



The Real Value of China's Stock Market

中国股票市场的实体价值

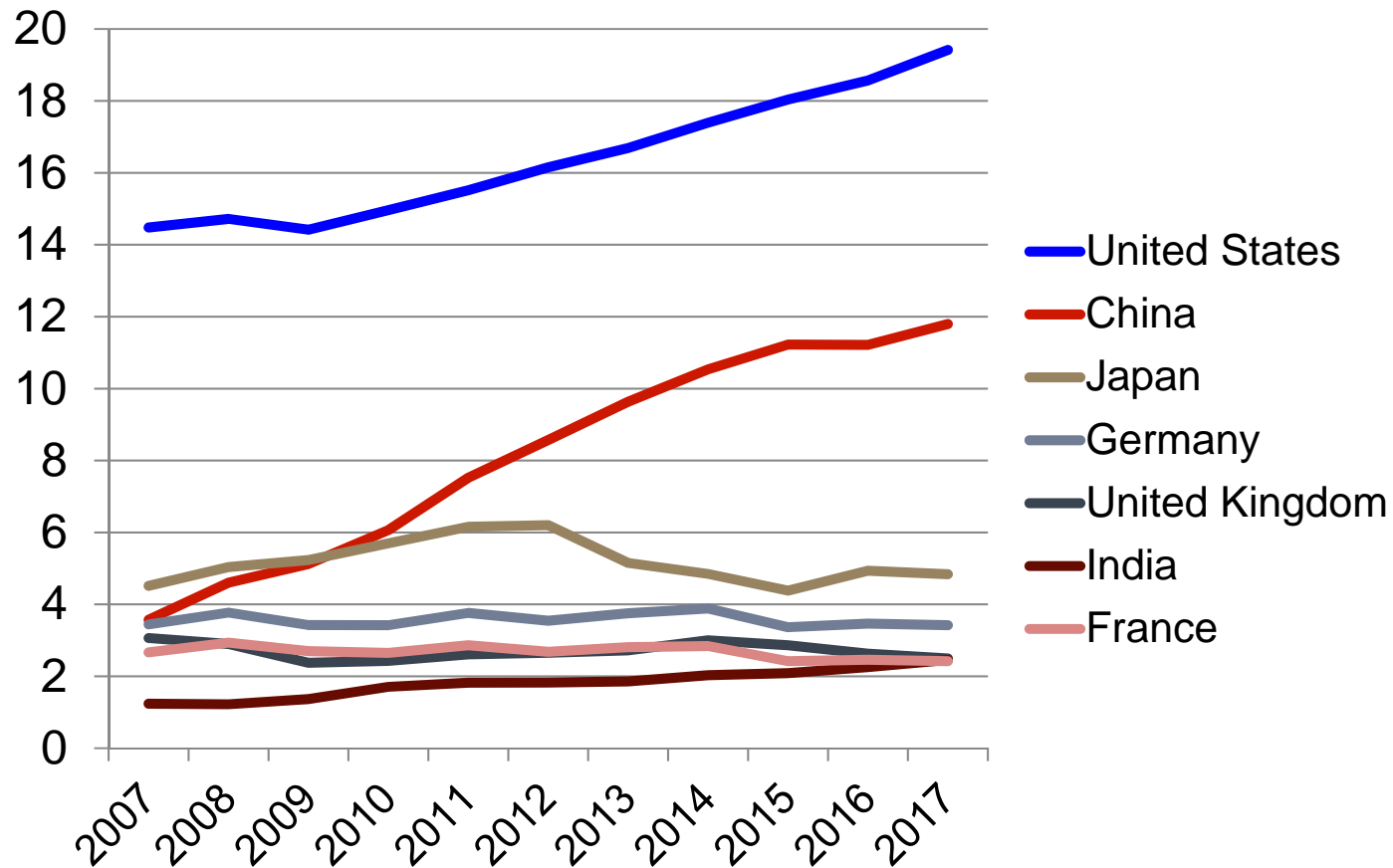
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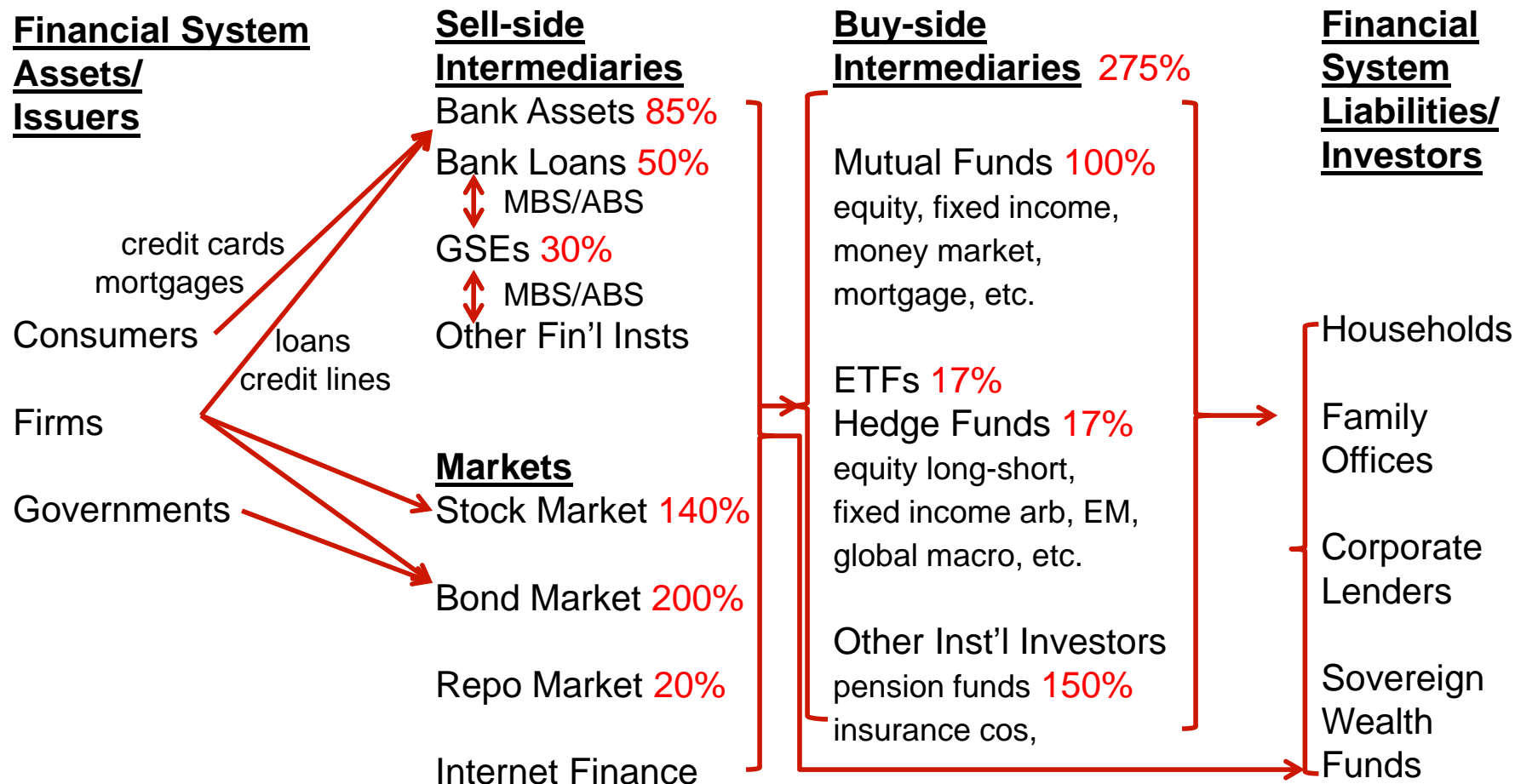
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GDP of Top Seven Economies, \$T, 2007-2017



