Internet Appendix A
For
Pre-Market Trading and IPO Pricing

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Table IA-1: Comparison of sample firms and ESM firms with no IPO

This table compares our sample that includes 218 Taiwanese firms that conducted IPOs during 10/2005-02/2011, with 299 firms that have traded on the ESM during the same period but haven't had an IPO by the time of analysis (Jan 2014). Panel A compares their firm characteristics when they start ESM trading. Panel B compares liquidity, volatility and returns during their first 6 months of trading on the ESM. NT$ refers to New Taiwan Dollars. All NT$ values are deflated to constant year 2011 NT$ based on Taiwan's CPI index. The exchange rate at the end of year 2011 is US$1 = NT$30.29. *Debt ratio* is total debt over assets. *Return on assets* is annual net earnings relative to assets. *Turnover* is the average of daily trading volume over shares outstanding. *Dollar volume* is the average of daily trading volume times closing price of the day. *%Zero trading* is the percentage of trading days with zero trading. *%Zero return* is the percentage of trading days with zero stock return or no trading. *Amihud ratio* is daily average ratio of the absolute value of stock return (in percentage point) over dollar trading volume (in millions of $NT). *Volatility* is the standard deviation of daily stock returns. *Cumulative return* is the buy-and-hold return, including both dividends and capital gains. We use *t*-test for differences in means, and Wilcoxon-Mann-Whitney test for differences in medians. ***, **, and * denote the difference is significant at the 1%, 5%, and 10% levels, respectively.

Panel A: firm characteristics at the initiation of ESM trading

Variables	Sample firms		ESM firms with no IPO		Difference	
	Mean	Median	Mean	Median	Mean	Median
Firm Age (years)	12.14	9.06	12.01	8.67	0.13	0.39
Assets (millions of NT$)	2101.32	882.57	3175.15	845.48	-1073.83	37.09
Revenues (millions of NT$)	1640.62	652.83	1486.77	645.09	153.85	7.74
Debt ratio (%)	41.33	41.86	42.94	42.36	-1.61	-0.51
Return on Assets (%)	9.22	8.93	3.73	3.93	5.50***	5.01***

Panel B: liquidity, volatility and return during the first 6 months of trading on ESM.

Variables	Sample firms		ESM firms with no IPO		Difference	
	Mean	Median	Mean	Median	Mean	Median
Turnover (%)	0.07	0.03	0.07	0.02	0.00	0.01*
Dollar volume (MM)	4.17	0.44	2.32	0.58	1.85*	-0.14
%zero trading	44.66	45.24	49.04	51.61	-4.39	-6.37*
%zero return	62.88	67.86	66.12	77.24	-3.24	-9.38*
Amihud ratio	34.76	8.33	63.17	14.52	-28.40**	-6.19***
Volatility (%)	4.40	3.70	4.92	3.82	-0.52*	-0.13
Cumulative return (%)	11.72	4.59	-4.61	-6.08	16.33***	10.67***

Table IA-2: Hiatus between key dates

Variables	N	Mean	Median	Std. Dev	Min.	Max.
First trading day on ESM to IPO apply day (calendar days)	218	634.33	381.50	554.38	183	2,716
IPO apply day to first trading day on TWSE/GTSM (calendar days)	218	192.49	180.50	63.66	84	406

Table IA-3: Pre-Market and After-Market Trading Characteristics

Turnover is the average of daily trading volume over shares outstanding. *Dollar volume* is the average of daily trading volume times closing price of the day. *%Zero trading* is the percentage of trading days with zero trading. *%Zero return* is the percentage of trading days with zero stock return or no trading. *Amihud ratio* is daily average ratio of the absolute value of stock return (in percentage point) over dollar trading volume (in millions of $NT). *Volatility* is the standard deviation of daily stock returns. *Cumulative return* is the buy-and-hold return, including both dividends and capital gains. All variables exclude the first day of trading after the IPO.

