Stock market reaction to capital raise announcements:

Evidence from Tehran Stock Exchange

S.M. Aghajanzadeh   M. Heidari   A. Ebrahimnejad

Tehran Institute for Advanced Studies

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Data

- Data consist of 3721 capital raise for 800 companies

  - Only 1413 event and 448 companies raise their capital after their IPO

  - Five different sources for capital rising: Cash, Resereves, Cash & Resereves, Revaluation , and premium

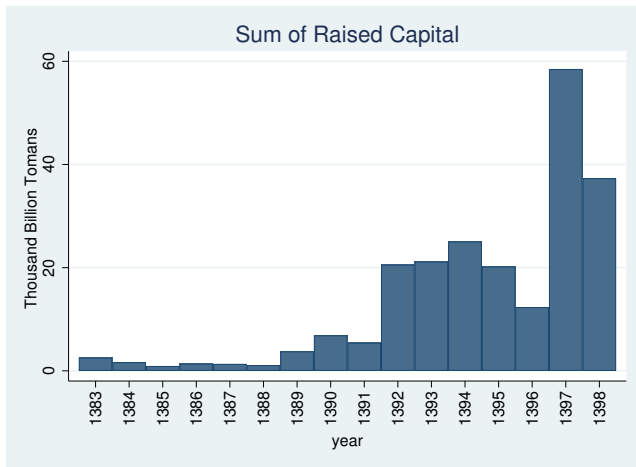|	Cash	Resereves	Cash & Resereves	Revaluation	Premium	Sum
Event	754	408	180	67	4	1413
Percent	53.4	28.9	12.7	4.7	0.3	100

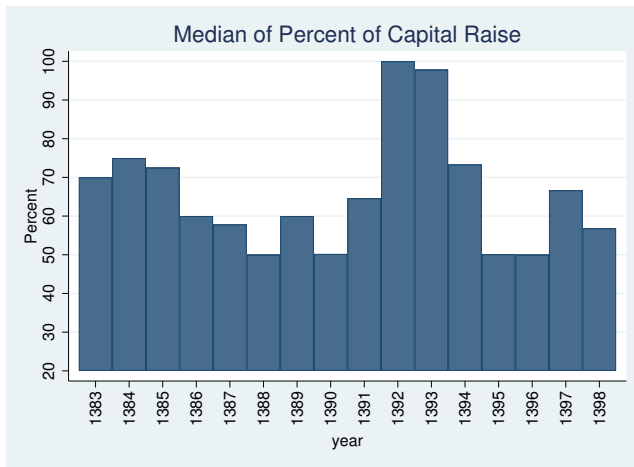## Data Summary

Raised Capital for each Firm
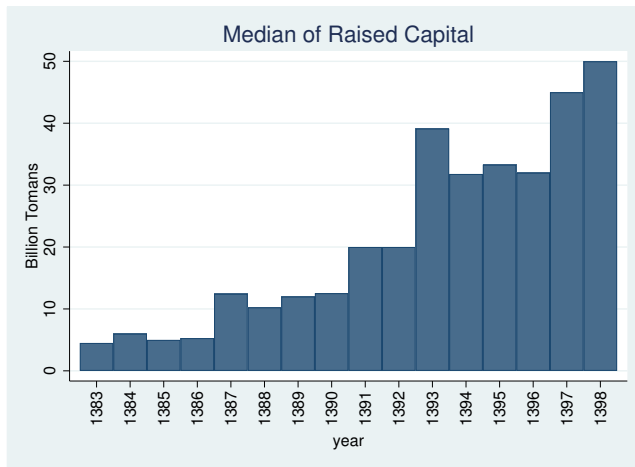
Data Summary