- Over the last decade, China has changed the world and become its largest real investor and growth driver.
- What role can/should its stock market play going forward?

The US Financial System is Securities-Based (% of \$19T GDP)

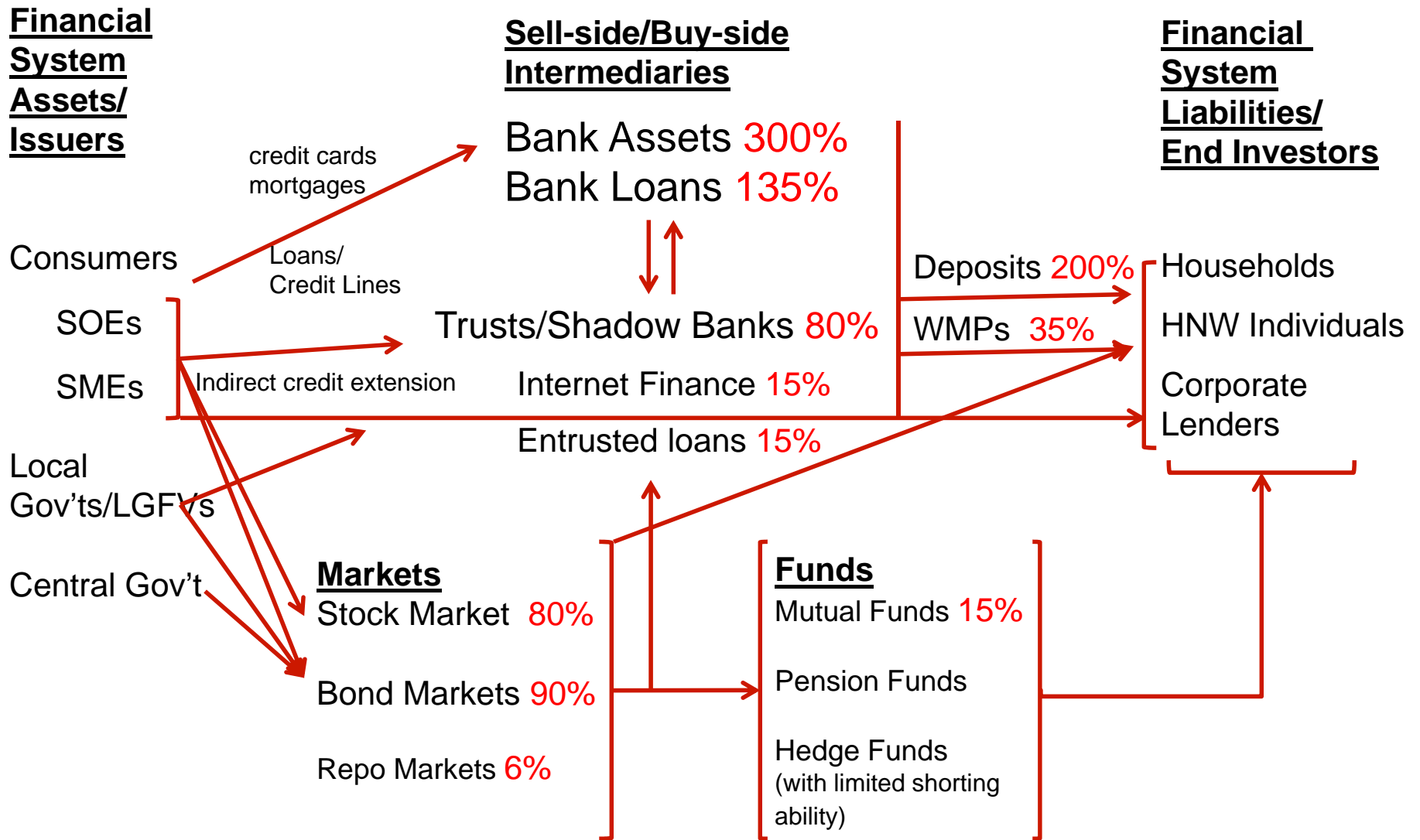


Derivatives Markets

(where IR, FX, and Equity directional & volatility risks are unpacked from capital and traded separately)

