THE PERFORMANCE OF IPOS IN ISTANBUL STOCK EXCHANGE IN YEAR 2000

2000 YILINDA İSTANBUL MENKUL KIYMETLER BORSASIN'DA HALKA İLK ARZI YAPILAN HİSSE SENETLERİNİN PERFORMANSI

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ABSTRACT : Initial public offering (IPO) may be the lowest cost financing for firms to obtain funds from small and institutional investors. The commissions, fees and other related expenses incurred are considerably small compared to those of short or long term loan or bond financing. This empirical study examines the performance of all IPOs in Istanbul Stock Exchange during the year of 2000. The study employs standard event study methodology for 34 IPOs over a 30 day event window. The empirical findings are consistent with most of the previous literature. The results support that the first two days of IPOs generally provide positive abnormal returns.

Keywords: Initial public offering, underpricing, abnormal return, event-study

***ÖZET** : Firmaların halka ilk arz yoluyla küçük ve kurumsal yatırımcılardan fon toplaması düşük maliyetli finanslama yollarından biri olabilir. Tahvil ihracı ve bankalardan kısa ve uzun vadeli kredi almanın maliyetleri, halka ilk arzın komisyon ve diğer maliyetleriyle karşılaştırıldığında oldukça yüksek olabilir. Bu ampirik çalışma 2000 yılında Istanbul Menkul Kıymetler Borsasında halka ilk arzı yapılan hisse senetlerinin performanslarını incelemektedir. Bu analizde literatürde yaygın olarak kullanılan "event-study" yöntemi uygulanarak halka ilk arzı yapılan 34 firmanın 30 günlük arz sonrası performansı ölçülmüştür. Ampirik bulgular literatürde geçen diğer çalışmalar sonuçlarıyla uyumludur. Elde edilen sonuçlara göre, halka arzın ilk iki gününde yatırımcıların normal üstü getiri elde etmeleri mümkündür.*

***Anahtar Kelimeler**: Halka ilk arz, düşük fiyatlama, normal üstü getiri, olay-çalışması.*

1. Introduction

The purpose of this empirical study is to analyse the aftermarket performance of initial public offerings (IPOs) in Istanbul Stock Exchange (ISE) in year 2000. There are total of 35 IPOs in year 2000. One of the initial offerings is eliminated due to data problems. This study examines only short-term aftermarket performances in a 30-day event window by employing standard event study methodology.

The first part of the paper reviews some useful methods for evaluation of common stocks. Next, previous literature about IPO aftermarket performances is briefly

summarized. Then, data and methodology used in the study are explained. Finally, empirical findings and conclusions are presented.

2. IPO Pricing

Pricing of stocks in IPOs may be the most critical stage of the whole going public process since the stock prices calculated for IPOs deeply affect the aftermarket performance of IPOs.

The expectations of issuing firms, investors and underwriters in IPO pricing are considerably different. Issuing firms like to get the highest issuing price to maximize cash flows to the firm. Investors like to purchase shares at a deep discounted price so that they can realize good returns in a short investment period. Underwriters act as an intermediary between investors and issuing firms. If an underwriter determines IPO prices low, the issuing firm may withdraw or switch to another underwriter. If an underwriter determines IPO prices relatively high, investors may be reluctant to buy new issues which results low commissions and/or unwantedinvestment in stocks for the underwriter.

Number of models are available in the literature for valuation of common stocks. Among these, p/e ratio, market-to-book value (m/b), book value (bv) and discounting future cash flows may be the most common models employed in IPO pricing.

2.1. p/e Ratio

Application of this model requires identifying number of similar companies. Then, market prices of common stocks and earnings of firms are averaged and used the stock price determination in IPOs.

$$\text{IPO share price} = (p/e)_{ave}\ (e_{iss.firms}) \qquad (1)$$

p/e represents average price per share over earnings per share of similar companies for a certain period. Earnings per share (e) is computed by dividing net income available shareholders to the number of common shares outstanding. After computing p/e ratio of similar firms, earnings per share of IPO firm is estimated by dividing the expected net income to shareholders by the number of common shares expected to be outstanding after IPO. Finally, average p/e ratio of similar firms is multiplied by the estimated e of IPO firm.