Variables	N	Mean	Median	Std. Dev	Min	Max
Turnover (%)						
6 months after listing at ESM	218	0.07	0.03	0.12	0.00	0.72
6 months prior to applying	218	0.09	0.06	0.11	0.00	0.58
3 months prior to pricing	218	0.19	0.14	0.20	0.00	1.43
6 months after IPO	218	0.96	0.74	0.71	0.06	3.56
Dollar volume (MM)						
6 months after listing at ESM	218	4.17	0.44	15.14	0.00	142.51
6 months prior to applying	218	5.25	1.30	15.12	0.00	137.10
3 months prior to pricing	218	11.48	4.18	26.10	0.00	302.03
6 months after IPO	218	75.95	26.50	157.82	0.72	1356.49
%Zero trading						
6 months after listing at ESM	218	44.66	45.24	31.75	0.00	100.00
6 months prior to applying	218	29.03	20.00	26.84	0.00	100.00
3 months prior to pricing	218	10.05	1.59	16.76	0.00	95.24
6 months after IPO	218	0.04	0.00	0.39	0.00	5.56
%Zero return						
6 months after listing at ESM	218	62.88	67.86	29.65	5.56	100.00
6 months prior to applying	218	48.82	44.84	28.34	3.97	100.00
3 months prior to pricing	218	26.34	19.05	21.10	1.59	100.00
6 months after IPO	218	6.07	5.56	3.83	0.00	22.22
Amihud ratio						
6 months after listing at ESM	213	34.76	8.33	79.64	0.00	720.50
6 months prior to applying	217	14.35	4.61	26.98	0.02	224.13
3 months prior to pricing	216	5.06	1.36	10.66	0.01	89.84
6 months after IPO	218	0.59	0.14	2.06	0.00	26.00
Volatility (%)						
6 months after listing at ESM	208	4.40	3.70	2.78	0.35	19.97
6 months prior to applying	217	3.70	3.34	1.82	1.21	14.26
3 months prior to pricing	216	3.56	3.23	1.50	1.39	11.54
6 months after IPO	218	3.15	3.14	0.73	1.36	5.43
Cumulative return (%)						
6 months after listing at ESM	218	11.72	4.59	43.41	-74.08	252.24
6 months prior to applying	218	35.66	24.15	50.87	-56.12	257.69
3 months prior to pricing	218	22.66	9.04	55.65	-65.47	377.33
6 months after IPO	218	1.98	-5.72	53.93	-81.79	429.30

Table IA-4: Predictability of Initial Returns

The dependent variable is the percentage *Initial return,* which is the ratio of the first trading day closing price over the IPO offer price minus one. *Expected initial return* is the ratio of the closing price on the pre-pricing day on the ESM over the offer price minus one. *Price revision* is the offer price relative to the midpoint of the initial price range, minus one. *Positive price revision* equals price revision if it is positive, and zero otherwise. *Market return* is the three-week value-weighted return of all stocks on TWSE and GTSM prior to the IPO pricing. *Volatility* is the standard deviation of daily stock returns during the 3 months prior to IPO pricing. *VC dummy* equals 1 if the firm is backed by venture capital, and zero otherwise. *Return on assets* is annual earnings relative to assets. All returns are measured as percentages. *t*-statistics are adjusted for heteroskedasticity. ***, **, and * denote significance at the 1, 5, and 10 percent level, respectively.

Model	(1)		(2)		(3)	
Variables	Estimates	t-value	Estimates	t-value	Estimates	t-value
Expected initial return	1.23	(7.98)***			1.21	(7.25)***
Price revision			2.44	(1.78)*	1.71	(2.44)**
Positive Price revision			-2.56	(-0.84)	-1.79	(-1.23)
Market return			2.84	(3.47)***	0.31	(0.81)
Volatility					3.11	(2.14)**
VC dummy					4.08	(0.89)
Return on assets					0.21	(1.12)
Log(assets)					0.72	(0.31)
Intercept	-16.65	(-2.07)**	56.77	(7.05)***		
Industry dummies					yes	
Year dummies					yes	
R^2	0.765		0.075		0.794	
N	218		218		216	

