

Stock market reaction to capital raise announcements: Evidence from Tehran Stock Exchange

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Table of Contents

- 1 Data
- 2 Abnormal Return
- 3 Literature
- 4 Abnormal Return Results
- 5 Abnormal Return Analysis

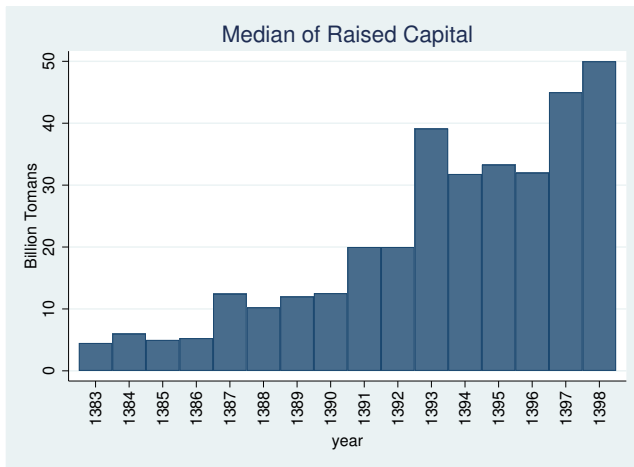
Data

- Data consist of 1439 capital raise for 448 companies
- Four different sources for capital rising: Cash, Resereves, Cash & Resereves , and Revaluation

	Cash	Resereves	Cash & Resereves	Revaluation	Sum
Event	754	408	180	97	1439
Percent	52.4	28.4	12.5	6.7	100