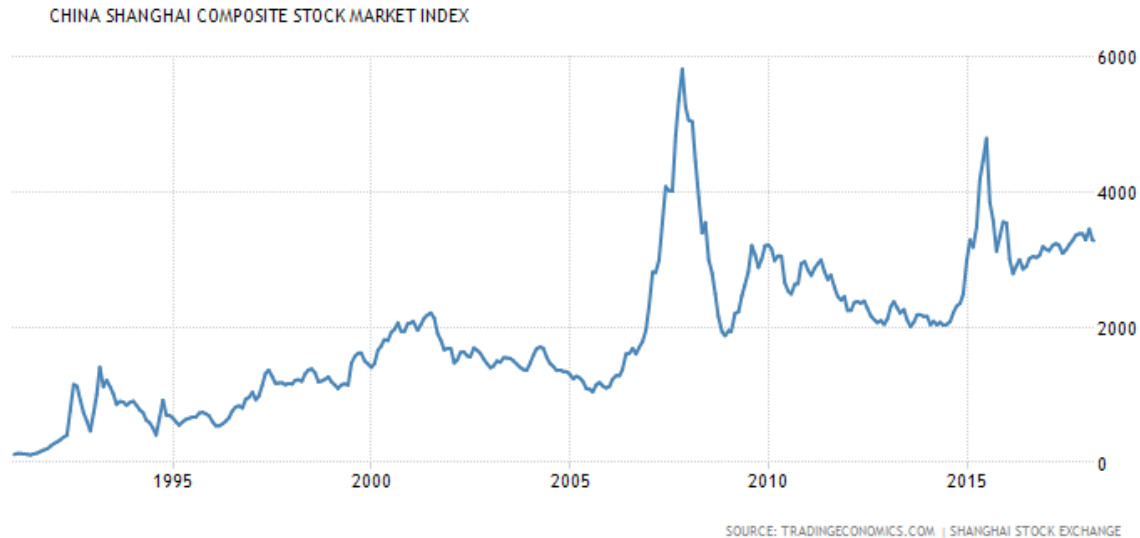
Regulators – Government, central bank, bank and markets regulators

China's Financial System is Bank-Based (% of 12T GDP)



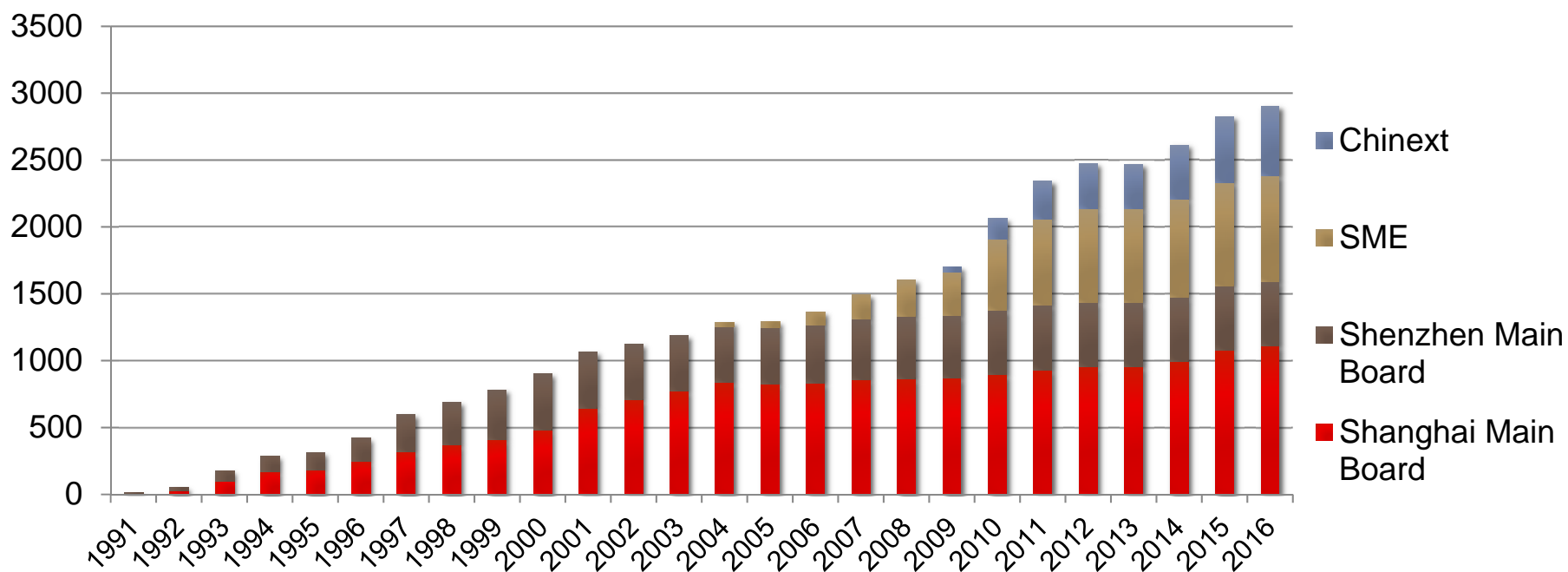
Regulators – Government, central bank, bank and markets regulators

China's Stock Market – Casino? Or Crystal Ball?