Table IA-5: Underwriting fees and intended price discount

This table examines the relationship between underwriting income and underpricing the level. When examining the relationship between the underpricing level and the FPO fee, we focus on the subscription ratio, which is the variable component of the FPO fee. Using the FPO fee rather than the subscription ratio yields similar results. The FPO subscription ratio is the total demand from the fixed-price offering tranche, relative to the shares sold through that tranche. The percentage FPO fee is 8.5 times the FPO subscription ratio, relative to the offer price. The *bookbuilding fee* is the fee bookbuilding investors pay for each share allocated to them, relative to the offer price, multiplied by 100%. *Intended price discount* equals one minus the ratio of the midpoint of the price range over the closing price on the day before bookbuilding starts, multiplied by 100%. *Volatility* is the standard deviation of percentage daily stock returns during the 3 months prior to IPO pricing. *VC dummy* equals to 1 if the firm is backed by venture capital and zero otherwise. *Return on assets* is percentage annual earnings relative to assets. *t*-statistics are adjusted for heteroskedasticity. ***, **, and * denote significance at the 1, 5, and 10 percent level, respectively.

Panel A: The dependent variable is the FPO subscription ratio

Model	(1)		(2)	
Variables	Estimates	t-value	Estimates	t-value
Intended price discount	4.09	(2.43)**	4.13	(2.34)**
Volatility			-3.90	(-1.12)
VC dummy			-31.11	(-1.23)
Return on assets			3.21	(1.89)*
Log(assets)			-27.11	(-2.84)***
Intercept	-42.35	(-0.96)		
Industry dummies			yes	
Year dummies			yes	
R^2	0.117		0.302	
N	204		202	

Panel B: The dependent variable is the percentage bookbuilding fee.

Model	(1)		(2)	
Variables	Estimates	t-value	Estimates	t-value
Intended price discount	0.03	(2.98)***	0.02	(1.66)*
Volatility			-0.06	(-0.59)
VC dummy			0.77	(2.96)***
Return on assets			-0.006	(-0.67)
Log(assets)			-0.05	(-0.3)
Intercept	0.73	(2.35)**		
Industry dummies			yes	
Year dummies			yes	
R^2	0.040		0.345	
N	218		216	

Figure IA-1: A Time Line of the IPO Process

| At least six months before applying | | Bookbuilding period: Four business days | | Typically four business days in between |

Start ESM trading

IPO application

One day after bookbuilding begins

FPO subscription begins (FPO and bookbuilding end on the same day)