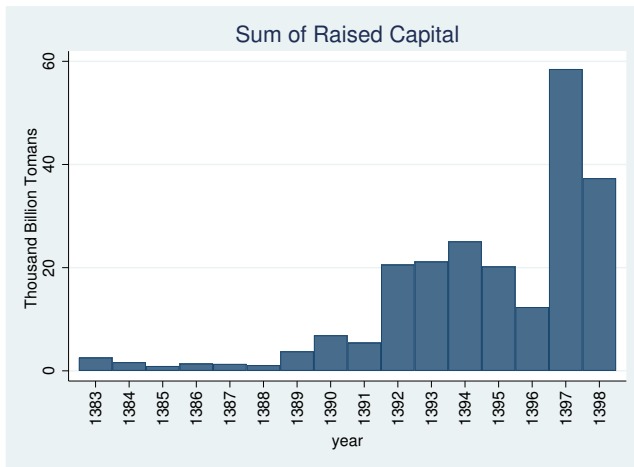
Data Summary

Raised Capital for each Firm



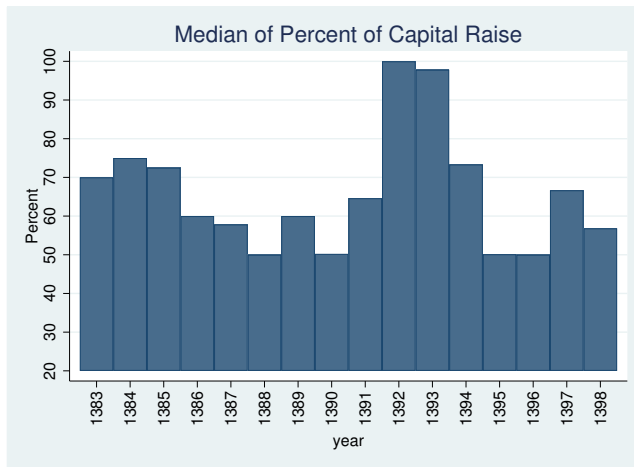
Data Summary

Value of Raised Capital in market



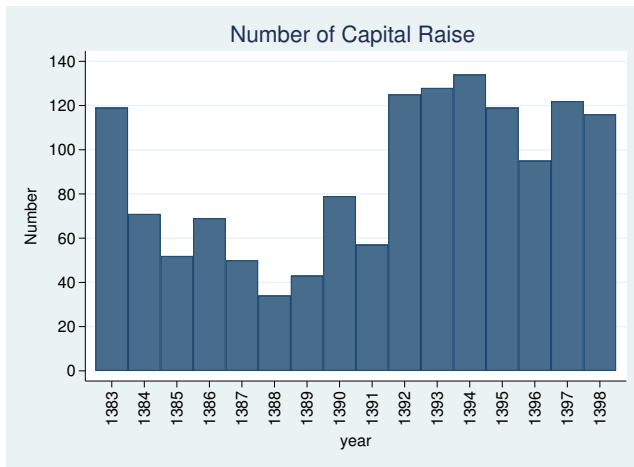
Data Summary

Percent of Raised Capital for each Firm



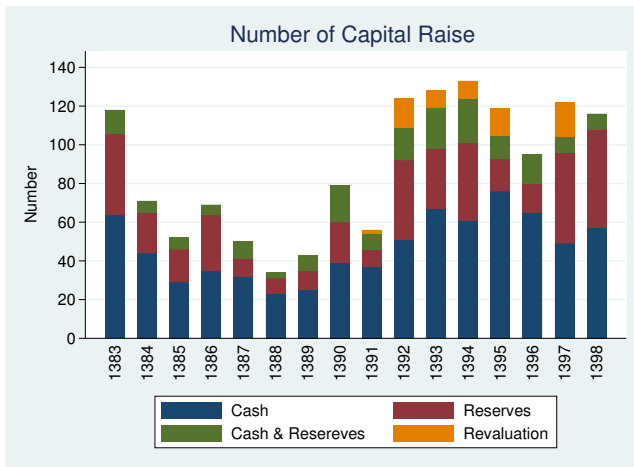
Data Summary

Number of Capital Raise



Data Summary

Number of Capital Raise



Number of Capital Raise for each Firm

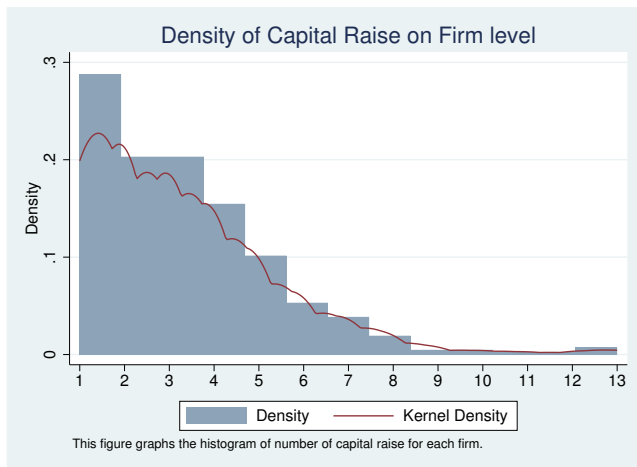


Table of Contents

- 1 Data
- 2 Abnormal Return**
- 3 Literature
- 4 Abnormal Return Results
- 5 Abnormal Return Analysis

Abnormal Return

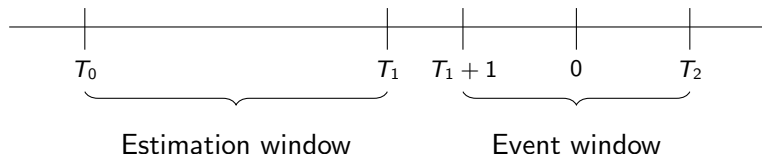
- Abnormal return is the difference between the observed return and the predicted return

$$AR_{i,t} = R_{i,t} - E(R_{i,t}|X_t)$$

- Predicted return
 - Mean-adjusted returns Model (MAR) $\rightarrow \bar{R}_i$
 - Market-adjusted returns Model (MKAR) $\rightarrow R_{M,t}$
 - Risk-adjusted returns Model (RAR) $\rightarrow \alpha_i + \beta_i R_{M,t}$