There may be two advantages of this method. p/e ratio shows the attractiveness of IPO shares at the issuing date compared to similar shares at the market. Moreover, p/e ratio provides a comparison of share prices of similar firms. The major disadvantage of this model is that p/e ratio doesn't consider future outlook of the firm which ignores the firms' ability to generate revenue and cash in the future.

2.2. Book Value

This model assumes that all assets on the balance sheet of the issuing firm are carried at market values. Therefore, the deduction of liabilities from total assets provides the book value of the issuing firm. The book value of the firm is then divided by the number of common shares to compute IPO pricing.

$$\text{IPO Share Price} = (\text{T.Assets} - \text{T. Liabilities}) / \text{Num. of Com. Shares Outstanding} \quad (2)$$

The most crucial disadvantage of this model is that accounting figures on financial statements provide very little information about the real value of the firms.

2.3. Market-to-Book Value (m/b)

This model uses market value per share over book value per share of similar firms as a reference point to determine share price in IPOs. As the average market prices of shares of similar firms may be chosen daily, weekly or monthly prices. Book value per share is simply the division of net worth to the number of shares outstanding. Next, the book value of IPO firm is computed and multiplied by the average m/b ratio of similar firms.

$$\text{IPO share price} = (m/b)_{ave} \, (b_{iss.firm}) \quad (3)$$

2.4. Discounting Cash Flows

This model first predicts the expected future free cash flows to common shareholders. Free cash flows could be defined as the amount of cash available to common shareholders after making all required cash payments for expenses and cash investments in assets. The predicted cash flows may mainly be composed of cash dividends. The model assumes that cash dividend payments may have no growth or grow at a constant rate or various rates for some years then converges to a constant rate through infinity. Finally, all predicted dividends are discounted to today. The weighted average cost of capital is often applied as the discount rate in the model. The weighted average cost of capital can be computed as follows; $k = w_d(1-T)k_d + w_{ps}k_{ps} + w_{cs}k_{cs}$. The discounted value is determined to be the share price of issuing firm.

$$\text{IPO share price} = \sum_{t=1}^{\infty} CF_t /(1+k)^t \quad (4)$$

3. Factors Affecting IPO Pricing

Underwriters tend to determine IPOs underpriced to stimulate the demand for new issues. There could be a number of factors proposed by the previous literature explaining underpricing.

Asset Size- A firm possessing larger amount of total assets may have less uncertainty about its existence in the future. Therefore, there may be less tendency for underpricing for larger firms.

Firm's Age- The more number of years the firm in operations, the less uncertainty for investors, and therefore, the less tendency for underpricing.

Total IPO Size- Smaller dollar amount IPOs may be more speculative for investors. Therefore, larger underpricing may be expected for smaller dollar value IPOs.

Market Return- The market's average return may increase during the time between the determination of IPO price and first day of trading. This may cause IPOs to look underpriced.

Going Public Ratio- This ratio may signal investors in two different ways. A small ratio of going public may signal less uncertainty that major shareholders are very confident about the firm. On the other hand, a small ratio of going public may also signal more uncertainty that major shareholders look hesitating sharing earnings and

control of the firm. Therefore, going public ratio may affect underpricing either positively or negatively.

Standard Deviation- Higher the standard deviation in earnings presents higher uncertainty for investors and so more tendency for higher underpricing.

Type of Public Offering- Public offerings could be made by issuing new common shares for new investors or sales of major shareholders'shares or mixture of both. In the first type of public offerings, the cash generated is used by the firm. In the later type of public offerings, the cash generated may not be used by the firm. Therefore, the second and third type of offerings poses more uncertainty for investors.

4. Underpricing of IPOs

Previous literature argues that asymmetric information among issuers to investors, and investors to investors may cause underpricing of IPOs.

Baron (1982) proposes that issuing firms accept the underwriter determined price since issuing firm doesn't have sufficient information about the level of its market price. Therefore, the issuing firms accept underpricing.

Another factor that accounts for the underpricing of IPOs is the institutional lag, which implies the rise of the stock exchange index between pricing and offering periods. (Kıymaz, 1997)

Differently informed investors pose an important role in the underpricing of IPOs. For instance, in Rock's Winner's Curse Model (1986), informed investors only prefer IPOs they know to be underpriced; and this fact forces underwriters to underprice IPOs. (Rock, 1986)

The empirical results obtained in Kıymaz's study (1997) for Istanbul Stock Exchange support Rock's asymmetric information hypothesis. Informed investors would only buy shares if they are underpriced. Knowing this, underwriters tend to underprice IPOs.