Pricing day (the day after bookbuilding ends)
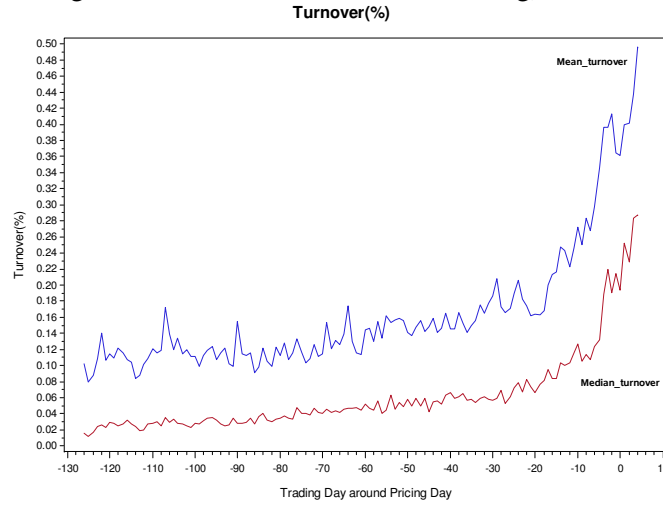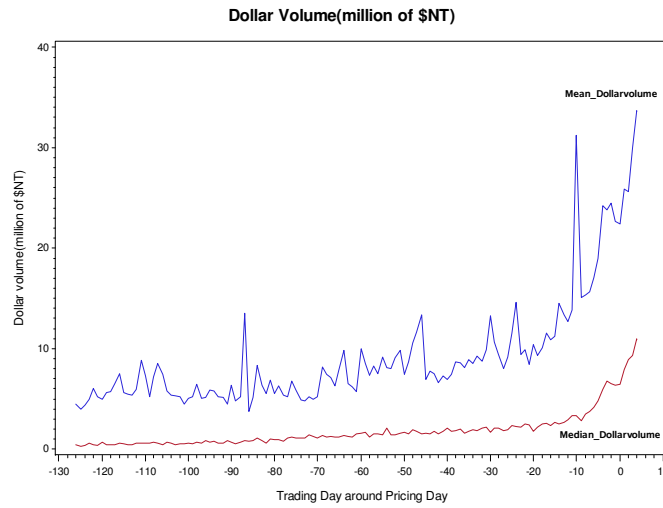
Start trading on TWSE or GTSM
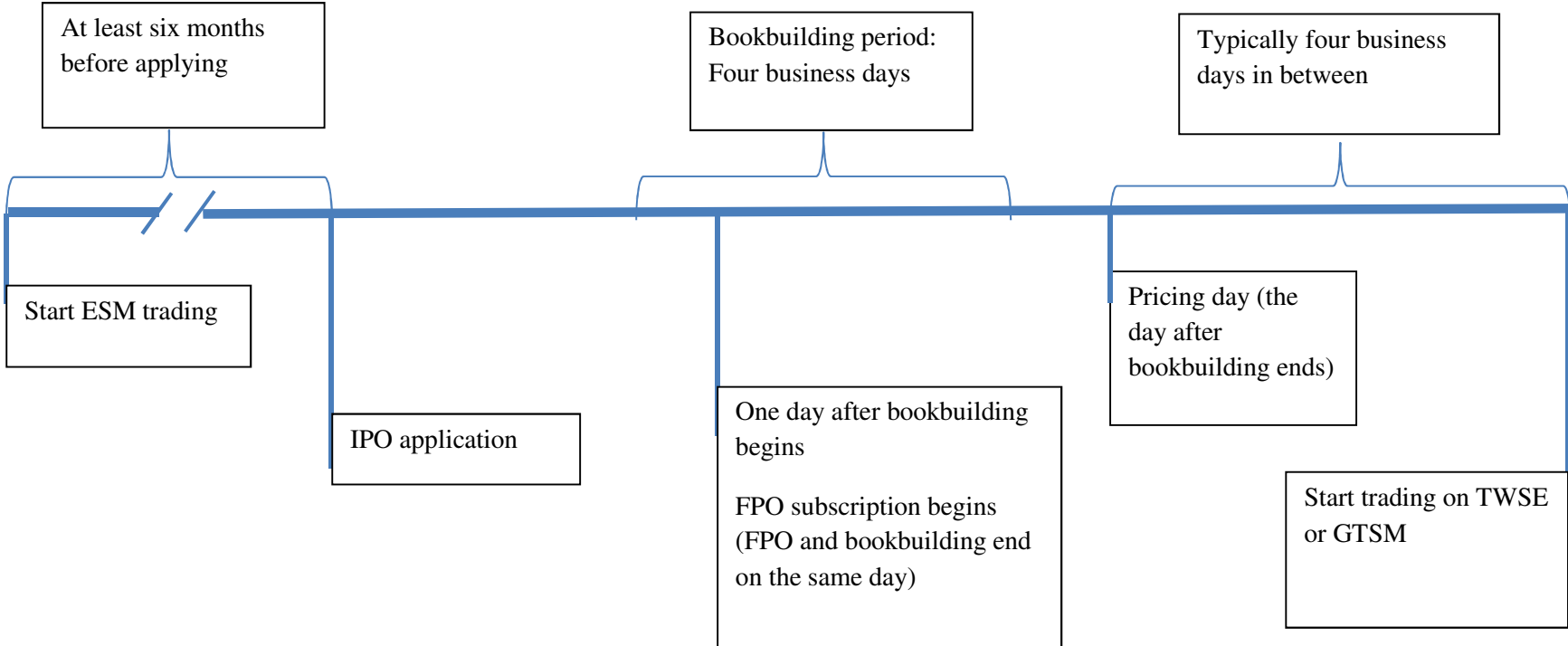
Figure IA-2: Turnover, dollar volume, and cumulative buy-and-hold return after ESM listing

IA-2.1 Turnover (daily trading volume relative to shares outstanding)

Turnover(%)

