0.0055	0.14	0.296
-6	103	45/58	0.0016	0.0071	0.72	-1.281
-5	103	50/53	0.0014	0.0085	0.60	-0.296
-4	103	45/58	(0.0015)	0.0070	-0.73	-1.281
-3	104	42/62	(0.0047)	0.0023	-2.25**	-1.961**
-2	104	40/64	(0.0038)	-0.0015	-1.80*	-2.353**
-1	104	46/58	0.0004	-0.0011	0.17	-1.177
0	104	69/35	0.0173	0.0163	4.59***	3.334***
+1	104	58/46	0.0061	0.0224	2.06**	1.177
+2	104	45/59	(0.0024)	0.0201	-0.89	-1.373
+3	104	36/68	(0.0056)	0.0145	-2.14**	-3.138***
+4	104	47/57	(0.0026)	0.0118	-1.12	-0.981
+5	104	53/51	0.0043	0.0162	1.72*	0.196
+6	104	47/57	(0.0012)	0.0149	-0.50	-0.981
+7	104	48/56	(0.0003)	0.0146	-0.16	-0.785
+8	104	53/51	0.0019	0.0165	0.75	0.196
+9	104	42/62	(0.0009)	0.0156	-0.36	-1.961**
+10	104	40/64	(0.0009)	0.0147	-0.40	-2.353**
+11	104	48/56	0.0014	0.0160	0.61	-0.785
+12	104	49/55	(0.0010)	0.0150	-0.47	-0.588
+13	104	45/59	(0.0033)	0.0117	-1.37	-1.373
+14	104	41/63	(0.0041)	0.0076	-1.86*	-2.157**

Source: Data from HoSE and SSC, and authors' calculations

Notes: ***; ** , * represent statistically significant levels of 1%, 5%, and 10% respectively

N: the number of issues observed, AAR on the day observed, CAR, test of significance of AAR[t(AAR)] and test of difference between AAR increased and AAR decreased; comprises 104 issues on HoSE in 2010 in the period from the day 15 before XR day to the day 15 after XR day (including the XR day).

Table 1 shows that on the XR day, the AR gained a remarkable increase (+1.73%). Statistic test confirms that the stock prices rose drastically on the XR day at the significant level of 1%. On day +1, the stock prices also rose, by 0.61% on average (at a significant level of 5%). By issuing more shares, the company signaled that it had a good plan to use the capital collected from the issue. On the XR day, stock prices rose independently of sizes of companies or issuing methods adopted although a difference between industries was reported. Prices of stocks from companies in heavy industry and financial-banking sector rose strongly (at a significant level of 1%), and those from service companies also increased considerably while stocks of real estate and construction companies rose slightly and stocks from companies in agriculture, fishery and forestry fell slightly (with no statistical significance).

On days -2 and -3, prices fell considerably [t(AAR) has a significant level of 5% and 10%]. Apparently, this fact is related to issuing process. The deadline for registration is two days after day 0 (XR), or day +2, and the T+3 rule is applied. Thus, investors have to buy on day -1 or earlier to secure their rights. To ensure their purchase, investors are better off buying on day -3 or -2. Similarly, sellers also want to sell early to include rights in the price, therefore they are ready to cut price to have their stocks sold on day -3 or -2. On these days, sale is stronger than purchase, and falls in price result from this trend. This argument will be more certain when considering differences in AAR between issuing methods. In issuing shares as bonuses or replacements for dividends, investors have no right to transfer rights, they have to accept new shares and do nothing about it; the prices therefore only fall slightly on day -2 or -3.

Contrarily, when rights are issued, several investors do not want to accept them and decide to sell them before it is too late with the result that the prices fall considerably on day -4, -3, and -2 at levels of significance of 10%, 10% and 5% respectively (Table 2).