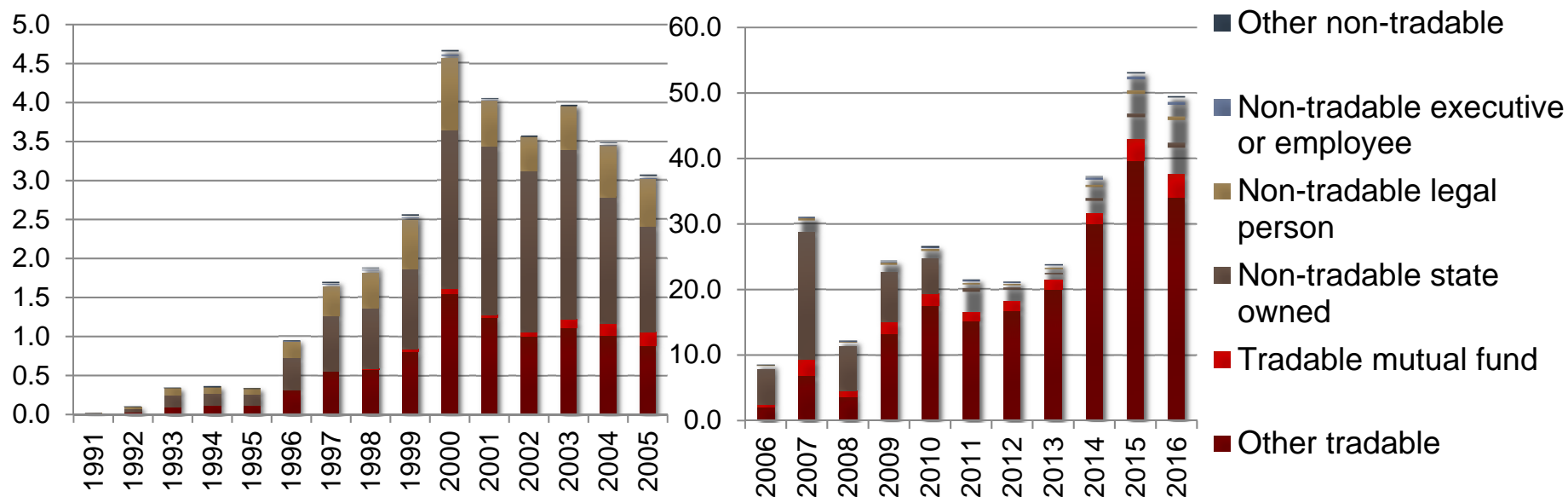
- Opened in 1991 as Deng Xiaoping's privatization experiment.
- Now the world's 2nd largest stock market.
- First labeled a casino in 2001 after period of speculation and fraud.
- High volatility erodes B&H returns, fuels perception of poor performance.
- Rollercoaster ride of 2015 cements market's casino reputation (China's stock market – A crazy casino | The Economist 5/26/2015).
- ★ **Our research suggests that these perceptions are wrong.**
- ★ **Stock prices in China are strongly linked to firm fundamentals.**

Number of Listed Firms 1991-2016



- Shanghai and Shenzhen main boards list larger, mature firms.
- SME and ChiNext boards on Shenzhen Stock Exchange list smaller, more entrepreneurial firms.
- Many distinctive features – 80% of volume is retail, market segmented by capital controls, large non-tradable component.
- Now has over 3500 stocks listed, over 400 firms seeking IPO approval.

Market Capitalization in Trillion RMB 1991-2016



- China's stock market now has over \$8.5T capitalization.
- Split-Share Reform of 2005 enabled the unlock of non-tradable shares.
- Now over 75% of stocks are tradable.

Stock Price Informativeness



Long literature in economics, finance and accounting going back to Hayek (1945) & Fama (1970) links good institutions to stock price informativeness, and further to investment efficiency:

- Benefits of good listing, disclosure, and audit policy (Amihud & Mendelson (1988), Diamond & Verrechia (1991), Hail & Leuz (2009)).
- Aggregation of diffuse information across individuals, incentives to generate information, and its inference from prices (Grossman & Stiglitz (1980), Kyle (1985), Glosten & Milgrom (1985)).
- Managerial use of price signals in investment decisions (Wurgler (2000), Durnev, Morck, and Yeung (2004), Chari & Henry (2004)).