IA-2.2 Dollar volume

Dollar Volume(million of $NT)
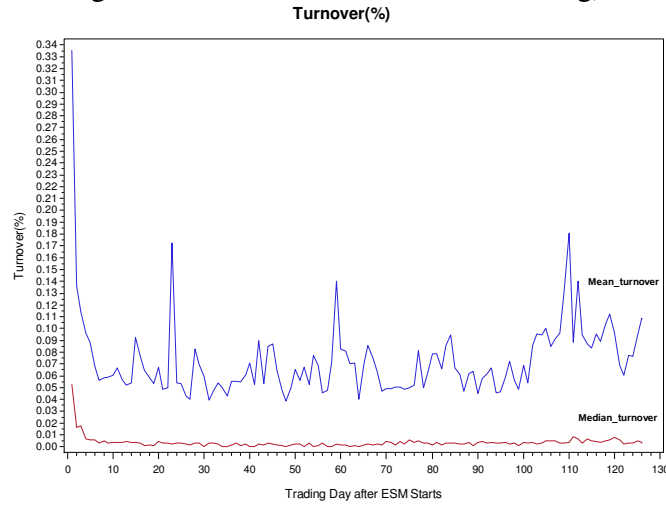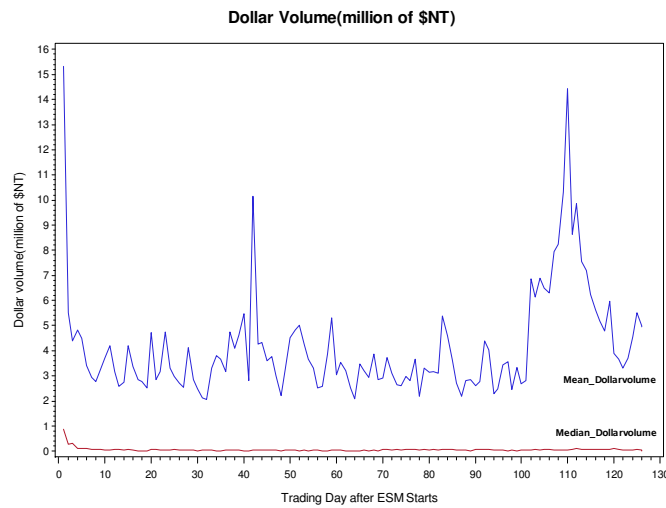
IA-2.3 Cumulative buy-and-hold return
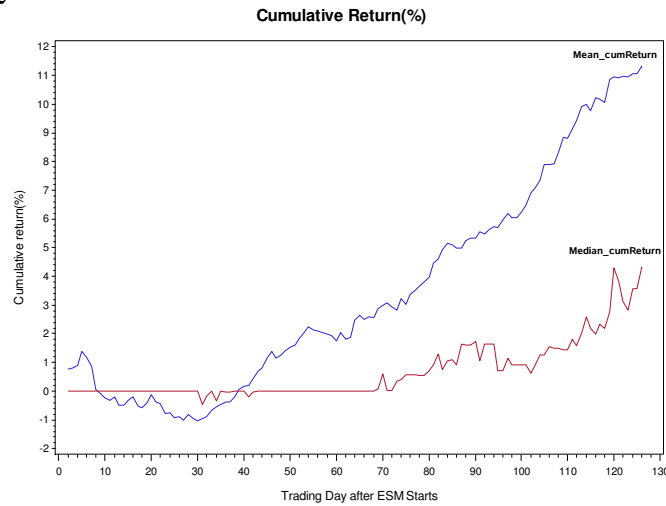
Cumulative Return(%)

Figure IA-3. Turnover, dollar volume and cumulative buy-and-hold return around IPO application

IA-3.1 Turnover (daily trading volume relative to shares outstanding)

Turnover(%)