5. Data and Methodology

A total of 34 IPOs in ISE in year 2000 are examined by using standard event study methodology. The daily adjusted stock returns are downloaded form ISE web page. The performance of IPOs are measured by abnormal returns over CAPM predicted returns.

Event study methodology is based on acceptance of efficient market hypothesis. The theory states that the value of a security is equal to the discounted value of its all future cash flows and this value includes all information about the firm. Security market line formulation is used in event studies to compute market adjusted stock returns.

$$R_{it} = R_f + (R_m - R_f) \, b_{it} \qquad (5)$$

If an unexpected information becomes available for market participants, the value of security changes to reflect the value of new information. The firm value affected by a new information could be captured by abnormal returns.

$$\sum AR_{it} = \sum R_{it} - \sum R_{mt} \tag{6}$$

R represents actual stock's returns, R_{mt} represents market adjusted stock returns while AR represents abnormal returns.

Firstly, a similar firm based on industry classification and the size of total assets and sales is chosen for each IPO. Next, beta coefficient of similar firm is computed by using previous 91-day returns (Appendix B). Then, risk-free rate is determined by using 91-day T-Bills interest rates (Appendix A).

Finally, utilizing security market line equation, market adjusted stock returns are computed in the event window. Next, the difference between actual returns and computed returns are calculated. The differences are called abnormal returns. Abnormal returns of each IPO are computed, and accumulated for 30-day event window.

6. Empirical Findings

Event day is identified as day t, and aftermarket performances of IPOs are examined for next 30 days. For computed abnormal returns, t test statistics and Wilcoxon Signed Ranks Test statistics are applied. Table 1 summarizes the empirical findings;

Table 1: Abnormal and Cumulative Abnormal Returns of IPOs

Day	AR	CAR	t prob.	WSR test
t	0.07	0.07	0.00	0.00
t+1	10.42	10.53	0.01	0.03
t+2	0.48	11.02	0.02	0.06
t+3	-1.26	9.78	0.06	0.20
t+30	0.53	-7.21	0.46	0.36

AR   : Average Return
CAR   : Cumulative Average Return
WSR   : Wilcoxon Signed Ranks
t prob : t probability

Abnormal returns for t, t+1 and t+2 are statistically different from zero and positive. The total cumulative abnormal returns is 11.02% on the initial two trading days. However, cumulative abnormal returns for whole30-day event window are statistically insignificant and negative. (Graph 1 and 2)

When IPOs in year 2000 are classified considering up or down trends of the market, four turns were visually observed in the stock market. Since all IPOs are made in the last few days of trend1, trend1 is considered as an extension of trend2. Overall, three turns are used for classifying IPOs. (Graph 3)

Trend 2 starts in mid February and ends early May. There are 13 IPOs in this upward trend and abnormal returns in day t are positive and significant. (Appendix 2)
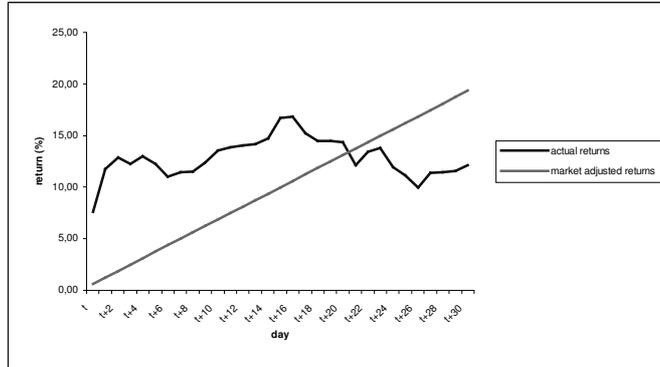
Graph 1: Actual vs Calculated Returns
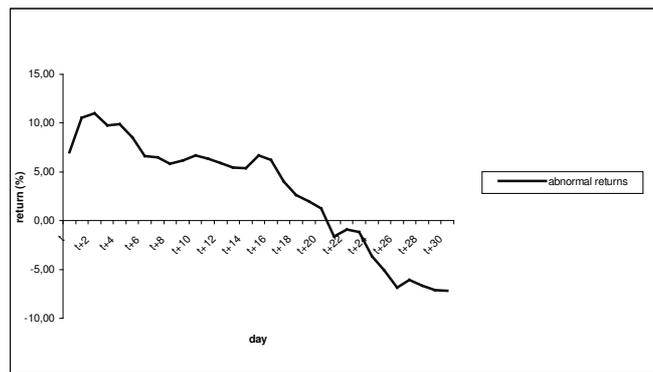
Graph 2: Abnormal Returns

Graph 3: ISE Market Trends In Year 2000

Trend 3 starts in early May and ends mid September. There are 16 IPOs conducted in this downturn trend. However, abnormal returns in in none of the event windows are significant.

