



Università Bocconi
Paolo Baffi Centre
on Central Banking and Financial
Regulation

The Chinese Stock Market 中国股票市场

Marianna Caccavaio, FEEM and Centro Baffi

Fondazione Eni Enrico Mattei
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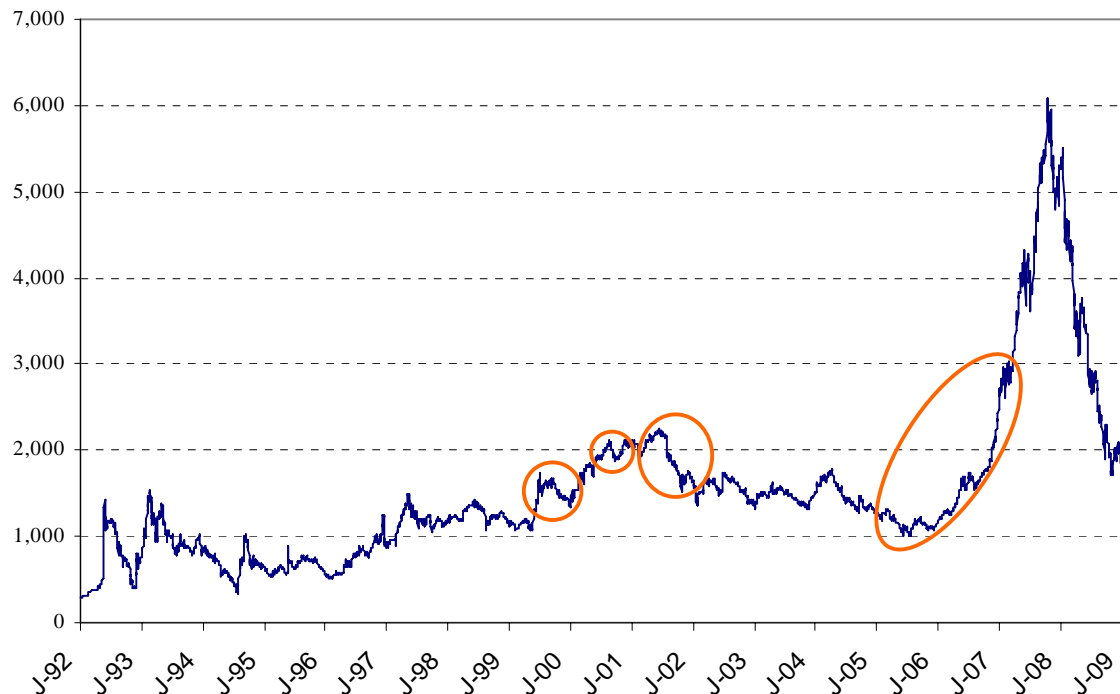
Motivation: JBF.

- Journal of Banking and Finance 33 (2009) 1: special issue on China.
- The first initiative of a major international finance journal which was keen to publish the work on various aspects of Chinese financial and capital markets.
 - » As society is moving in the direction of a more integrated global community, we can see that in this new century, China will be an important key player who could influence many global issues facing humanity.

Motivation: The reform of the Chinese stock market.

- In 2005-2006 the Chinese authorities have reformed the stock market through corporate actions heavily featuring an increase in the supply of shares.
- To our knowledge, no other stock market in financial history has witnessed such a widespread and large increase in supply (about 33%) in such a short time period (less than two years).
- Two previous attempts had failed because of negative market reactions.

Shanghai Stock Exchange Composite Index.

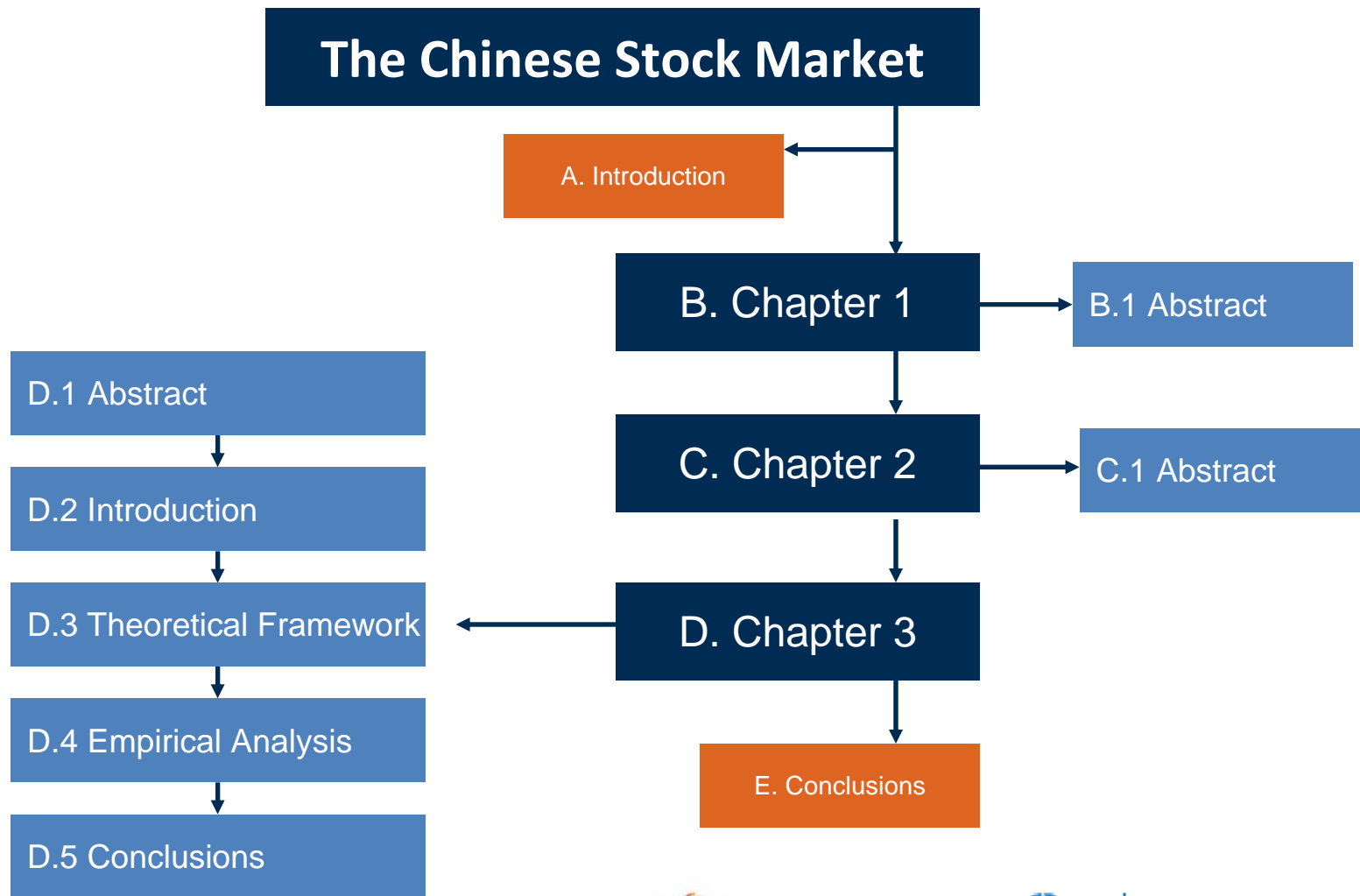


- The previous attempts to sell NTS all took place when the market was a peak, and ended in failure when the market reacted adversely.
- The latest attempt has taken place during a bear market, when there is a clear need for action that will support the market.