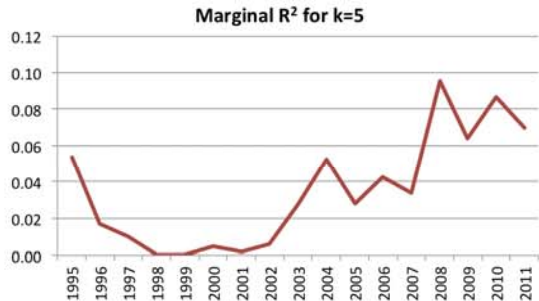
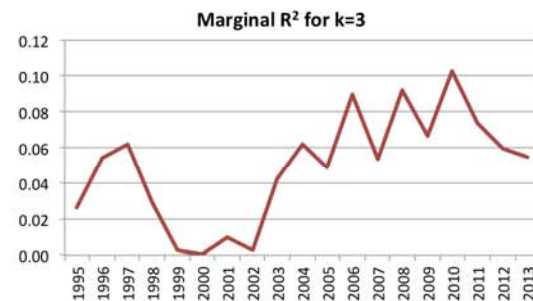
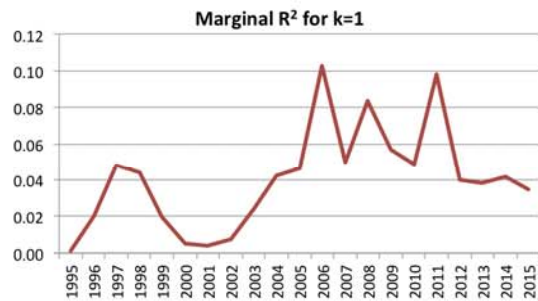
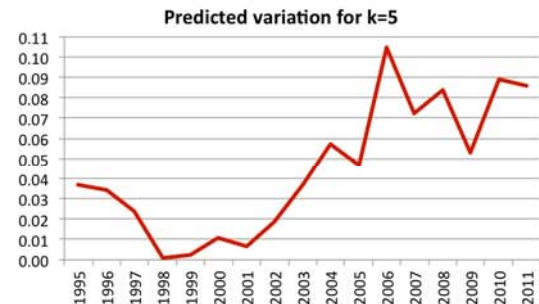
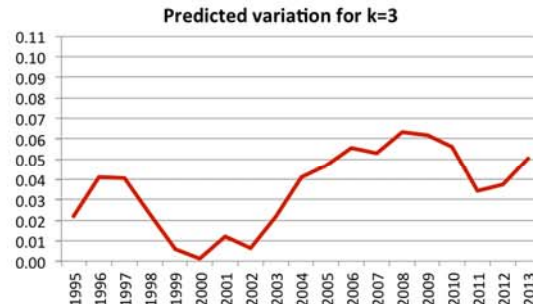
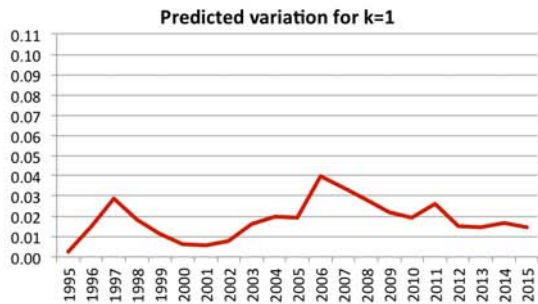
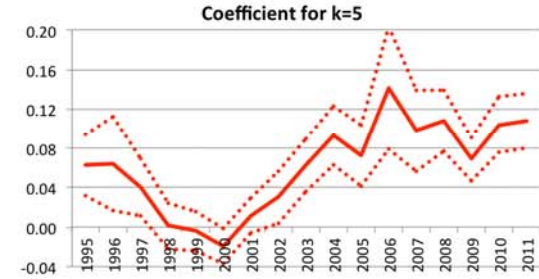
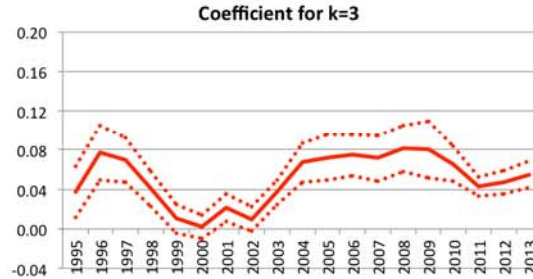
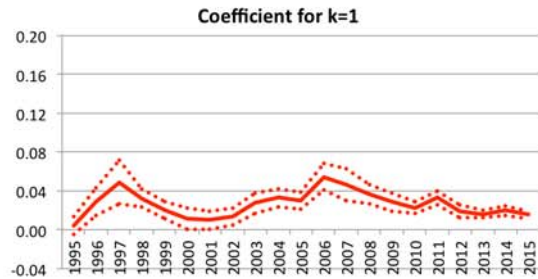
Measuring Stock Price Informativeness

- Bai, Philippon, Savov (2016 JFE) develop a theoretical model in which stock price informativeness promotes efficient corporate investment and economic growth.
- They define **price informativeness** as the extent to which market valuations differentiate firms that will have high earnings from those that will not.
- They analyze the coefficient, predicted variation, and marginal R² of equity value in the following cross-sectional regression using US data:

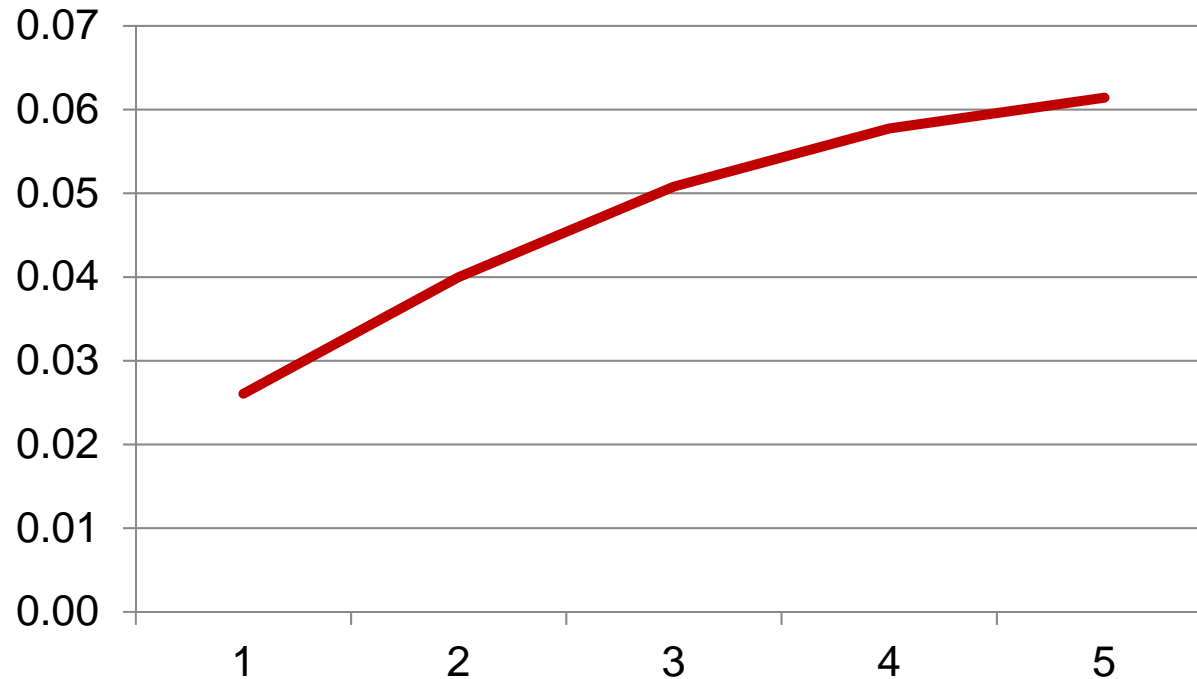
$$\frac{\text{Net Profit}_{i,t+k}}{\text{Assets}_{i,t}} = c_{j,t} + a_t \log\left(\frac{\text{Mkt Equity}_{i,t}}{\text{Assets}_{i,t}}\right) + b_t \frac{\text{Net Profit}_{i,t}}{\text{Assets}_{i,t}} + e_{i,t+k}$$

- Industry fixed effects control for differences in discount rates.