Regarding the whole market, the prices fell considerably on days +3 and +14 with t(AAR) gaining a significant level of 5% and 10% respectively. Examining the ratio of AAR increased to AAR decreased produces the same result. This method, however, also shows that except for these days the market prices tend to fall on days +9 and +10, that is, two weeks after the XR day. On closer examination, it was found that the prices fell mainly on days +2 and +3 with the same significant level of 5% when shares were issued as bonuses and replacements for dividend. This means that after bonuses and dividends were ensured because the deadline for subscription (day +2) had passed, many investors sold old shares for fear that seasoned equity issues would make prices get much lower (Table 2). Issues of subscription rights made the prices fall considerably in three weeks (on day +14 and +15).

Table 2: Abnormal return by method

Day	Subscription right	Bonus-dividend
-15	0.0055*	-0.0029
-14	0.0017	0.0001
-13	-0.0026	0.0047
-12	-0.0055*	0.0010
-11	-0.0007	-0.0017
-10	-0.0016	0.0060**
-9	0.0024	0.0006
-8	0.0039	-0.0011
-7	-0.0011	0.0012
-6	-0.0009	0.0034
-5	0.0025	0.0006
-4	-0.0057*	0.0015
-3	-0.0075*	-0.0026
-2	-0.0082**	-0.0006
-1	-0.0013	0.0017
0	0.0203***	0.0152***
+1	0.0119**	0.0019
+2	0.0031	-0.0064**
+3	-0.0047	-0.0063**
+4	-0.0023	-0.0029
+5	0.0043	0.0044
+6	-0.0019	-0.0007
+7	0.0008	0.0001
+8	0.0029	0.0012
+9	-0.0000	-0.0016
+10	-0.0017	-0.0004
+11	0.0010	0.0017
+12	0.0007	-0.0023
+13	-0.0081**	0.0002
+14	-0.0072*	-0.0018

Source: Data from HoSE and SSC, and authors' calculations

Notes: ***; ** , * represent statistically significant levels of 1%, 5%, and 10% respectively

Regarding increase/ decrease in return of 104 surveyed cases, 69 cases on day 0 enjoyed some increase in their return at a significant level of 1%. Days -3, -2, +3, +9, +10 and +14 produced reverse results when they showed a considerably fall in prices of stock issued at a significant level of 5% (see the last column of Table 1). In general, this result is rather consistent with AAR test.

Cumulative abnormal return (CAR): CAR of the market only reaches a statistically significant level in time frames that include the XR day (Table 3). When considering different issuing methods separately, market response is very clear to issues of subscription rights. CAR of this method with a time frame from day -4 to day -1 falls at a significant level of 1%, which confirms the tendency to sell, or refuse the subscription rights, before the issue.

Table 3: Cumulative abnormal return

Time frame	CAR	t-stat
[-12;-2]	(0.005)	(0.331)
[-1;+1]	0.024	3.325***
[-2;+2]	0.018	1.911*
[-5;0]	0.009	0.898
[0;+1]	0.023	4.004***
[0;+2]	0.021	2.941***
[0;+5]	0.017	1.695*

[0;+11]	0.017	1.191
[-2;-4]	(0.010)	(1.391)
[+3;+4]	(0.008)	(1.404)
Subscription rights issue		
[-4;-1]	(-0.0227)	(2.735)***

Source: Data from HoSE and SSC, and authors' calculations

Notes: ***; ** , * represent statistically significant levels of 1%, 5%, and 10% respectively

b. Risk:

Table 4 compares risks in two time frames - 50 days before XR [-50; -1], and 50 days after XR [0; +49] – with 104 cases of seasoned equity issues. Of these cases, 55 enjoyed some decrease in risk degrees (28 of them gained some statistical significance) while 49 cases witnessed increases in their risk degrees (29 of them gained some statistical significance).

Stocks with considerable changes in risk degrees (either decrease or increase) are on significant lines of 10%, 5% and 1% in Figure 1.