Interesting research topics.

- The setup of the Chinese reform, together with various unique market imperfections, is ideal to investigate several financial issues:
 - » (i) Studying the impact of corporate actions on the determination of relative stock prices in a speculative market;
 - » (ii) Understanding the roles of fundamentals in the repricing of the stock market;
 - » (iii) Estimating the slope of the demand function for stocks using the increase in supply of shares caused by the reform (current research).

Outline of the talk.



A.1

A. Introduction

A.1. Classes of shares

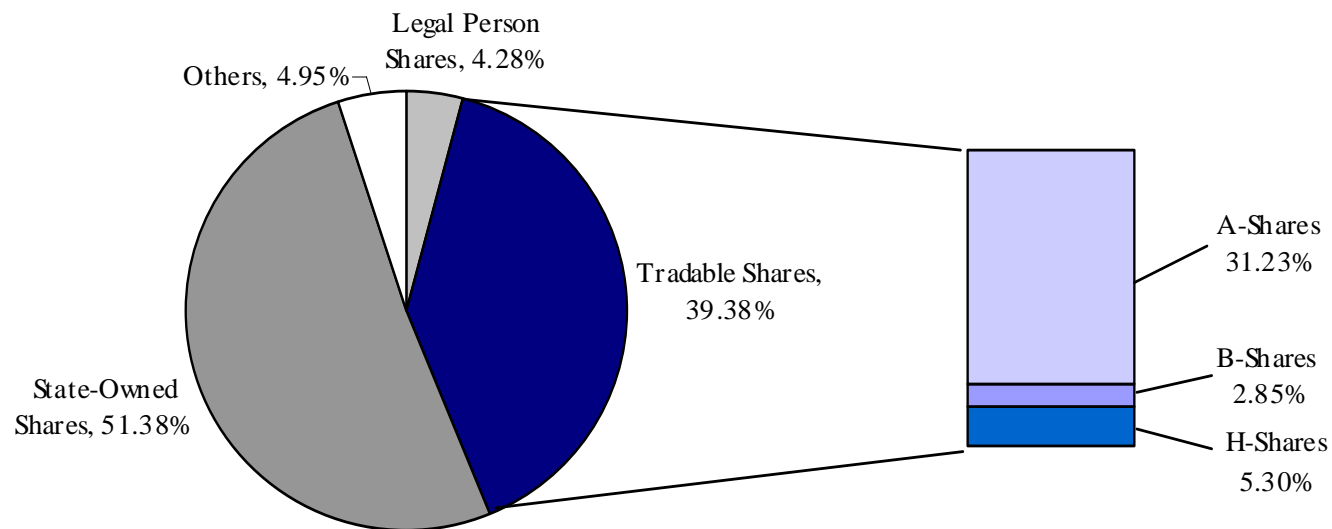
A.2. The reform timeline

A.3. Dataset

B. Chapter 1 C. Chapter 2 D. Chapter 3 E. Conclusions

Classes of shares (1/3).

- Chinese firms issue multiple classes of shares:
 - » Tradeable Shares (TS): A-Shares, B-Shares, H-Shares.
 - » Non-tradeable Shares (NTS): State-owned, Legal person, Others.
- ⇒ NTS have the same cash flow and voting rights as TS.



A.1

Classes of shares (2/3).

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- A-shares could be traded only by domestic investors until 2003.
- B-shares are denominated in foreign currencies and until February 2001 were reserved to foreign investors.
- Overseas listed shares are issued by Chinese companies on securities markets outside mainland China (H-shares Hong Kong, N-shares New York, L-shares London and S-shares Singapore).
- Legal-person shares have been given, in the restructuring process of State-owned enterprises (SOEs), to domestic institutions, most of which are partially owned by the central or local government.
- State shares are owned by the State Council.

A.1

Classes of shares (3/3).

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- Transfer of NTS has become possible since mid 1990s through irregularly scheduled auctions and over-the-counter transactions.
 - » Green-Black(2003): Transfer involved large blocks affecting the control of companies.
 - » Chen-Xiong(2001): Large discount, Price of NTS/Price of TS=80%.
 - » Poor governance and potential expropriation of minority investors.
 - » Market illiquidity.
 - » Difficult market for corporate control.

A.2

A. Introduction

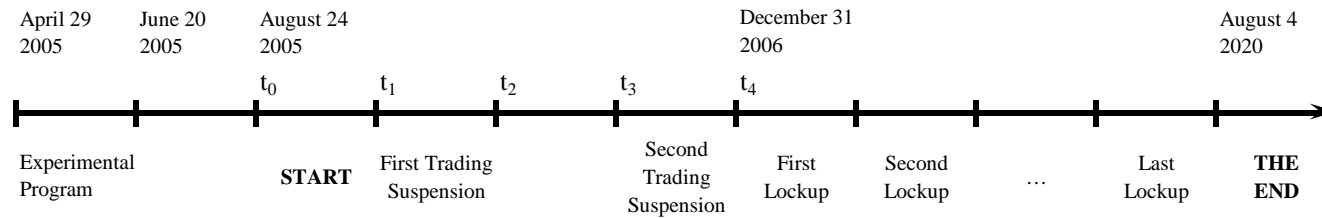
A.1. Classes of shares

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The Reform Timeline: Announcements.



- On April 29, 2005, the government launched an experimental program to convert NTS into TS among a selected group of firms.
- On June 20, 2005, the China Security Regulatory Commission (CRSC) initiated the second round of the program, involving 42 companies.
- On August 24, 2005, (t_0) the government announced that all NTS should be converted into TS by the end of 2006 and NTS holders should compensate TS holders in exchange for the tradability.