Value of Raised Capital in market

Data Summary

Percent of Raised Capital for each Firm

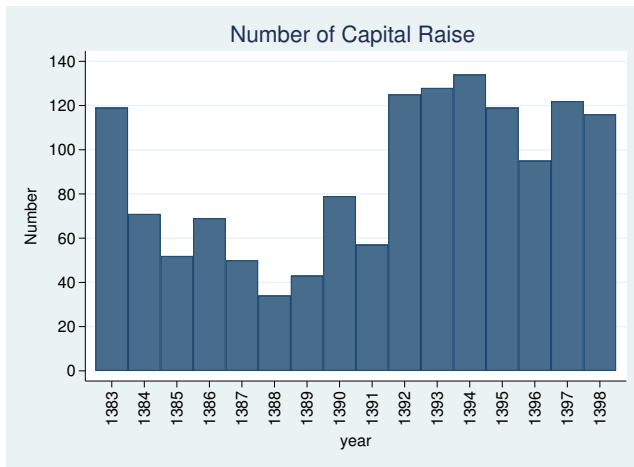Median of Percent of Capital Raise

Data Summary

Number of Capital Raise

Data Summary
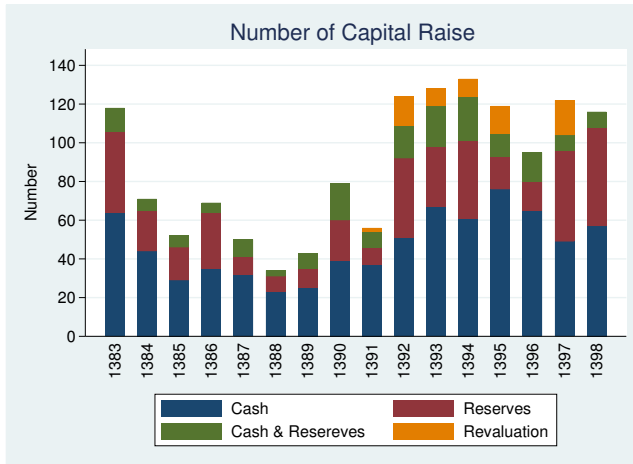
Number of Capital Raise

Number of Capital Raise

Percent of each type of Capital Raise

Cash · Reserves · Cash & Resereves · Revaluation

Number of Capital Raise for each Firm
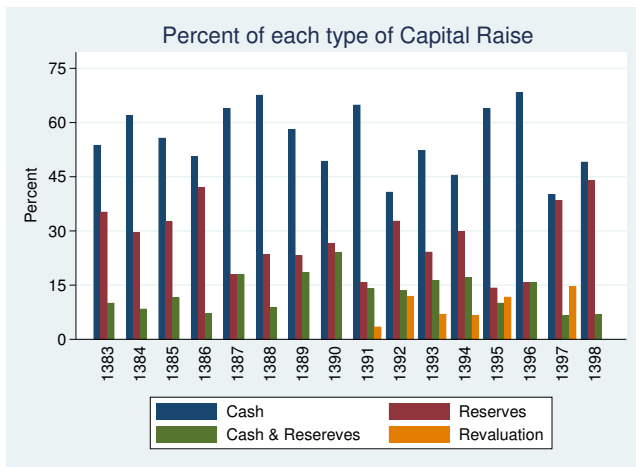
This figure graphs the histogram of number of capital raise for each firm.
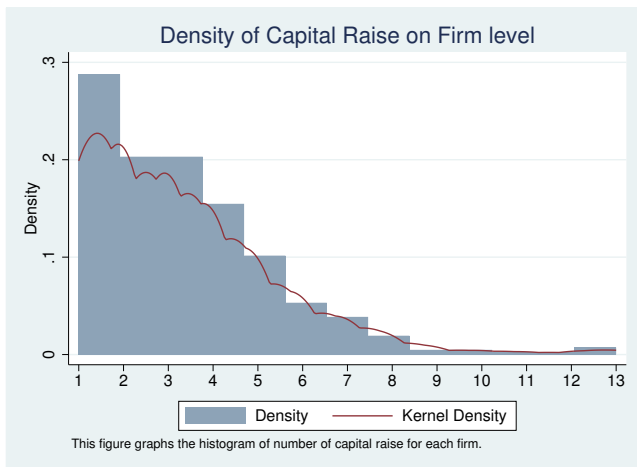
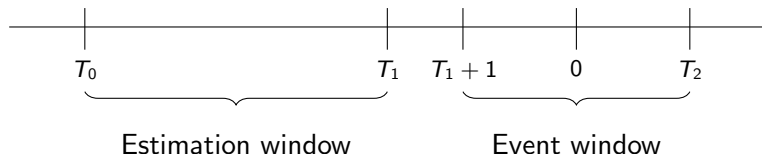# Table of Contents

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

Abnormal Return Calculation

First Step

Estimation window   Event window

- 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 $CAAR = 0$)

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  - $t_{CAAR} = \sqrt{N} \frac{CAAR}{S_{CAAR}}$
  - $S_{CAAR}^2 = \frac{1}{N-1} \sum_{i=1}^{N} (CAR_i - CAAR)^2$
  - $CAR_i = \sum_{i=t_1}^{t_2} AR_{i,t}$

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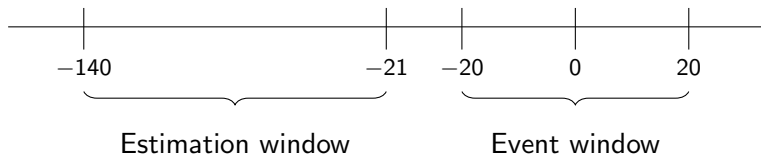
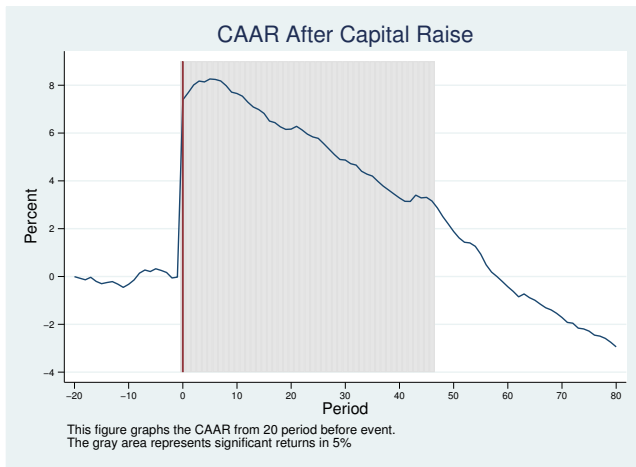## Abnormal Return

- We use the Risk-adjusted returns Model (CAPM) to predict returns.