Abnormal Return Calculation

First Step



- Event windows specifically 3-day, 7-day, and 11-day event periods
- Estimation window : Each event window implies a particular estimation window interval. (For example, 3-day event window $[-1,+1]$ is associated with $[-122,-2]$ estimation window)
- Fama,Fisher,Jensen, and Roll use Event Window as Estimation window [IER-1969-The Adjustment of Stock Prices to New Information]

Abnormal Return Calculation

Second Step

- For each Firm :

$$R_{i,t} = \hat{\alpha}_i + \hat{\beta}_i(R_{m,t}) + \boxed{\varepsilon_{i,t}} \rightarrow AR_{i,t}$$

- Average abnormal return during period t: N_t is the number of firms in the sample during period t

$$AAR_t = \sum_{i=1}^{N_t} \frac{AR_{it}}{N_t}$$

- Cumulative Abnormal Returns

$$CAR_t(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it}$$

- Cumulative Average Abnormal Return from period t_1 to period t_2

$$CAAR_{t_1, t_2} = \sum_{i=t_1}^{t_2} CAR_i(t_1, t_2)$$

Abnormal Return Calculation

Cross-Sectional Test (Test $AAR = 0$)

- Hypothesis is
$$\begin{cases} H_0 : AAR = 0 \\ H_1 : AAR \neq 0 \end{cases}$$
- The t-statistics for this test is
 - $t_{AAR} = \sqrt{N} \frac{AAR}{S_{AAR}}$
 - $S_{AAR}^2 = \frac{1}{N-1} \sum_{i=1}^N (AR_i - AAR)^2$

Abnormal Return Calculation

Cross-Sectional Test (Test $CAAR = 0$)

- Hypothesis is $\begin{cases} H_0 : CAAR = 0 \\ H_1 : CAAR \neq 0 \end{cases}$
- The t-statistics for this test is
 - $t_{CAAR} = \sqrt{N} \frac{CAAR}{S_{CAAR}}$
 - $S_{CAAR}^2 = \frac{1}{N-1} \sum_{i=1}^N (CAR_i - CAAR)^2$
 - $CAR_i = \sum_{t=t_1}^{t_2} AR_{i,t}$

Table of Contents

- 1 Data
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- 3 Literature**
- 4 Abnormal Return Results
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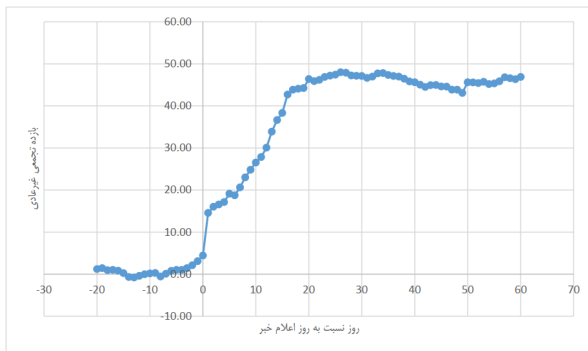
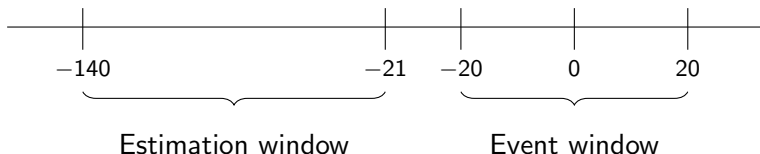


Table of Contents

- 1 Data
- 2 Abnormal Return
- 3 Literature
- 4 Abnormal Return Results**
- 5 Abnormal Return Analysis