A.2

A. Introduction

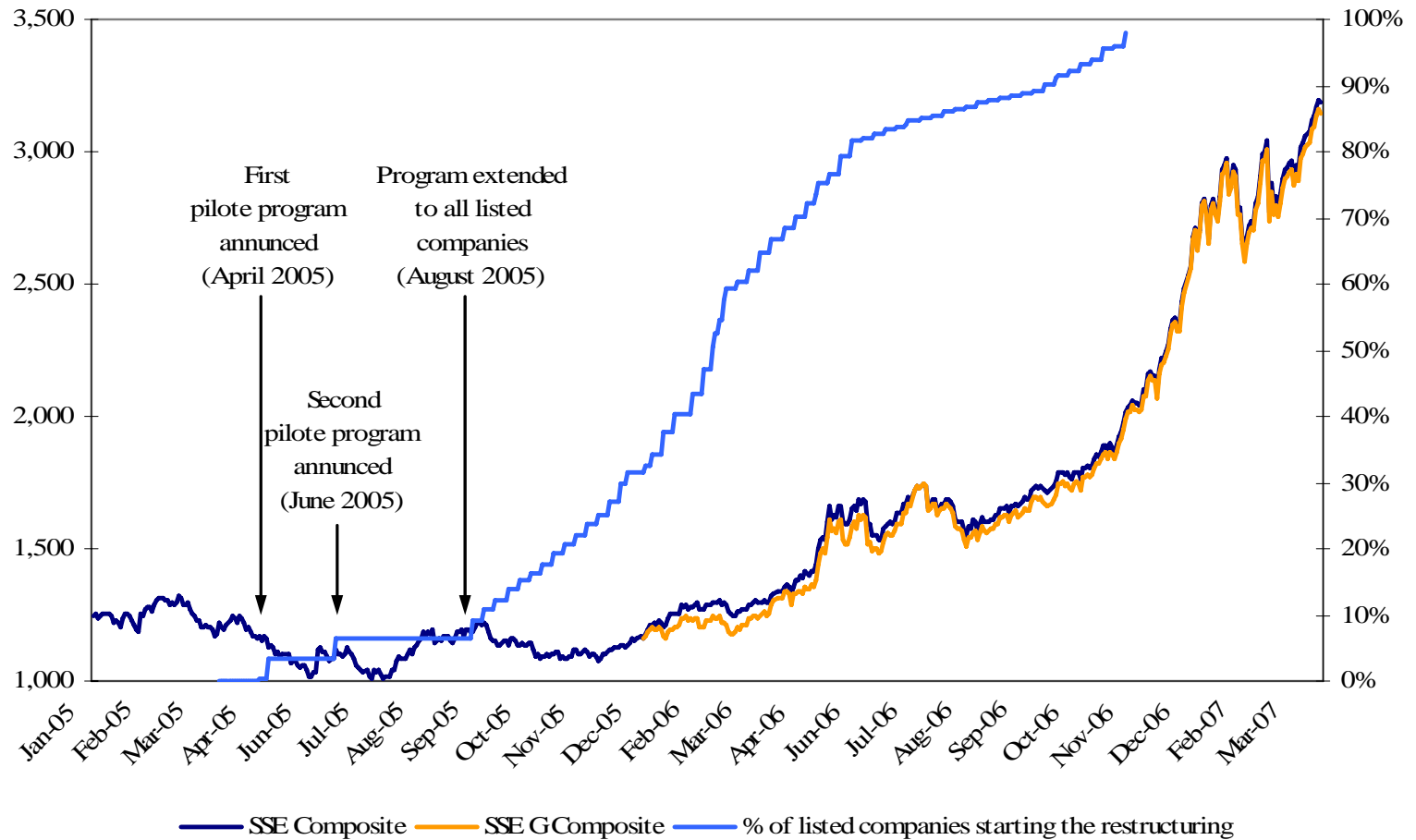
A.1. Classes of shares

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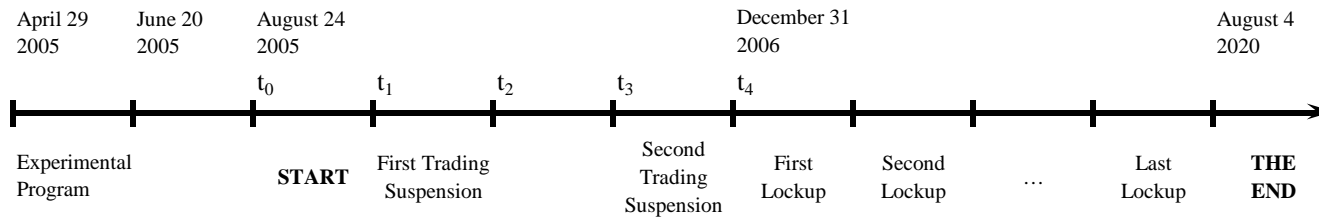
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The Reform Timeline: Announcements (figure).



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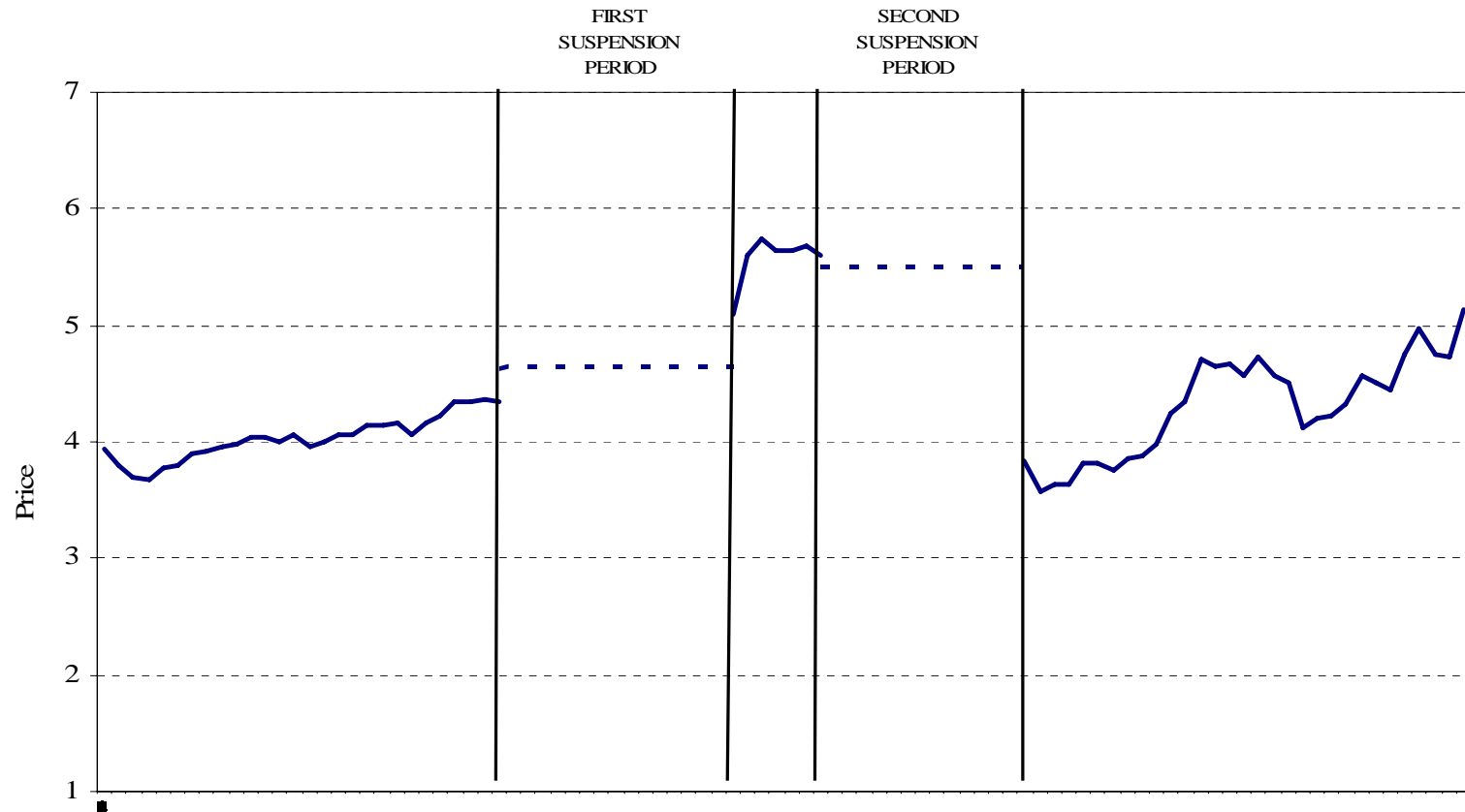
The Reform Timeline: Process.