Trend 4 starts in mid September and continue through November. The rest part of the year is not included in the study since there was no IPO. There are only 5 IPOs conducted in this upward trend. None of the abnormal returns in this period is significant.

Next, all IPOs are reclassified based upon type of going public; increasing paid-in capital by issuing new shares or selling existing shares of major shareholders, or mixture of both. The reclassification results 22 IPOs for capital increase type, only 4 IPOs for sales of existing shares of major shareholders type, and 8 IPOs in mixture of both. Empirical findings show that the market positively responds to increase in capital by providing significant abnormal returns in day t through day t+3. Nevertheless, for the later types of IPOs the market provides positive and significant abnormal returns only at day t.

The empirical results are summarized in Table 2 to develop an investment strategy.

Table 2: Investment Strategies for IPOs

Market Trend	Day	SOE		NSI		MIX	
		%	Str	%	Str	%	Str
Bullish	0	-	Buy	-	Buy	-	Buy
	t	6.35	Sell	8.31	Hold	8.98	Sell
	t+1			13.42	Hold		
	t+2			14.41	Sell		
	t+3			12.58			
	t+30			14.85			
Bearish	0	-	Buy	-	Buy	-	Buy
	t	5.83	Sell	6.24	Hold	6.20	Sell
	t+1			15.45	Hold		
	t+2			16.89	Hold		
	t+3			16.95	Sell		
	t+30						

Str : Investment Strategy
NSI : New Shares Issues
SOE : Sales of Existing Shares
MIX : Mixture of NSI and SOE.
% : Abnormal Return in Percentage

Investors should invest in capital increase IPOs and liquidate shares at day t+2 if the market is bullish, or liquidate at day t+3 if the market is bearish. This strategy provides a cumulative 14.41% abnormal return in bullish, 16.95% on bearish markets over 3-day period. Investors should also invest in public sale of existing shares or in mixture of two and sell the shares in the same trading day.

This strategy provides a 6.35% abnormal return on the average for public sales of existing shares while 8.98% abnormal return on the average for mixture of public sales of existing shares in bullish markets. The abnormal returns for public sales of existing sales and mix type in bearish markets are lower relative to bullish markets, 5.83% and 6.20% respectively.

7. Conclusions

Empirical findings considering trends in the market and type of going public are also evaluated for developing an investment strategy. If the market trend is upward, investors should invest in IPOs not considering the type of going public. If the reason of going public is to acquire additional capital, investor should hold his/her investments three days and then liquidate. For all other types of going public, investor should liquidate his/her position in the same day. If the market trend is downward, investor may invest in all type of IPOs. Investor should hold his/her position four days for only capital increase IPOs. For all others, investor should liquidate his/her position in the same trading day.

Overall, the empirical results may be applied to develop investment strategies. Three criteria for investment making could be suggested for investors. First, investors should compute IPO price of shares by utilizing various stock valuation models. Then, investors should expect that IPOs are to be underpriced. Next, investors should consider type of going public. Empirical findings support that the capital increase IPOs provide the highest abnormal returns. Lastly, the market trends should be paid attention. Capital increase IPOs in market downturns provides the highest abnormal returns for investors.

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APPENDIX A

T-Bill Auction	Maturity	Interest Rate
January 2000	91-day	8.52 %
February 2000	91-day	9.59 %
March 2000	336-day	32.82 %
April 2000	91-day	8.32 %
May 2000	91-day	8.76 %
July 2000	91-day	7.18 %
August 2000	91-day	7.06 %
August 2000	329-day	29.76 %
October 2000	91-day	8.94 %
November 2000	91-day	8.80 %

Maturities older than 91 days are converted to 91-day returns using the formula $(1+r)^{\frac{91}{x}}$, r being interest rate and x being maturity.