Stock Price Informativeness in China 1995-2016

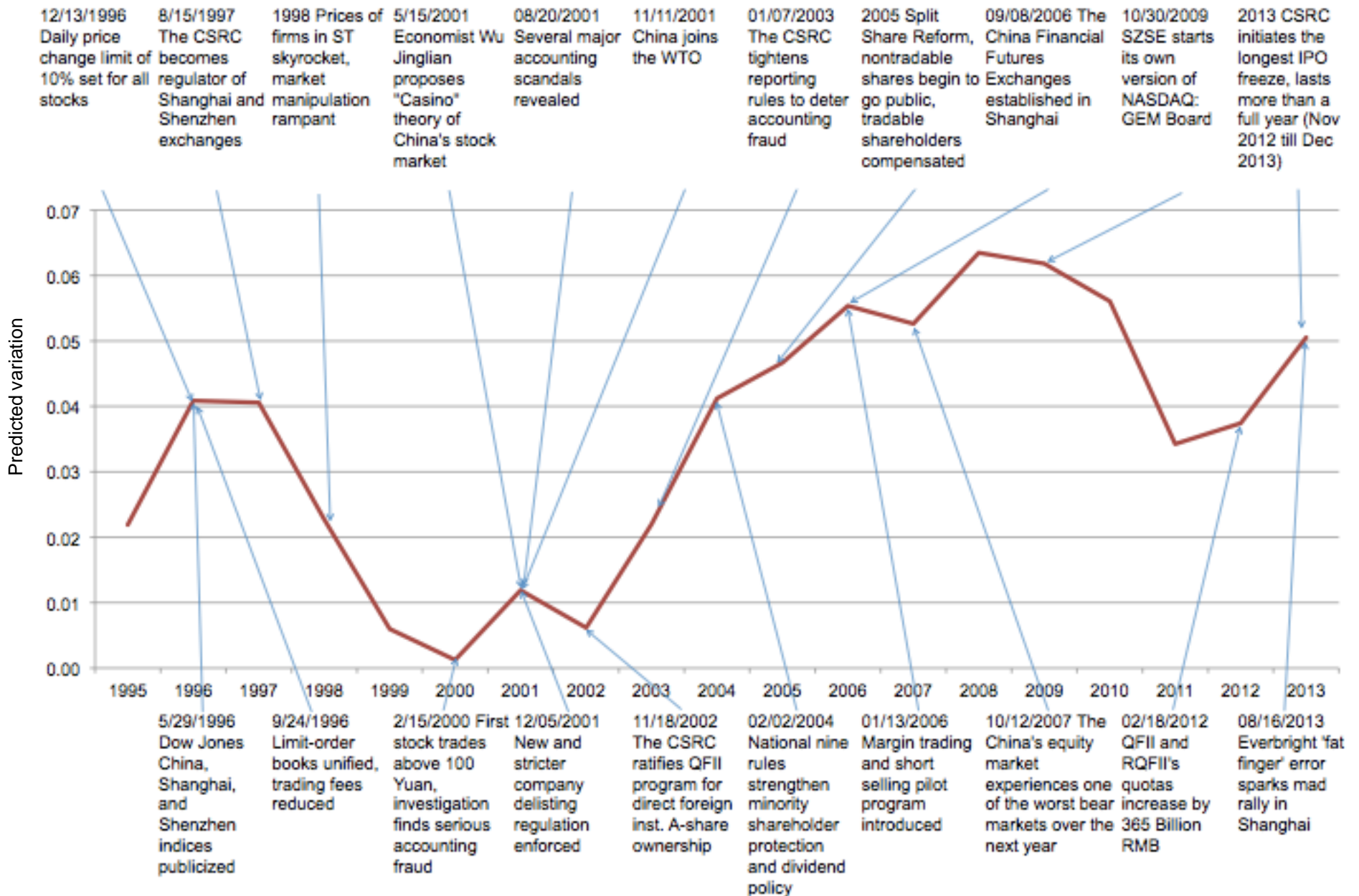


Price Informativeness by Forecasting Horizon k

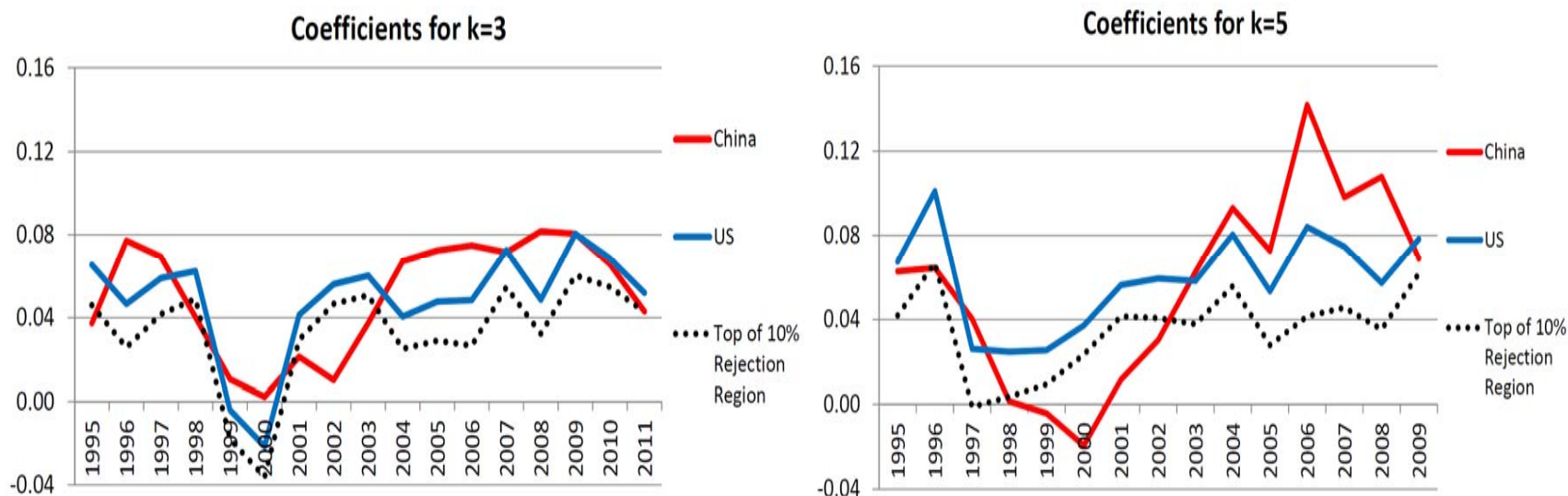


- The price informativeness coefficient increases with the forecasting horizon (similar to US).
- Perhaps because more distant future earnings are better proxies for the complete earnings stream capitalized into the current price, especially for China with its high growth rate.

Stock Price Informativeness in China



Stock Price Informativeness: China vs. US



US results from Alexi Savov

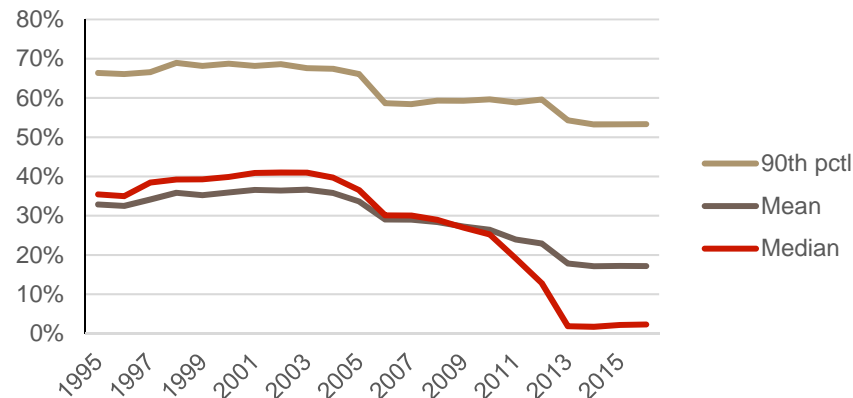
From 2004 onwards, we cannot reject that China stock price informativeness is at least as large as in the US at any conventional significance level.

Cross-Sectional Variation in Stock Price Informativeness

- China's unique institutional features allow for an examination of the variation across firms in price informativeness based on a number of interesting variables.
 - State ownership.
 - Dual listing across segmented markets—close to 100 firms have essentially identical shares traded in both China (A shares) and Hong Kong (H shares).
 - Foreign institutional ownership via the QFII program.
- Policy implications?

State Ownership

- The distribution of state ownership changed at the time of the split share reform.



- The price informativeness coefficient is modeled as a linear function of the percentage of state ownership.
 - Essentially no average effect prior to 2006.
 - From 2006 onwards, for $k=5$, average interaction coefficient is -0.096