- On t_1 , individual firms announced to enter the process of the reform and publicized a compensation proposal to TS holders.
- On t_2 , individual firms announced the final compensation to be voted on at the extraordinary shareholder meeting.
- On t_3 , shareholder registration for shares and the extraordinary shareholder meeting started.
- On t_4 , individual firms' reform concluded and TS holders were paid by NTS holders.

A.2

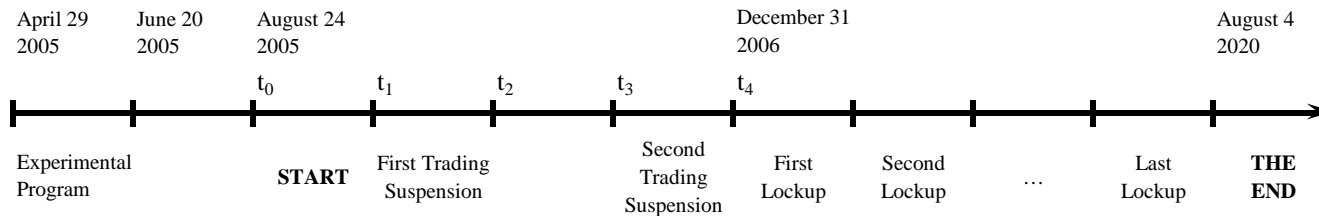
The Reform Timeline: Process (figure).



- The price for Baotou Huazi International during the reform process.

A.2

The Reform Timeline: Lock-up.



- The length of the first lockup period must be longer than 12 months.
- The length of the first and second lockup periods must be longer than 24 months.
- After the initial 12-month lockup, a non-tradable shareholder is only allowed to sell less than 5% and 10% of the total shares outstanding in 12 and 24 months respectively.

A.2

The Reform Timeline: Lock-up (figure).

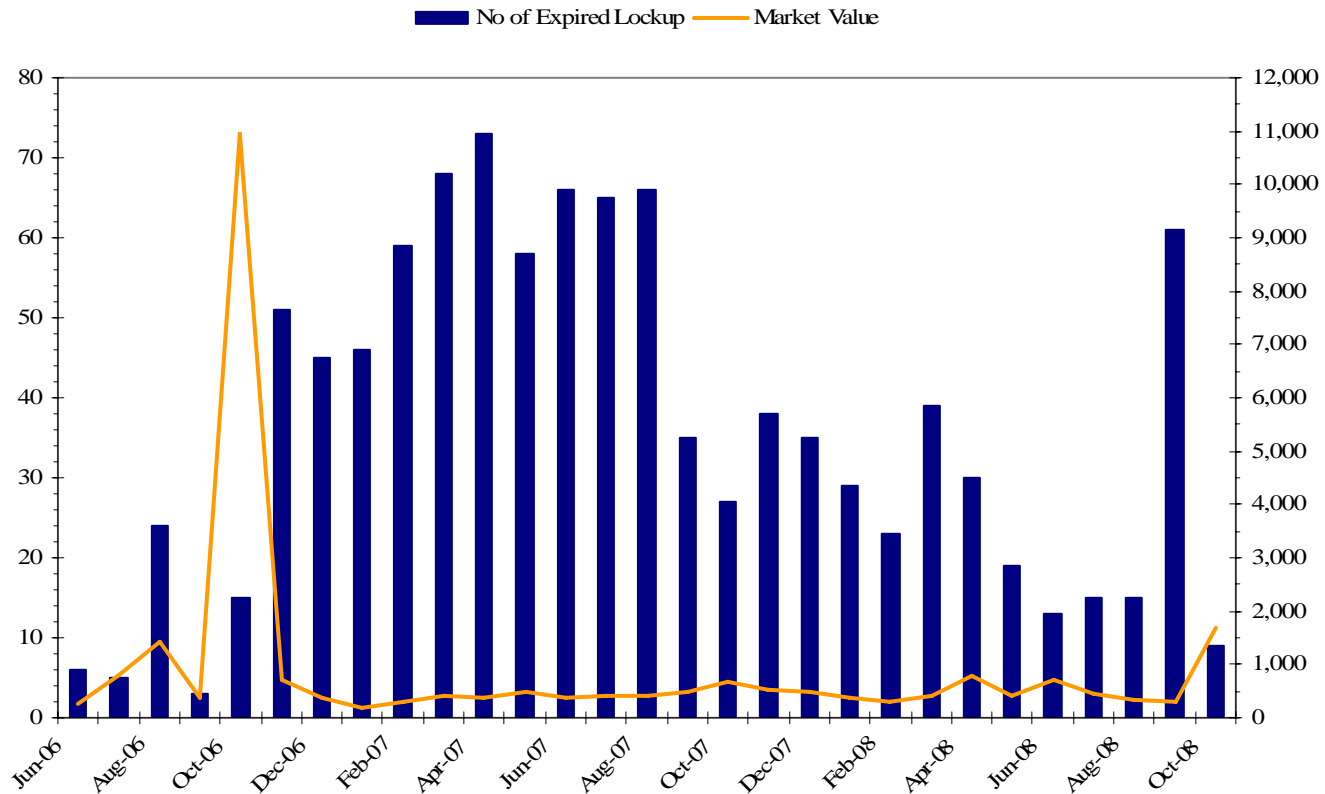
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- Intertemporal distribution of the lockup expirations.
- October 06: China Merchant Bank.

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Agreeing example: Wuhan Iron & Steel.

- Original offer: 2.3 shares, 1.5 put warrants (strike = 3), 1.5 call warrants for every 10 shares. Improved offer: 2.5 plus 2.5 put warrants (strike =3.13) and 2.5 call warrants.
- The listed company's largest shareholder and the firm's sole holder of NTS promises not to sell the shares within 24 months after they become tradable. It will sell no more than 10% of these TS, in the third year after they are allowed to trade, at a minimum price of 3.6 Yuan per share. If it sells such shares at less than 3.6 Yuan per share, the sales revenue generated will be given to the listed company.
- The largest shareholder has also promised to hold no less than a 60% stake, or 4.7 bln shares, in the listed company until the end of 2010, which compares with its current 75.81% stake.
- It has expressed support for the proposal to pay cash dividends of no less than 50% of the firm's annual disposable profit for three consecutive years after 2005, which will be voted on at the 2005 general shareholders meeting.

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The Reform Timeline: Chapters.

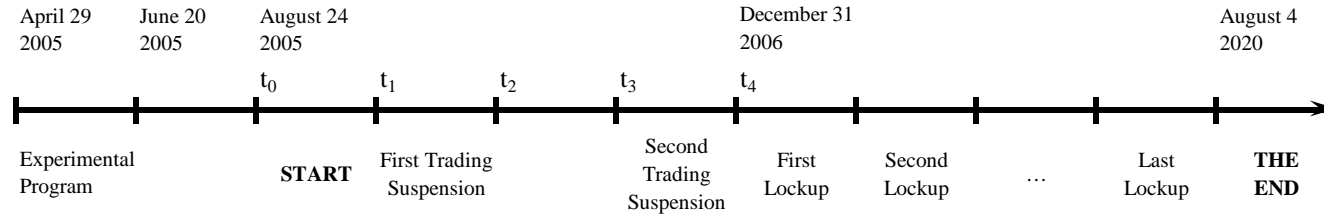
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The Reform Timeline: Chapters.