APPENDIX B

	IPO Firm	Similar Firm	IPO Date	Beta	Type of IPO
1	Yazıcılar Otomotiv	Koç Holding	February 17	0.79	SOE
2	Karsan Otomotiv	Otokar	February 21	0.49	MIX
3	Nuh Çimento	Adana Çimento C	February 24	0.63	NSI
4	Şeker Piliç	Banvit	February 24	0.35	NSI
5	Anadolu Hayat	Anadolu Sigorta	February 28	0.68	SOE
6	Türk Ekonomi Bankası	Garanti Bankası	March 02	1.02	MIX
7	Lio Yağ	Pınar Süt	March 02	0.41	MIX
8	Alkim Alkali Kimya	Eczacıbaşı İlaç	March 28	0.46	NSI
9	İş Genel Finansal Kiralama	Toprak Leasing	March 28	0.45	NSI
10	Doğan Burda Rizzoli	Hürriyet Gazetecilik	March 28	1.07	SOE
11	EGS Holding	Koç Holding	March 30	0.86	NSI
12	Ersu	Pınar Süt	March 30	0.46	NSI
13	Soda Sanayi	Eczacıbaşı İlaç	April 20	0.57	MIX
14	Logo Yazılım	Aselsan	May 08	0.91	NSI
15	Sezginler Gıda	İntema	May 11	0.68	NSI
16	Zorlu Enerji	Aksu Enerji	May 25	0.88	NSI
17	Altınyağ Kombinaları	Pınar Süt	May 25	0.64	NSI
18	Sınai Yatırım Bankası	Garanti Bankası	June 01	0.96	NSI
19	Dentaş Ambalaj	Viking Kağıt	June 08	0.62	NSI
20	Acıbadem Sağlık Hizmetleri	Marmaris Altınyunus	June 15	0.66	NSI
21	İpek Matbaacılık	Duran Ofset	June 28	0.30	NSI
22	Ak Enerji	Aksu Enerji	July 07	0.97	NSI
23	Ayen Enerji	Aksu Enerji	July 05	1.08	MIX
24	Vakıf Risk Sermayesi Yatırım Ortaklığı	Borusan Yatırım	July 05	0.87	NSI
25	Turkcell	Aselsan	July 11	0.97	SOE
26	Escort Computer	Aselsan	July 20	0.96	NSI
27	MenderesTekstil	Kordsa	July 27	0.88	NSI
28	Tek-Art Turizm	Marmaris Martı	July 10	0.64	MIX
29	Favori Dinlenme Yerleri	Marmaris Martı	August 31	0.60	NSI
30	Sanko Pazarlama	Kordsa	October 05	0.92	MIX
31	Link Bilgisayar	Aselsan	October 26	0.90	NSI
32	EGS Finansal Kiralama	Toprak Leasing	October 26	0.21	NSI
33	Arena Bilgisayar	Aselsan	November 02	0.92	MIX
34	Alkim Kâğıt	Viking Kâğıt	November 02	0.38	NSI

NSI: New Shares Issues
SOE: Sales of Existing Shares
MIX: Mixture of NSI and SOE.