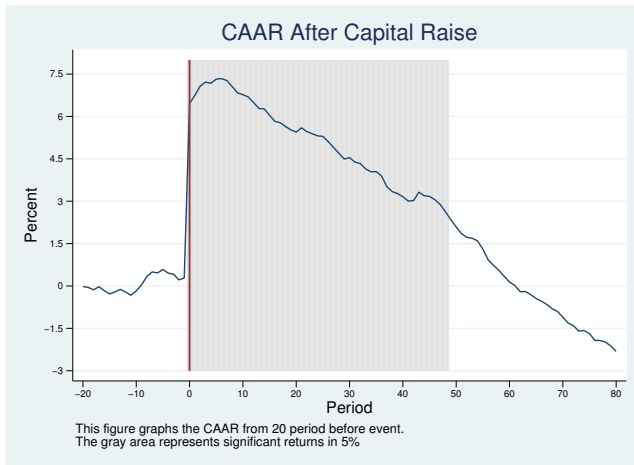
Abnormal Return

- We use the Risk-adjusted returns Model (CAPM) to predict returns.
 - We accumulate factors' return in close days for using in the model.
- We set estimation and event window as:



-
- We test whether $CAAR = 0$ or not

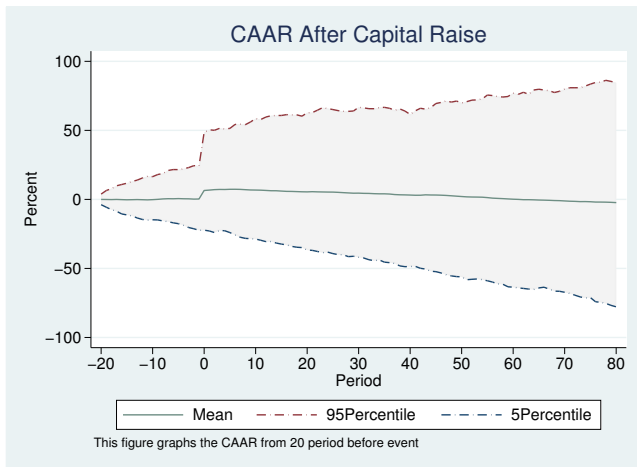
Abnormal Return



Analysis of abnormal return in days surrounding the capital raise announcements

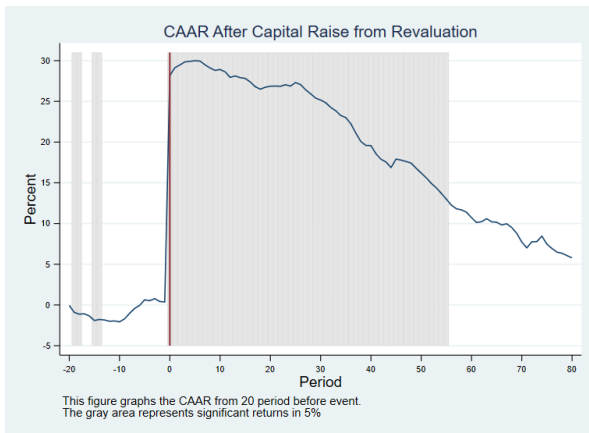
Period	AAR	CAAR	Number	Period	AAR	CAAR	Number
-20	-0.01	-0.01	997	0	7.42	7.39	1015
-19	-0.07	-0.07	999	1	0.30	7.69	1015
-18	-0.07	-0.14	1000	2	0.32	8.01	1015
-17	0.10	-0.03	999	3	0.14	8.17	1014
-16	-0.17	-0.20	1000	4	-0.04	8.14	1014
-15	-0.10	-0.30	1001	5	0.16	8.26	1012
-14	0.05	-0.25	1002	6	-0.02	8.24	1012
-13	0.04	-0.21	1004	7	-0.06	8.18	1012
-12	-0.10	-0.32	1005	8	-0.26	7.98	1010
-11	-0.14	-0.45	1005	9	-0.27	7.71	1010
-10	0.13	-0.33	1004	10	-0.08	7.65	1009
-9	0.18	-0.14	1004	11	-0.11	7.54	1008
-8	0.28	0.14	1005	12	-0.25	7.29	1008
-7	0.14	0.27	1005	13	-0.21	7.09	1007
-6	-0.08	0.21	1005	14	-0.07	6.98	1004
-5	0.12	0.32	1007	15	-0.16	6.82	999
-4	-0.08	0.25	1009	16	-0.26	6.50	996
-3	-0.09	0.17	1010	17	-0.07	6.44	996
-2	-0.23	-0.06	1010	18	-0.19	6.26	995
-1	0.04	-0.03	1012	19	-0.11	6.15	995