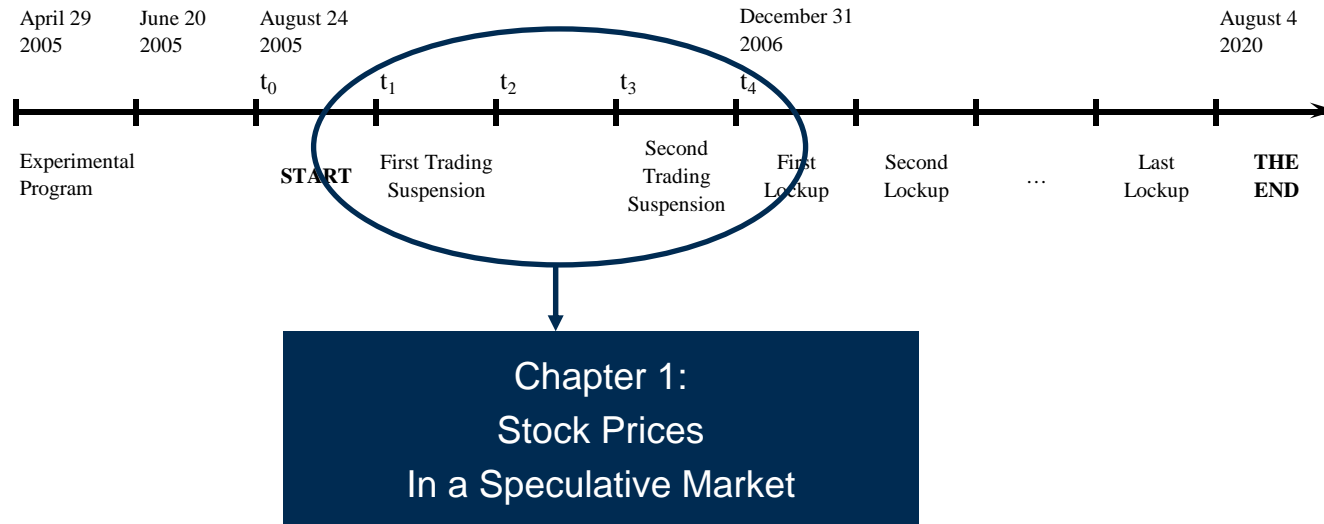
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A. Introduction

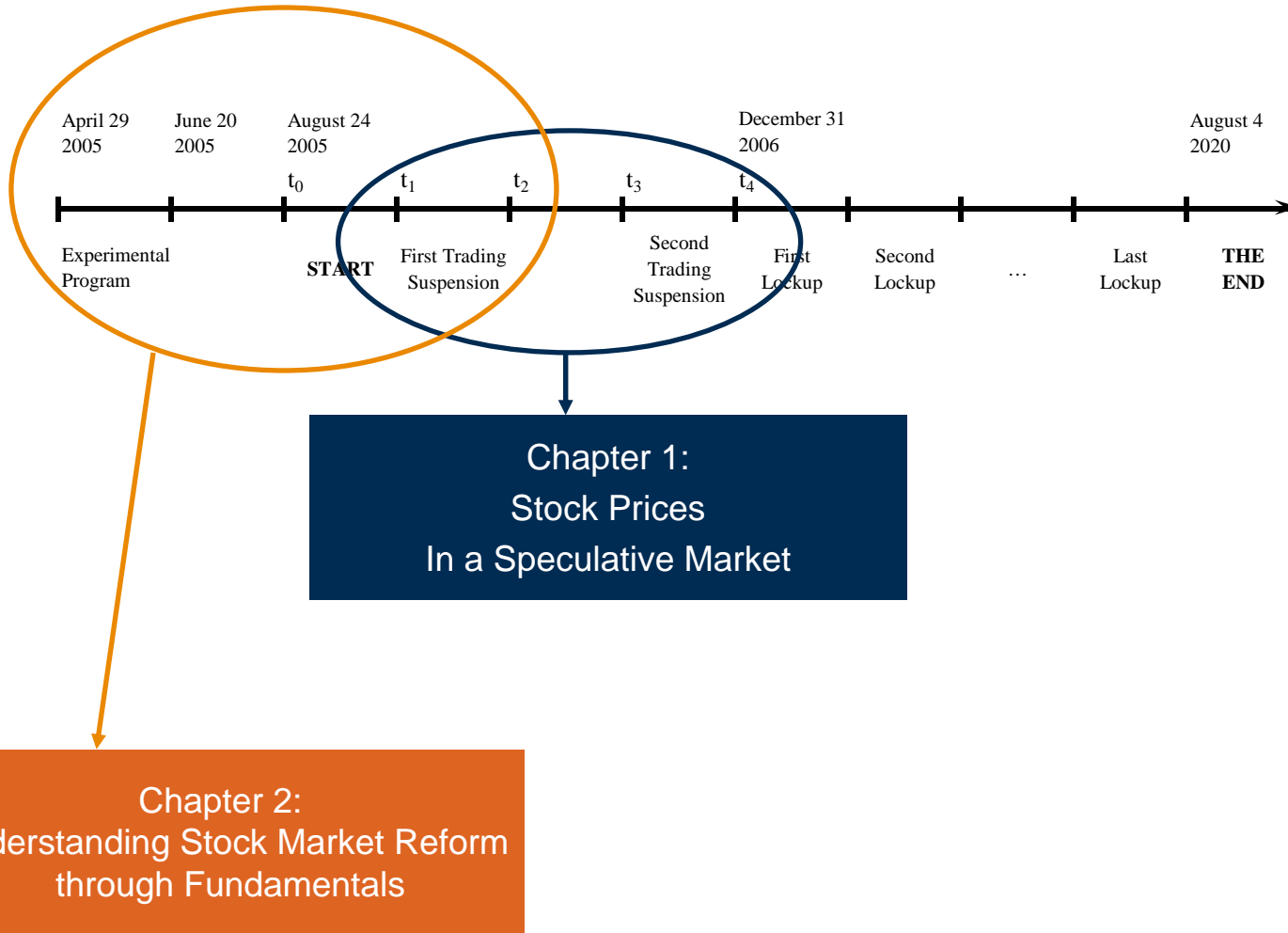
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The Reform Timeline: Chapters.