APPENDIX C

	IPO Firm	CAR_{it}				
		t	t+1	t+2	t+3	t+30
1	Yazıcılar	3.72	-12.51	-12.37	-14.31	-76.60
2	Karsan	18.32	17.08	24.92	20.35	26.69
3	Nuh Çimento	-0.17	7.83	4.50	5.69	-18.15
4	Şeker Piliç	-1.08	4.09	1.54	-2.52	-38.13
5	Anadolu Hayat Sigorta	12.19	16.01	11.51	6.91	-36.57
6	Türk Ekonomi Bankası	4.78	-4.24	-12.56	-17.45	-89.53
7	Lio Yağ	-1.01	-14.03	-17.31	-18.33	-46.32
8	Alkim Alkali Kimya	18.60	8.45	12.73	9.44	20.72
9	İş Genel Finansal Kiralama	20.59	31.53	32.80	22.68	59.70
10	Doğan Burda Rizzoli	3.13	-4.45	-7.83	-12.26	-26.50
11	EGS Holding	16.99	10.91	11.35	7.03	-20.95
12	Ersu	-5.05	17.74	23.57	33.15	85.90
13	Soda Sanayi	21.03	26.66	28.66	28.50	-22.84
14	Logo Yazılım ve Ticaret	20.95	67.38	61.16	59.70	46.12
15	Sezginler Gıda	20.69	7.01	8.98	2.98	-40.54
16	Zorlu Enerji	22.08	64.26	64.28	55.82	36.34
17	Altınyağ Kombinaları	0.46	-1.41	-6.83	-12.48	-65.83
18	Sınai Yatırım Bankası	5.48	-0.04	0.58	-1.95	-70.94
19	Dentaş	-4.93	-8.56	-10.74	-19.20	-26.29
20	Acıbadem Sağlık	-15.41	-21.70	-21.06	-19.41	13.46
21	İpek Matbaacılık	2.92	7.21	9.92	15.28	111.17
22	Ak Enerji	-6.03	-0.98	-3.98	-8.69	-11.13
23	Ayen Enerji	8.38	5.54	0.64	0.68	-5.31
24	Vakıf Risk Sermayesi Yatırım Ortaklığı	23.23	71.08	88.74	98.76	118.58
25	Turkcell	5.83	0.61	-2.65	-1.32	-14.29
26	Escort Computer	1.14	-0.89	-2.97	-5.09	11.02
27	Menderes Tekstil	-6.61	5.94	12.35	19.86	54.82
28	Tek-Art Turizm	1.82	-5.16	-3.24	-3.20	41.90
29	Favori Dinlenme Yerleri	7.40	49.89	66.68	85.17	39.49
30	Sanko Pazarlama	1.77	0.44	6.89	4.16	11.76
31	Link Bilgisayar	23.88	21.05	21.39	23.38	-59.80
32	EGS Finansal Kiralama	0.01	-10.56	-15.93	-15.93	-102.67
33	Arena Bilgisayar	8.41	4.28	1.50	-7.83	-69.24
34	Alkim Kağıt	4.56	-2.49	-2.41	-6.93	-81.15
	Average	0.07	10.53	11.02	9.78	-7.21
	t-probability	0.00	0.01	0.02	0.06	0.46

APPENDIX D

			Type of IPO			Market Trend		
			SOE	NSI	MIX	Trend 1-2	Trend 3	Trend 4
	Sample Size		4	22	8	13	16	5
General Statistics	Mean Return	t	6.22	6.80	7.98	8.62	5.46	7.73
		t+1	-0.08	14.90	12.96	8.08	15.01	2.54
		t+2	-2.83	16.21	16.27	7.81	16.37	2.29
		t+3	-5.24	15.76	16.69	5.30	16.68	-0.63
		t+30	-38.49	2.81	46.58	-14.05	14.91	-60.22
	Standard Deviation	t	4.15	11.93	7.98	9.55	11.43	9.57
		t+1	12.01	25.96	12.96	14.08	29.83	11.69
		t+2	10.35	29.31	16.27	16.83	33.55	13.61
		t+3	9.91	32.74	16.69	17.55	37.32	15.21
		t+30	26.99	61.99	46.58	50.28	54.77	43.31
	Standard Error Mean	t	2.07	2.54	2.82	2.65	2.86	4.28
		t+1	6.01	5.53	4.58	3.90	7.46	5.23
		t+2	5.18	6.25	5.75	4.67	8.39	6.09
		t+3	4.95	6.98	5.90	4.87	9.33	6.80
		t+30	13.50	13.22	16.47	13.94	13.69	19.37
Test Statistics	t probability	t	0.058	0.014	0.026	0.014	0.075	0.145
		t+1	0.990	0.014	0.432	0.062	0.062	0.652
		t+2	0.622	0.017	0.542	0.123	0.070	0.726
		t+3	0.367	0.035	0.888	0.304	0.094	0.931
		t+30	0.065	0.834	0.284	0.333	0.293	0.036
	Wilcoxon SRT	t	0.068	0.031	0.017	0.079	0.079	0.043
		t+1	1.000	0.024	0.401	0.179	0.179	0.686
		t+2	0.465	0.026	0.575	0.278	0.278	0.686
		t+3	0.273	0.067	0.889	0.408	0.408	0.686
		t+30	0.068	0.961	0.327	0.379	0.379	0.080

NSI: New Shares Issues
SOE: Sales of Existing Shares
MIX: Mixture of NSI and SOE.