→ going from 0% to 50% state ownership reduces price informativeness by more than half of unconditional magnitude.
- Political risk associated with state subsidies makes earnings harder to predict?

Dual-Listing and Foreign Institutional Ownership

Coefficient estimates and t-stats for difference in price informativeness, panel regression

H Shares Dual-Listed				
k=1	k=2	k=3	k=4	k=5
-0.007	-0.010	-0.013	-0.019	-0.030
(-2.43)	(-2.98)	(-2.63)	(-2.81)	(-3.31)

QFII Ownership				
k=1	k=2	k=3	k=4	k=5
0.006	0.007	0.008	0.013	0.007
(2.90)	(1.75)	(1.35)	(1.55)	(0.68)

- The presence of dual-listed H shares appears to reduce A-share price informativeness – noise from discount rate shocks in Hong Kong leaking into A-share prices?
- Higher QFII ownership is associated with higher price informativeness consistent with Kacperczyk et al. (2018)

Discount Rates

- We've just established a strong link between stock prices and future profits.
- Next question: How do investors discount these profits?
- Classic Fama-Macbeth cross-sectional regression methodology with Newey-West standard error adjustment in the second stage.
- Taking the US as a basis for comparison, although we know many international developed markets exhibit similar pricing patterns.
- Scale variables as needed so that the coefficients are comparable across markets.
 - US, monthly, 1995-2016
 - China A shares, monthly, 1995-2016
- Short sample will reduce the power of the estimation.
- Weighted least squares in the second stage to account for the increasing size of the cross-section in China.