A.2

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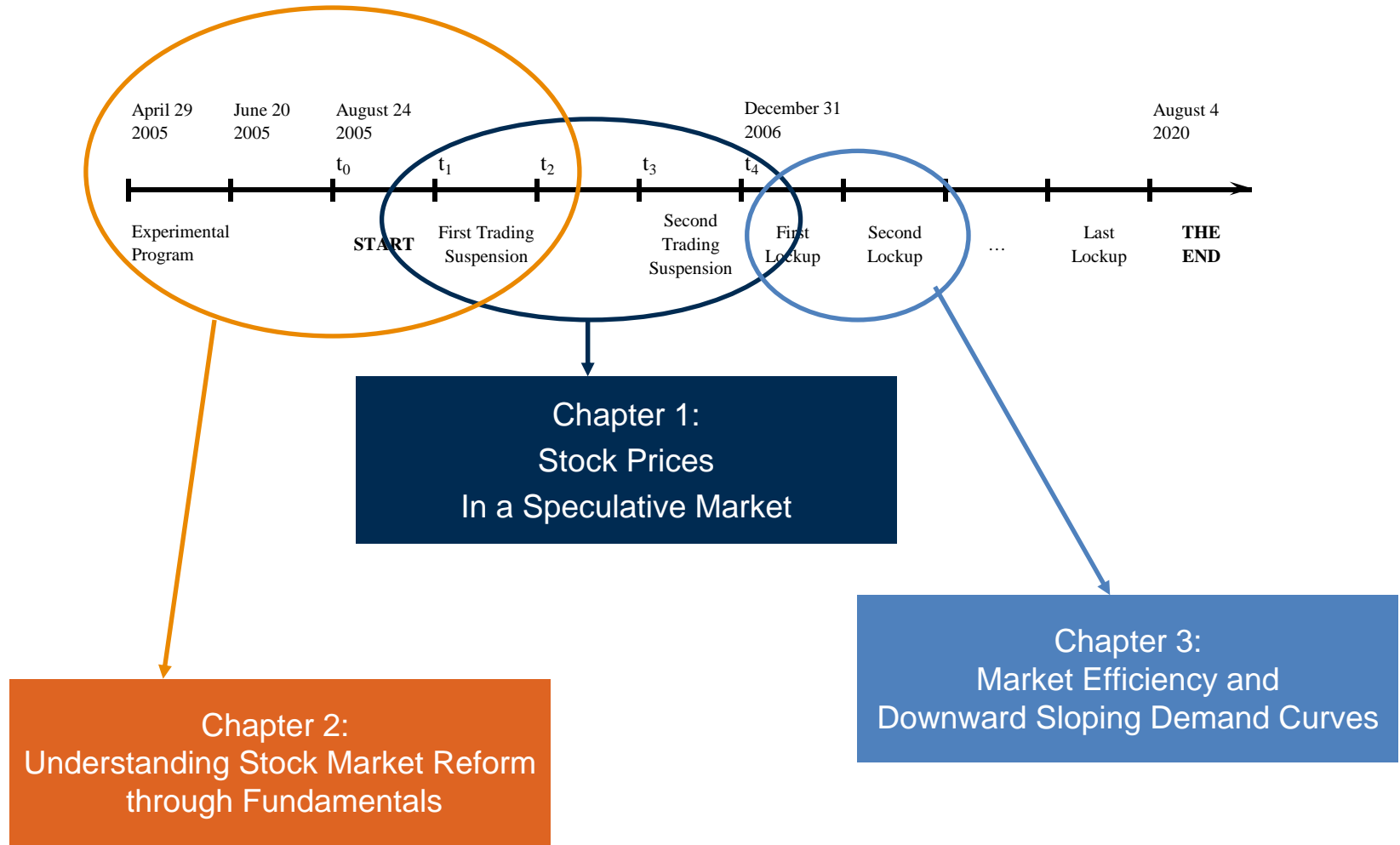
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The Reform Timeline: Chapters.



Data.

- DataStream and Fudan University Database:
Daily data for all the 1636 listed companies in Shanghai and Shenzhen Stock Exchange from 12/31/1990 to 04/23/2008 (RI,P,PO,PH,PL, PB,PA, UP,VO,MV,NOSH,TS,NTS).
- Nomura Institute of Capital Market Research:
The announcements dates of each company which entered the reform process between September 2005 and February and compensation plan of each company (1301 companies).
- CSMAR Database:
 - » China listed firm's cash and stock dividends;
 - » China stock market equity division reform;
 - » China listed firm's corporate governance.

Stock Prices in a Speculative Market: The Chinese Split-Share Reform

Andrea Beltratti, Bernardo Bortolotti and Marianna Caccavaio

B.1

Abstract.

- We derive relations that should have been followed by the prices of stocks and exploit a company-level data set to compare the actual and the theoretical price reactions.
- We find evidence for abnormal returns both before the beginning of the reform and during the reform.
- Cross-sectionally, abnormal returns are associated mainly with turnover and compensation.
- This shows that in a speculative market, investors do not properly react to unambiguous corporate actions.

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Understanding Stock Market Reform through Fundamentals: The Case of China

Andrea Beltratti, Bernardo Bortolotti and Marianna Caccavaio

- We evaluate the stock price effects of the 2005-2006 reform of the Chinese stock market.
- Liquidity and corporate governance are the main factors affected by the reform.
- We analyze three specific event periods that may be plausibly associated with reform announcements.
- Our results show that the reform was beneficial to the market, especially for those companies with lower fundamentals.
- Results are consistent with the expectation of improved liquidity reducing expected returns and increasing stock prices, with minor impacts observed from variables associated with corporate governance.

The Lock-Up Period In the Chinese Stock Market Reform: Implication for Market Efficiency and Downward Sloping Demand Curves

Marianna Caccavaio

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- We investigate volume and price patterns around the lockup expiration in the recent split share structure reform in China.
- We find that, even though the events are totally anticipated, there is a drop in the stock price, and an increase in volume, when the lockup ends.
- We discuss our results to the light of the Petajisto(2008) model and we provide supportive evidence to his main implications. Specifically, we find that the slopes of the demand curve are negatively related to firm size and positively related to idiosyncratic risk.

- Does supply affect stock prices?
 - » Analysis of secondary equity offerings: Scholes(1972), Mikkelson-Partch(1985) and Loderer-Cooney-VanDrunen(1991);
 - » Modifications in the composition of indices: Harris-Gurel(1986) and Shleifer(1986);
 - » Brav-Gompers(2003).

- Why should the demand function for stocks slope down?
 - » the slope of the demand function depends on arbitrage risk: Wurgler-Zhuravskaya(2002);
 - » the slope of the demand function for stocks is limited by the amount of capital available to arbitrageurs: Petajisto(2008);
 - ⇒ limited short selling increases the slope of the demand curve.

- The setup of the Chinese reform is ideal to evaluate the effects of increased supply on stock prices. The end of the lock-up period is publicly known in advance (at least twelve months). It is therefore possible to identify for a very large number of companies the specific day of increase in the supply of shares.
- Authorities and investors have long agreed on the reality of downward sloping demand curves in China (the reform represents the third attempt on the part of the Chinese authorities).
- The prohibition to short sell stocks must produce negatively sloped demand function; data about the expiration of lock-ups may be useful to determine the size of the slope. This is an advantage with respect to data from markets where short-selling is allowed that must control very carefully for substitution possibilities across stocks.

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Estimating the slope of the demand function.