Table 4: Risk of price fluctuation before and after the issue

Significant level of F-test	Risk increased	Risk decreased
1%	9	10
5%	23	21
10%	29	28
Total	**49**	**55**

Source: Data from HoSE and SSC, and authors' calculations

After classifying stocks according to three criteria (market capitalization, issuing method, and industry) we found no clear difference between groups of stocks in their risk degrees before and after the XR day.

5. Conclusion

The seasoned equity issues on HoSE make stock prices fall considerably in the period from 2

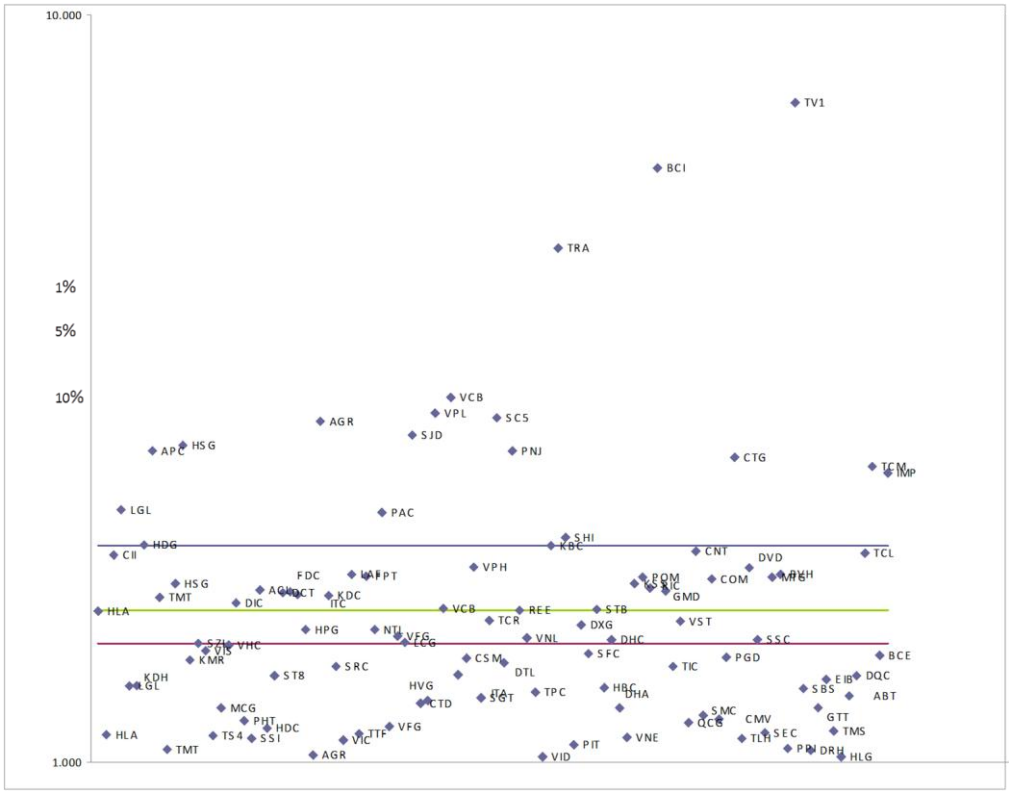

Figure 1: Test of risk in observed companies by significant levels of 1%, 5% and 10%

Source: Data from HoSE and SSC, and authors' calculations

to 4 days before the XR day, especially in cases of subscription rights issues. The prices also fall drastically 2 – 3 days after the XR day, especially in cases of shares used as payment for dividends or bonuses. Contrarily, the prices of stock from most sectors (except for realty business and agriculture) increase considerably on the XR day. After the issues, the number of stocks suffering considerable increases in risk degree is equal to that of stocks enjoying considerable decreases in risk degree.

Limitation of the research is that it only examines the HoSE in 2010 – the year that witnessed the economic recession. To estimate more precisely profitability and risk involved in issues of seasoned equity, data of other years, especially the "booming" and promising years of 2006 – 2007, should be included in further researches. Moreover, fluctuations on the Hà Nội stock market should be examined and compared with those on the HoSE■

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