Cross-Sectional Patterns in US Stock Returns 1995-2016

Predictors	Beta	Size	BM	Mom	Illiq	Max	Rev
Mean	0.91	19.75	0.61	0.124	1.1398	0.070	0.010
Std. Dev.	1.36	1.89	0.46	0.483	4.2608	0.049	0.125
Skewness	0.22	0.15	1.52	1.20	6.85	2.18	3.44
5th percentile	-1.24	16.71	0.10	-0.497	0.0003	0.021	-0.184
25th percentile	0.12	18.37	0.29	-0.181	0.0034	0.037	-0.063
50th percentile	0.83	19.70	0.50	0.049	0.0292	0.057	0.003
75th percentile	1.65	21.05	0.81	0.320	0.3174	0.087	0.073

Fama-MacBeth Regressions of Excess Returns on Predictors

Coeff.	-0.06	-0.16	0.22	0.12			
(t-stat.)	(-0.80)	(-2.25)	(1.16)	(0.34)			
Coeff.	-0.03	-0.15	0.23	0.09	0.057	-3.77	-2.09
(t-stat.)	(-0.42)	(-2.80)	(1.29)	(0.25)	(1.71)	(-1.98)	(-3.36)
WLS	-0.02	-0.16	0.23	0.19	0.056	-3.48	-2.30
	(-0.36)	(-2.70)	(1.19)	(0.54)	(1.92)	(-1.72)	(-3.65)

Cross-Sectional Patterns in China A Share Returns 1995-2016

Predictors	Beta	Size	BM	Mom	Illiq	Max	Rev
Mean	1.05	19.74	0.40	0.222	0.0073	0.059	0.020
Std. Dev.	0.71	0.81	0.24	0.386	0.0179	0.031	0.108
Skewness	-0.57	0.99	0.24	1.86	9.76	2.95	1.77
5th percentile	0.11	18.67	0.13	-0.259	0.0005	0.029	-0.117
25th percentile	0.73	19.16	0.26	-0.022	0.0020	0.042	-0.044
50th percentile	1.07	19.62	0.37	0.163	0.0045	0.055	0.005
75th percentile	1.39	20.17	0.52	0.400	0.0089	0.072	0.068
Fama-MacBeth Regressions of Excess Returns on Predictors							
Coeff.	0.27	-0.88	0.58	0.25			
(t-stat.)	(1.85)	(-4.97)	(1.19)	(1.00)			
	0.32	-0.67	0.70	0.20	256.6	-16.38	-2.38
	(2.31)	(-3.74)	(1.64)	(0.82)	(2.46)	(-7.01)	(-2.29)
WLS	0.41	-0.73	0.37	0.17	294.6	-14.42	-3.94
	(4.41)	(-3.60)	(1.08)	(0.65)	(2.74)	(-6.72)	(-4.26)

Chinese Investors Price Stocks Like Investors in Other Large Economies

US	Beta	Size	BM	Mom	Illiq	Max	Rev
WLS	-0.02	-0.16	0.23	0.19	0.056	-3.48	-2.30
	(-0.36)	(-2.70)	(1.19)	(0.54)	(1.92)	(-1.72)	(-3.65)
China A	Beta	Size	BM	Mom	Illiq	Max	Rev
WLS	0.41	-0.73	0.37	0.17	294.6	-14.42	-3.94
	(4.41)	(-3.60)	(1.08)	(0.65)	(2.74)	(-6.72)	(-4.26)

- Surprisingly similar patterns, despite almost total market segmentation.
- Chinese investors pay up for size, liquidity and long shots, and they discount for systematic risk.

Investment Opportunities and Cost of Capital

- Two related questions:
 - What are the investment opportunities for USD global investors?
 - What are the implications for firms' cost of capital?
- Due to capital controls (exchange rate controls), China's markets were inaccessible for many years.
- More recently there has been increasing ability to invest and interest in investing in China.
 - QFII/RQFII.
 - Shanghai-Hong Kong and Shenzhen-Hong Kong Stock Connect.
 - MSCI and FTSE/Russell index inclusion.

Opportunities in China for Global Equity Investors

- In contrast to perception, China's market has performed well using traditional performance measures 1995-2016.

$R_M - R_F$	China	US	Europe
Ann. mean (%)	14.77	7.83	6.44
Ann. vol. (%)	31.63	15.32	17.51
Sharpe ratio	0.47	0.51	0.37

- China has a low correlation with other large economies.

	China	US
US	0.19	
Europe	0.23	0.80

- Together these facts imply high potential alphas for global investors.

China	US		Global	
$R_M - R_F$	1-factor	4-factor	1-factor	4-factor
Mth. Alpha (%)	0.97	0.97	0.99	0.91
t-stat.	(1.39)	(1.34)	(1.47)	(1.27)

High Alphas in China and Cost of Capital

China		US		Global	
		1-factor	4-factor	1-factor	4-factor
$R_M - R_F$	Alpha	0.97	0.97	0.99	0.91
	t-stat.	(1.39)	(1.34)	(1.47)	(1.27)
SMB	Alpha	1.25	1.26	1.25	1.29
	t-stat.	(4.63)	(4.56)	(4.64)	(4.63)
HML	Alpha	0.73	0.72	0.74	0.71
	t-stat.	(2.26)	(2.38)	(2.28)	(2.24)
WML	Alpha	0.10	0.06	0.10	-0.01
	t-stat.	(0.38)	(0.23)	(0.37)	(-0.02)

- High potential alphas available to global investors mean high cost of capital for China's firms.
- Research by Henry suggests stock market liberalization and integration would reduce the cost of capital for China's firms and boost investment, wages, and economic growth.

Conclusions

1. Stock price informativeness (cash flows)

- Contrary to the Casino Theory, stock prices in China are now as informative about future profits as they are in the US.
- There is interesting and potentially important cross-sectional variation in price informativeness:
state ownership -, dual listing -, QFII ownership +.

2. Pricing (discount rates)

- Though it is a segmented market, China A shares exhibit pricing patterns similar to those in developed markets—investors pay up for size, growth, and long shots, and they discount for systematic risk.
- The market has performed well and its low correlation creates opportunities (high alpha) for global investors. This high alpha is a high cost of capital for China's firms and a drag on economic growth.