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	Supply experiment		Findings			Reasons for downward sloping demand curve			
	Secondary equity offering		Abnormal returns	Abnormal volume	Elasticity	Liquidity premium	Heterogeneous information	Insufficient arbitrage	Market segmentation
Scholes (1972)	x		x		?				
Holthausen-Leftwich-Mayers (1990)	x		x		?				
Mikkelson-Partch (1985)	x		x		?				
Shleifer (1986)		x	3%	x	1				
Loderer-Cooney-VanDrunen (1991)	x		x	x	11.12	?	?		x
Kaul-Mehrotra-Morck (2000)	x		2.34%	x					
Wurgler- Zhuravskaya (2002)	x				8.24			x	
Brav-Gompers (2003)		x	x					?	
Field-Hanka (2001)		x	-1.50%	40%	?				
Petajisto (2008)	x		x	x	1			x	x
Caccavaio (2009)		x	x	x	?	?	?	?	?

Commitment?
Quality?
Compensation?

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Data: summary statistics.

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	No of Expired Lockup	Lockup Percentage	Lockup Percentage CAP	Market Value Expired Lockup CAP	No. of Holder Owning Share with Expired Lockup Period
Jun-06	6	48.62	13.37	273.65	3.17
Jul-06	5	43.96	12.47	800.94	3.00
Aug-06	22	27.99	10.12	1415.40	3.14
Sep-06	3	32.41	10.00	391.54	2.00
Oct-06	15	40.58	10.93	10952.70	7.47
Nov-06	47	34.83	7.67	703.18	1.96
Dec-06	42	32.70	8.07	360.59	1.69
Jan-07	43	31.66	7.56	191.09	2.05
Feb-07	59	31.85	7.64	287.91	2.07
Mar-07	63	27.15	7.34	409.75	1.76
Apr-07	68	32.67	7.81	361.62	2.04
May-07	54	35.34	8.40	475.85	2.28
Jun-07	61	28.99	8.13	376.25	2.38
Jul-07	59	36.41	8.14	398.40	2.41
Aug-07	59	36.17	8.46	425.87	2.37
Sep-07	32	37.86	8.61	485.34	2.09
Oct-07	24	42.10	9.96	665.26	2.04
Nov-07	35	42.08	9.63	539.95	1.94
Dec-07	36	34.39	9.42	490.78	2.25
Jan-08	31	38.85	7.14	372.47	1.74
Feb-08	24	29.34	6.71	316.28	1.88
Mar-08	36	30.01	8.89	412.15	2.25
Apr-08	25	31.71	7.02	795.22	1.88
May-08	18	32.09	7.74	405.95	1.67
Jun-08	12	33.91	7.08	708.26	1.42
Jul-08	10	40.26	12.12	447.29	2.40
Aug-08	12	30.54	9.73	346.64	2.67
Sep-08	59	35.57	7.18	293.23	1.80
Oct-08	50	34.01	8.18	1701.38	1.80
Nov-08	28	35.73	8.60	994.15	2.50

D.4

Price and volume.

- Pricing model:

- » $r_{it} = \alpha_i + \sum_{k=1}^K \beta_{ik} r_{kt} + \varepsilon_{it}$

- Volume:

- » $v_{it} = \beta_0 + \beta_1 v_{mt} + \varepsilon_{it}$

- CAR:

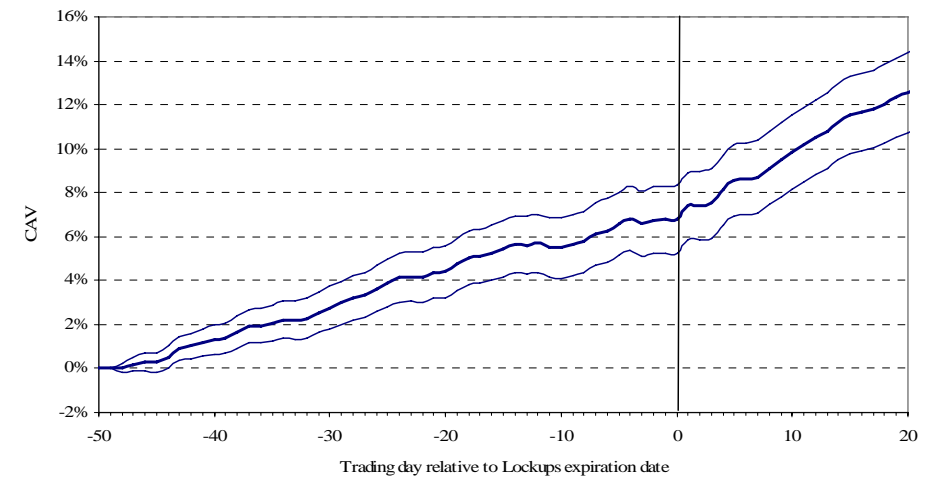
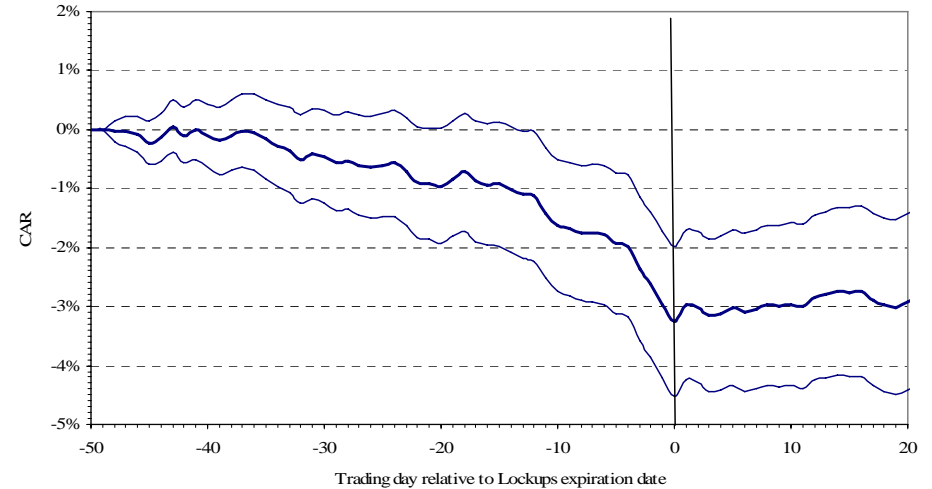
- » $CAR_{i0} = ar_{i0}$

- » $CAR_{it} = CAR_{it-1} + ar_{it}, t = 1, 2, \dots, T$

- Statistical test:

- » Independence (CLM Variance)

- » No cross correlation (CS Variance)



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Abnormal returns.