IA-3.2 Dollar volume

Dollar Volume(million of $NT)
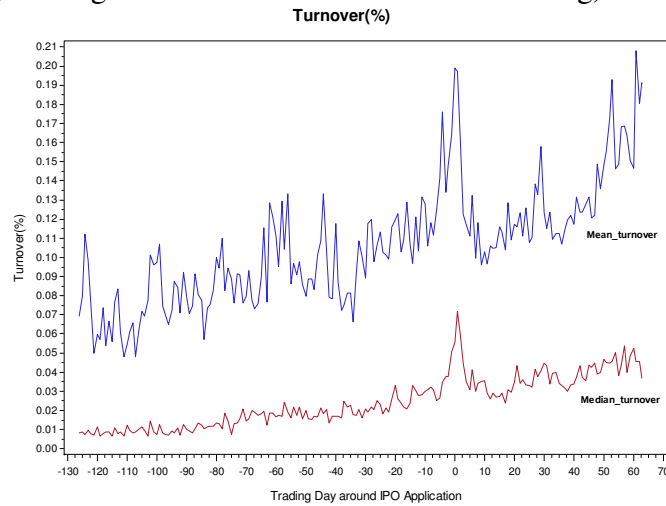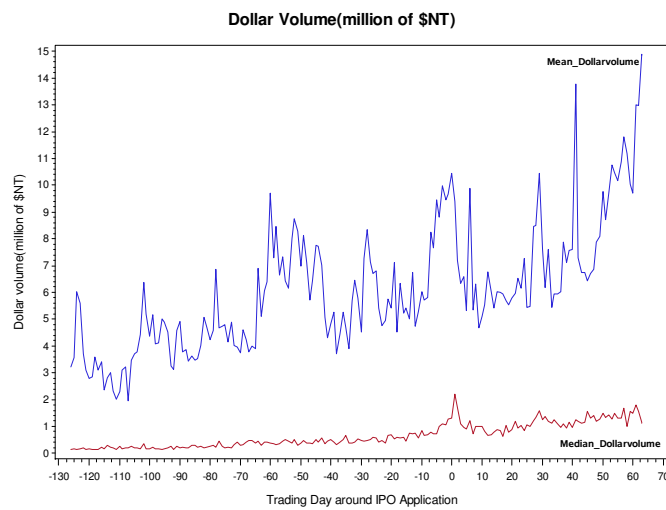
IA-3.3 Cumulative buy-and-hold return
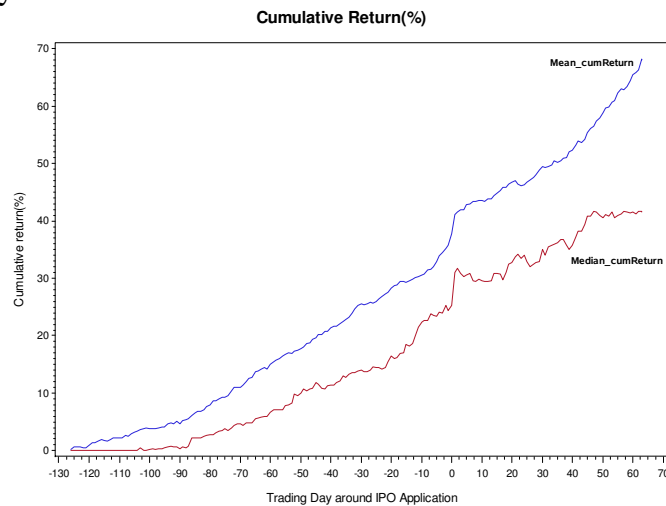
Cumulative Return(%)

Figure IA-4: Turnover, dollar volume and cumulative buy-and-hold return around IPO pricing

IA-4.1 Turnover (daily trading volume relative to shares outstanding)