Abnormal Return



Abnormal Return

Abnormal return of raised capital from Revaluation

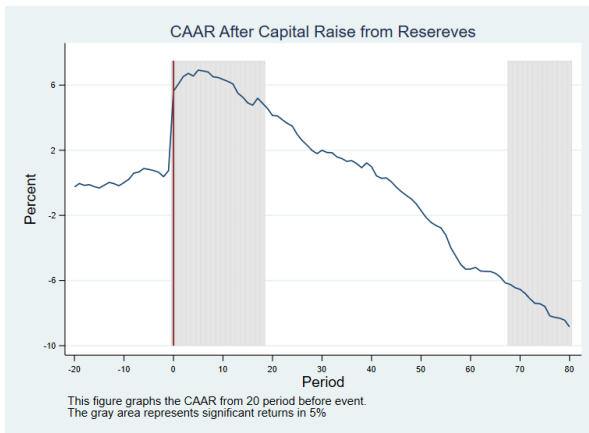


Analysis of abnormal return in days surrounding the Revaluation announcements

Period	AAR	CAAR	Number	Period	AAR	CAAR	Number
-20	0.33	0.33	60	0	30.33	32.79	61
-19	-0.97	-0.64	60	1	1.61	34.40	61
-18	-0.19	-0.83	61	2	0.93	35.34	61
-17	-0.25	-1.05	60	3	-0.10	35.24	61
-16	-0.50	-1.54	60	4	-0.57	34.67	61
-15	-0.33	-1.87	60	5	0.03	34.70	61
-14	0.63	-1.24	60	6	-0.15	34.55	61
-13	0.10	-1.14	60	7	-0.45	34.09	61
-12	0.03	-1.10	60	8	-0.38	33.71	61
-11	0.27	-0.83	60	9	-0.61	33.10	61
-10	0.29	-0.54	60	10	0.10	33.20	61
-9	0.59	0.05	60	11	-0.09	33.11	61
-8	0.84	0.89	60	12	-0.35	32.77	61
-7	0.87	1.76	60	13	0.60	33.37	61
-6	0.79	2.55	60	14	-0.07	33.30	61
-5	0.93	3.49	60	15	0.07	32.86	60
-4	0.09	3.57	61	16	-0.58	32.29	60
-3	0.05	3.62	61	17	-0.62	31.67	60
-2	-0.63	2.99	61	18	-0.05	31.62	60
-1	-0.53	2.46	61	19	0.33	31.95	60