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Day over which the AR is cumulated	Whole	Shanghai	Shenzen	Small	Big	High sigma	Low sigma
t-50 through t-20	-0.73	-0.93	-0.38	-1.43	-0.05	-3.29	1.93
CLM variance t-stat	-0.92	-0.91	-0.31	-1.21	-0.05	-2.56	2.15
CS variance t-stat	-1.42	-1.41	-0.48	-2.04	-0.07	-3.97	3.31
t-50 through t	-2.96	-2.92	-3.03	-3.06	-2.87	-8.77	3.07
CLM variance t-stat	-2.72	-2.00	-1.92	-1.83	-2.04	-5.29	2.27
CS variance t-stat	-4.57	-3.49	-2.98	-3.43	-3.06	-8.33	4.14
t-50 through t+20	-2.82	-2.39	-3.54	-3.18	-2.47	-12.93	7.70
CLM variance t-stat	-2.02	-1.29	-1.73	-1.50	-1.35	-6.35	4.33
CS variance t-stat	-3.67	-2.41	-2.94	-3.01	-2.23	-10.39	8.77
t	0.19	0.39	-0.14	-0.01	0.41	-0.18	0.58
CLM variance t-stat	0.92	1.26	-0.63	-0.04	1.64	-0.64	1.88
CS variance t-stat	1.44	2.23	-0.67	-0.08	2.04	-0.83	3.81
t through t+20	0.15	0.58	-0.62	0.01	0.29	-4.51	4.97
CLM variance t-stat	0.22	0.64	-0.63	0.01	0.32	-4.92	5.13
CS variance t-stat	0.33	1.02	-0.87	0.02	0.44	-6.21	9.78
t through t+50	-0.18	0.75	-1.80	0.29	-0.65	-9.28	9.26
CLM variance t-stat	-0.15	0.49	-1.16	0.18	-0.41	-5.63	6.47
CS variance t-stat	-0.26	0.86	-1.67	0.32	-0.65	-8.40	11.97

- The abnormal returns are larger for small firms and for high idiosyncratic risk firms, consistently with the prediction of Petajisto(2008) model.

- Test: comparing the demand curves implied by lockup expiration in China
 - » Size of a stock affects the price impact around lockup expiration?
 - » Idiosyncratic risk of a stock affects the price impact around lockup expiration?

- ⇒ Compare the return for a stock with the return for its control portfolio formed on the basis of size and idiosyncratic risk.

D.4

Control portfolios: sample statistics.

- 10x5 matrix of control ptf:
 - » Sorting stocks into 10 deciles based on the market value;
 - » Subdividing each decile into quintiles based on idiosyncratic risk;
 - » Wang-Xu with Liquidity Replicating Portfolio (Market Index + Size + Floating ratio + Liquidity);

$$r_{i,d,t}^e = \theta_{i,t} + \phi_{i,t} r_{i,d,t} + \gamma_{i,t} \text{sign}(r_{i,d,t}^e) \times v_{i,d,t} + \varepsilon_{i,d,t+1}$$

- » Sequential sort.

		Market Value	Idiosyncratic Risk				
			Low	2	3	4	High
Panel A	Small		39	39	38	37	39
Number of Stocks	2		47	43	54	50	51
	3		59	46	53	43	42
	4		45	54	55	45	51
	5		51	50	51	48	52
	6		50	52	52	45	51
	7		47	50	47	49	41
	8		42	49	52	46	35
	9		47	52	44	46	43
	Big		40	51	40	37	48
	Panel B	Small		214	262	262	261
Market Value	2		449	434	558	639	714
	3		677	626	743	632	721
	4		825	975	983	717	1043
	5		1142	976	1184	1180	1364
	6		1455	1565	1433	1189	1645
	7		1620	1637	1817	1692	1640
	8		1867	2209	2445	2412	1756
	9		3713	4521	3199	4802	3694
	Big		48808	20298	35290	7259	12460
	Panel C	Small		0.53	0.74	0.82	0.87
Idiosyncratic Risk	2		0.77	0.85	1.30	1.45	1.83
	3		0.99	0.96	1.32	1.12	1.45
	4		0.79	1.14	1.34	1.17	1.87
	5		0.90	1.05	1.26	1.39	1.88
	6		0.89	1.15	1.31	1.22	1.83
	7		0.77	1.05	1.21	1.35	1.32
	8		0.73	1.02	1.32	1.29	0.92
	9		0.84	1.12	1.08	1.31	1.38
	Big		0.61	1.13	0.89	0.87	1.66

D.4 Control portfolios: abnormal returns.

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Day over which the AR is cumulated		Mean	Median	Min	Max	St. Dev.	% Positive	No. Of Obs
Value Weighted	t-50 through t-20	-2.43	-3.37	-219.02	98.54	17.10	40%	1038
	t-50 through t	-5.39	-5.76	-227.57	112.27	19.76	34%	1038
	t-50 through t+20	-6.30	-7.20	-181.76	96.44	23.41	35%	1038
	t	-0.28	-0.45	-10.49	11.60	2.71	42%	1038
	t through t+20	-1.19	-1.77	-136.29	106.28	15.37	43%	1038
	t through t+50	-3.09	-4.54	-379.67	81.27	24.17	40%	968

- The cumulative abnormal return on a stock in the event window is then the difference between its own cumulative return and the cumulative return of its benchmark portfolio (matched on market equity and idiosyncratic risk).

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Petajisto (2008).

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	Car t-50 through t		
Sigma	-0.587** (0.283)		-0.817** (0.409)
Ln Market Value		0.767** (0.327)	0.874*** (0.319)
Constant	-3.853* (2.320)	-11.492** (5.312)	-10.199* (5.752)
Observations	1038	1038	1038
R-squared	0.02	0.02	0.03

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in parentheses

- Idiosyncratic risk and market equity statistically significant.
- The coefficient of idiosyncratic risk is about 0.7, meaning that an increase in idiosyncratic volatility of 10% would decrease the abnormal return around index changes by 7 percentage points.
- For market equity, the positive coefficient tells us that increasing the market capitalization of a stock reduces its expected price impact around an lockup expiration event.

- Preliminary results are promising and will require further analysis on the price elasticity of demand for stock.
- Control portfolios formed on the basis on the peculiarities of the Chinese market (size, floating, liquidity).
- Moreover the setup of the reform allows us to study two other interesting elements:
 - » The relations among the compensation, the increase in supply, the change in prices. (Single company level)
 - » The motivations for the lock-up in the Chinese reform. (Commitment? Quality? Compensation?).

E. Main conclusions (1/2).

- Overall, the reform has been highly successful. The market has been able to absorb a 33% increase in the amount of TS with no immediate negative effects on prices.
- The reform has generated interest on the part of retail investors and this has caused a large amount of speculative activity.
- Relative prices appear to show some deviations from theoretically rational paths.
- Improved potential for risk sharing and real privatization of firms.
- There are now preconditions for further improvements in governance and modifications to ownership that may be beneficial to future market valuations.

E. Main conclusions (2/2).

A. Introduction
B. Chapter 1
C. Chapter 2
D. Chapter 3

E. Conclusions

- Liquidity variables are much more important than variables related to corporate governance. This is consistent with:
 - » The idea of complementarity between corporate governance and investors' protection;
 - » Previous research characterizing the Chinese market as a highly speculative one.
- ⇒ MSCI-Barra, Research Bulletin march 2009, Risk Review of the China A Share: "Among the various style factors in the Barra CHE2 model, the best-performing is the Trading Activity factor. This factor differentiates between stocks based on their trading volume or liquidity, and its return reflects the relative performance of those stocks that are more actively traded. There are four descriptors used in computing the exposure to trading activity, including the beta of liquidity, as well as the mean turnover over the last 3 months, last 6 months, and last 12 months".

- Estimation of elasticities of demand functions exploiting information about the supply increase following lockup expirations.
- Caccavaio-Girardin(2009): “The determinants of the H-share discounts of Chinese-listed firms”.
- Caccavaio(2009): “The logic in Chinese asset pricing and at the factors that drive the cross-sectional variation in average stock returns”.
- Follow-up study on changes in investors’ protection and corporate governance changes at the level of the firm.
- Role of mutual fund managers.



Thank you! 谢谢!

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