- We set estimation and event window as:

  Estimation window   Event window
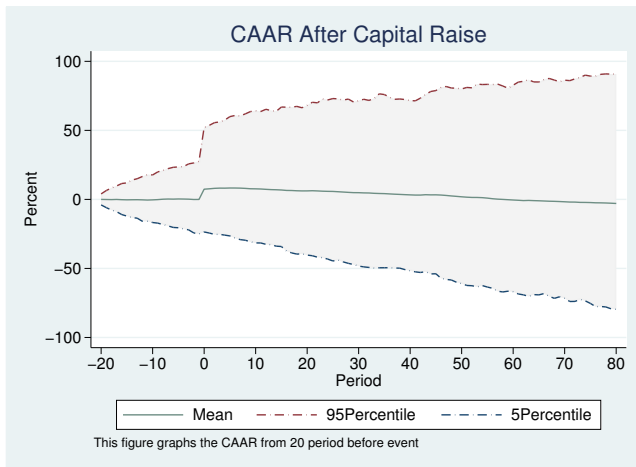
- We test whether $CAAR = 0$ or not

Abnormal Return

CAAR After Capital Raise

This figure graphs the CAAR from 20 period before event.
The gray area represents significant returns in 5%

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

CAAR After Capital Raise from Revaluation

This figure graphs the CAAR from 20 period before event.
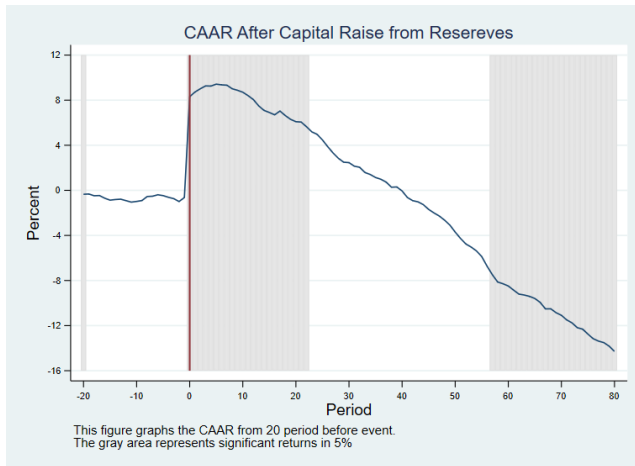The gray area represents significant returns in 5%
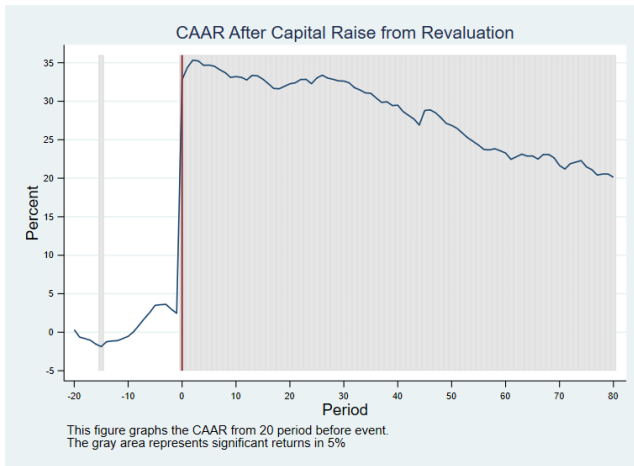
Analysis of abnormal return in days surrounding the Revaluation announcements

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

CAAR After Capital Raise from Resereves

This figure graphs the CAAR from 20 period before event.
The gray area represents significant returns in 5%

Abnormal Return

Abnormal return of raised capital from Cash

CAAR After Capital Raise from Cash

This figure graphs the CAAR from 20 period before event.
The gray area represents significant returns in 5%
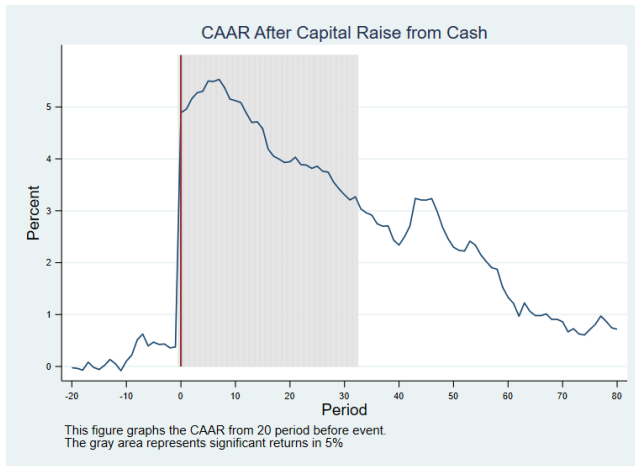
Abnormal Return

Abnormal return of raised capital from Cash & Reserves