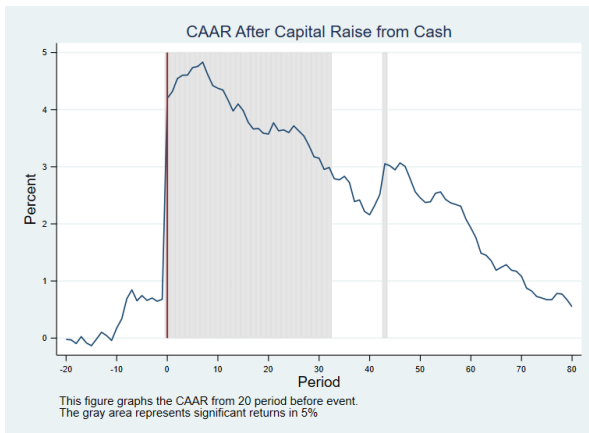
Abnormal Return

Abnormal return of raised capital from Reserves



Abnormal Return

Abnormal return of raised capital from Cash



Abnormal Return

Abnormal return of raised capital from Cash & Reserves

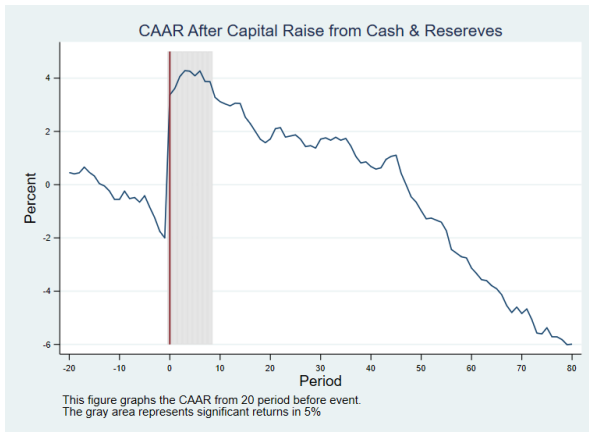


Table of Contents

- 1 Data
- 2 Abnormal Return
- 3 Literature
- 4 Abnormal Return Results
- 5 Abnormal Return Analysis**

*Abnormal Return at event day**Panel A: Book-to-Market ratio*

No Revaluation			
	Mean	σ	Frequency
Low	5.13	19.44	285
Middle	3.12	13.10	301
High	4.32	12.25	312
Total	4.17	15.16	898
Revaluation			
	Mean	σ	Frequency
Low	34.64	44.15	41
Middle	17.91	19.20	25
High	25.93	29.96	18
Total	27.80	35.82	84

*Abnormal Return at event day**Panel B: Market Cap*

No Revaluation			
	Mean	σ	Frequency
Small	6.45	19.80	272
Middle	3.90	14.15	308
Large	2.49	10.67	318
Total	4.17	15.16	898
Revaluation			
	Mean	σ	Frequency
Small	31.91	35.67	50
Middle	28.78	43.79	18
Large	13.82	22.44	16
Total	27.80	35.82	84

*Abnormal Return at event day**Panel C: P/E ratio*

No Revaluation			
	Mean	σ	Frequency
Low	1.65	16.52	211
Middle	4.75	19.33	247
High	3.96	10.16	231
Total	3.54	15.91	689
Revaluation			
	Mean	σ	Frequency
Low	34.81	42.36	29
Middle	7.74	18.62	6
High	27.76	31.13	23
Total	29.21	36.76	58

*Abnormal Return at event day**Panel D: Free Float*

No Revaluation			
	Mean	σ	Frequency
Low	5.13	19.36	302
Middle	3.49	13.10	278
High	3.77	12.06	283
Total	4.15	15.30	863
Revaluation			
	Mean	σ	Frequency
Low	13.67	20.85	12
Middle	31.19	37.19	32
High	29.99	38.73	38
Total	28.07	36.19	82

*Abnormal Return at event day**Panel E: Free MarketCap*

No Revaluation			
	Mean	σ	Frequency
Small	6.36	20.20	268
Middle	4.21	14.24	288
Large	2.17	10.25	307
Total	4.15	15.30	863
Revaluation			
	Mean	σ	Frequency
Small	29.01	34.22	44
Middle	37.43	46.15	21
Large	14.05	22.27	17
Total	28.07	36.19	82

*Abnormal Return at event day**Panel F: Volatility(past 250 days)*

No Revaluation			
	Mean	σ	Frequency
Low	4.32	18.60	275
Middle	4.94	12.07	263
High	2.63	14.67	284
Total	3.93	15.40	822
Revaluation			
	Mean	σ	Frequency
Low	23.97	31.00	29
Middle	30.91	37.80	33
High	20.90	26.26	20
Total	26.01	32.81	82