IA-4.2 Dollar volume

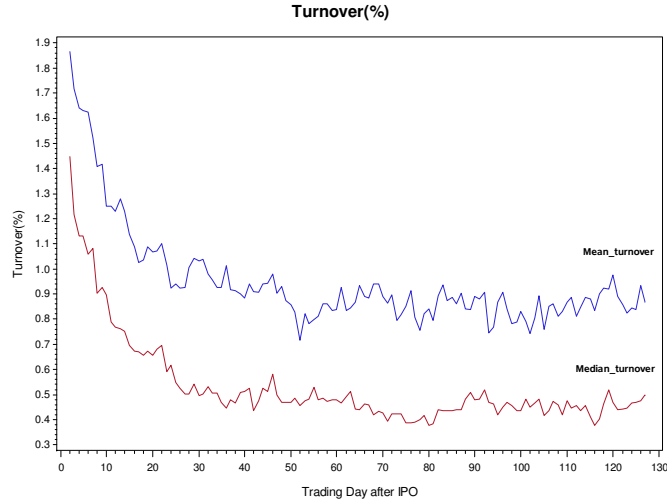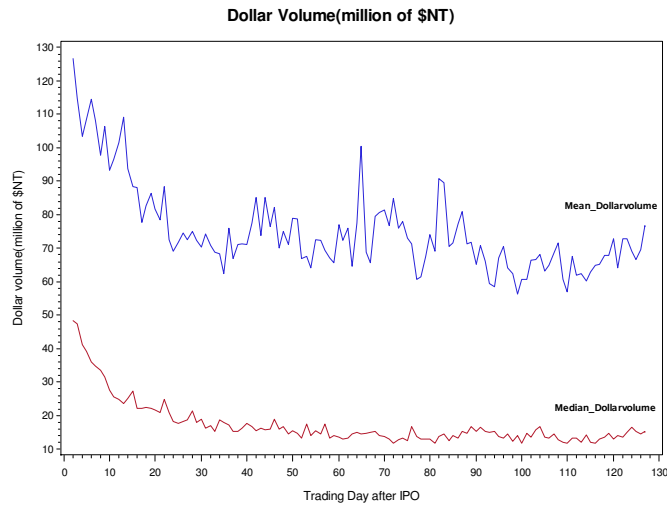IA-4.3 Cumulative buy-and-hold return
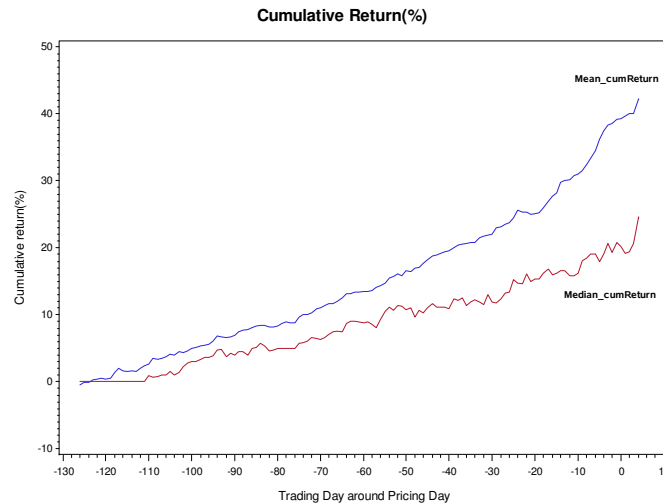
Figure IA-5: Turnover, dollar volume and cumulative buy-and-hold return after Listing on TWSE or GTSM (First trading day excluded)

IA-5.1 Turnover(daily trading volume relative to shares outstanding)

Turnover(%)

IA-5.2 Dollar volume

Dollar Volume(million of $NT)

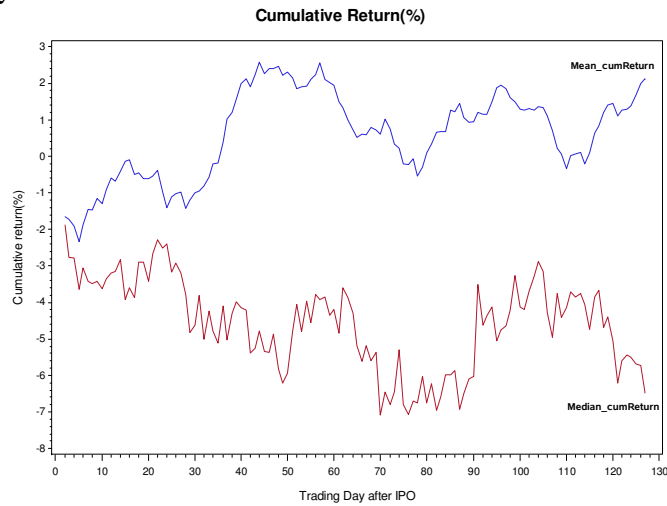IA-5.3 Cumulative buy-and-hold return

Cumulative Return(%)

Figure IA-6. Price Error and Price Accuracy around IPO pricing

IA-6.1 Price Inaccuracy

Price Inaccuracy(%)

1.2 Price Error

Price Error(%)