*Abnormal Return at event day**Panel G: Debt ratio*

No Revaluation			
	Mean	σ	Frequency
Low	4.40	18.60	304
Middle	3.39	12.28	282
High	4.87	14.40	280
Total	4.22	15.41	866

Revaluation			
	Mean	σ	Frequency
Low	25.10	37.36	13
Middle	25.50	27.60	28
High	30.78	42.31	39
Total	28.01	36.62	80

*Abnormal Return at event day**Panel H: Leverage ratio*

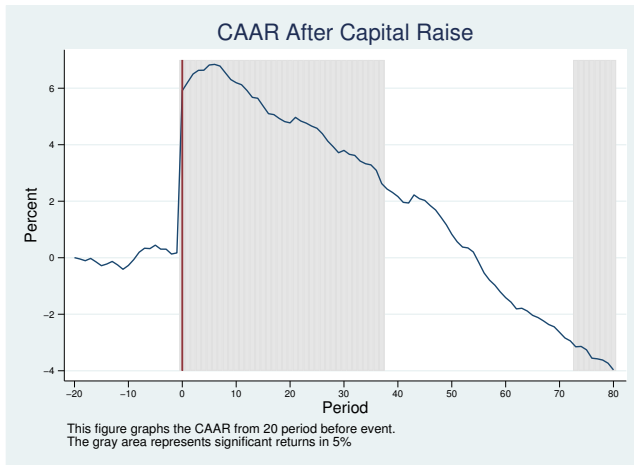
No Revaluation			
	Mean	σ	Frequency
Low	3.83	10.49	300
Middle	3.63	13.99	280
High	5.21	20.30	286
Total	4.22	15.41	866

Revaluation			
	Mean	σ	Frequency
Low	24.37	34.20	17
Middle	28.47	34.56	32
High	29.53	40.77	31
Total	28.01	36.62	80

Table of Contents

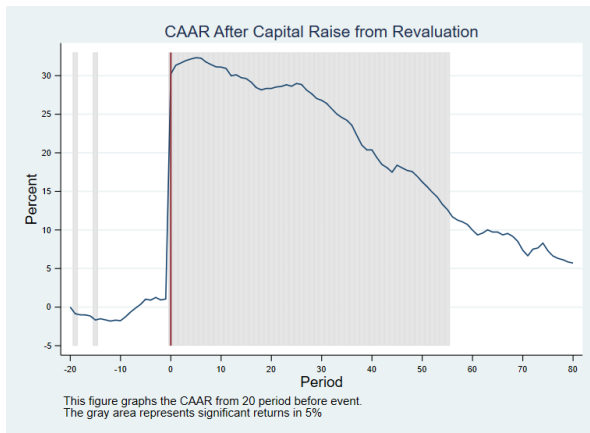
6 Appendix I : 4 Factor Abnormal Return

Abnormal Return



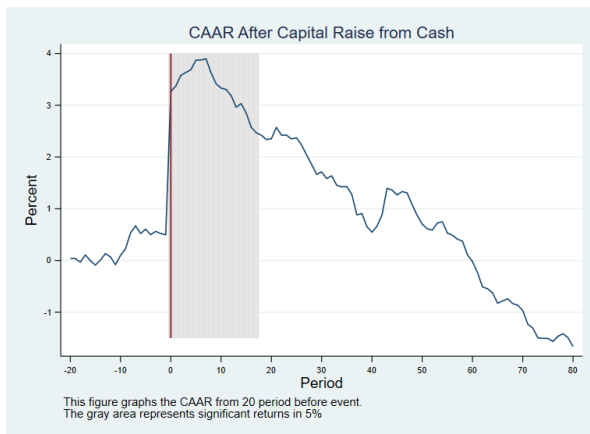
Abnormal Return

Abnormal return of raised capital from Revaluation



Abnormal Return

Abnormal return of raised capital from Cash



Abnormal Return

Abnormal return of raised capital from Cash & Reserves

