The real value of China's stock market

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Contents

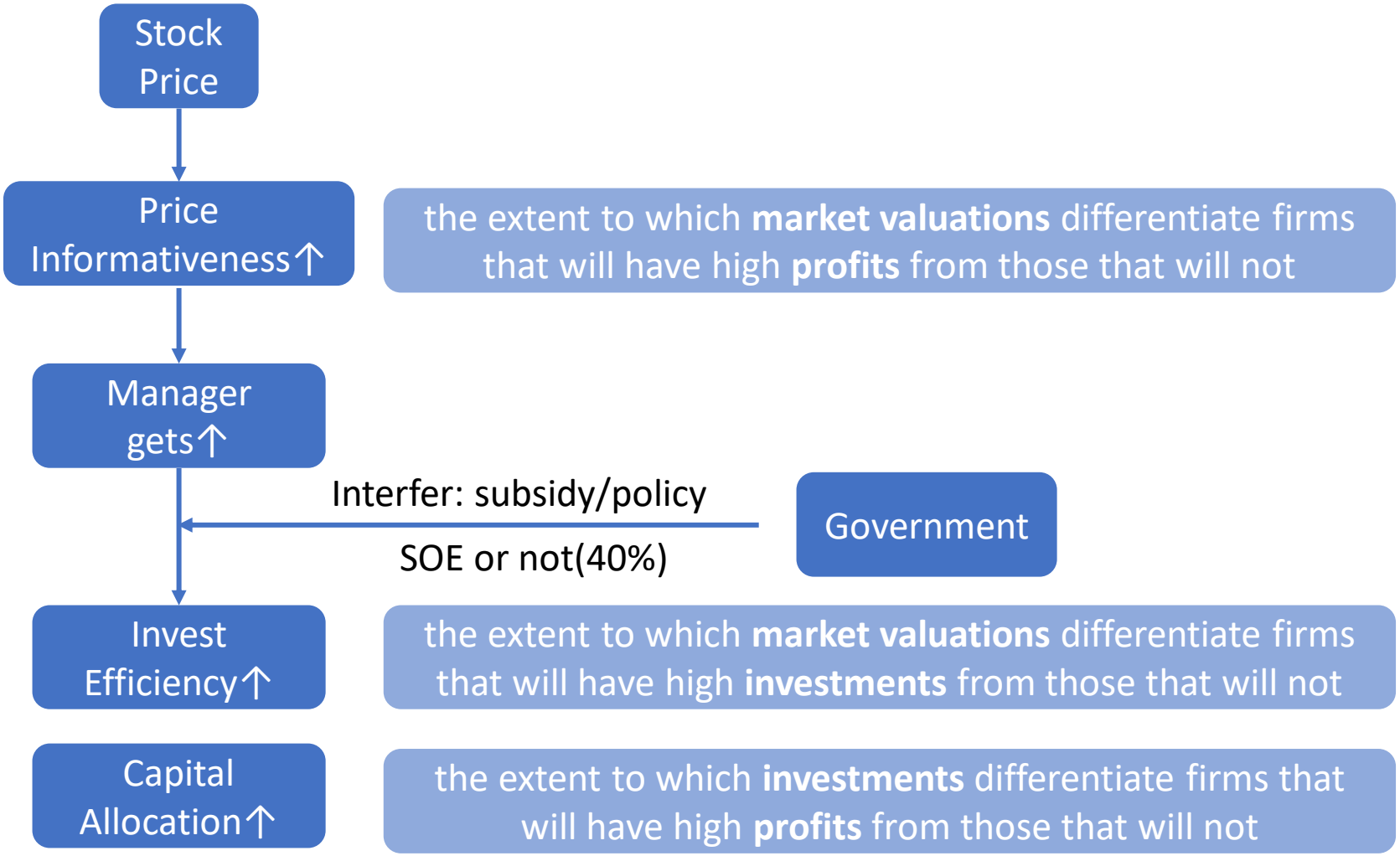
1.Introduction_Background

- Over the last ten years, China’s GDP tripled for the third decade in a row.
- China has become the world’s largest investor. China’s investment in 2018 was $5.9 trillion, compared with $4.3 trillion in the United States and $1.2 trillion in Japan.
- It has also become the world’s greatest contributor to global growth, making the efficiency of its investment a matter of global importance.
- **Is China's investment efficiency high?**

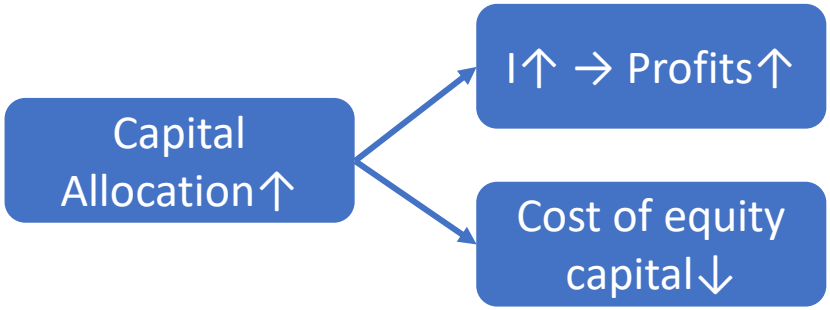
1.Introduction_Background

- About A shares:
- Aa capital allocation channel, China’s stock market has been a side experiment, derided as a casino, dominated by **retail investors**, and subject to **frequent regulatory interventions** and **significant restrictions on the tradability of shares**.
- Despite programs to accommodate foreign investment in A shares, foreign investors still hold only 3% of the market.
- As of December 2019, more than 3,700 companies have been listed in China, with a market value of more than US$8 trillion.
- State-owned enterprises and private enterprises face different policies.
- The reform of non-tradable shares has a profound impact on China's stock market.

1.Introduction_Background



1.Introduction_Background



Both the government and investors hope that China's stock market will develop to a high level.

1993Dual listing

2002QFII ownership

2005The reform of non-tradable shares

2008Financial crisis

1.Introduction_Literatures

The informativeness of prices

- Bai et al. (2016): stock price informativeness promotes efficient allocation of corporate investment and economic growth
- Farboodi et al. (2017) also adopt the Bai–Philippon–Savov measure to study the effect of increased data availability and processing power on price informativeness
- Kacperczyk et al. (2018) use it to study the impact of foreign investors on market efficiency.

1.Introduction_Literatures

Private enterprise vs. SOE

- Lin et al. (1998): blame state-imposed policy burdens for SOE underperformance;
- Chen et al. (2015): SOE's managerial promotion depends not on profitability but on avoiding layoffs
- Harrison et al. (2019): compared to fully privately owned firms, privatized SOEs continue to benefit from low-interest loans and government subsidies.
- Harrison et al. (2019): differences between private firms and SOEs become more pronounced with China's massive postcrisis economic stimulus package
- Chen et al. (2017): starting in 2009, four trillion yuan was funneled through the state-owned banks, often to other state-owned firms, to stimulate investment.

1.Introduction_Motivation

- What is the current price information content of China's stock market?
- Whether stock price informativeness and investment efficiency vary with the fraction of a firm’s equity that is state-owned, especially after the crisis?
- How efficient is China’s asset allocation? Is China a good asset allocation target?

1.Introduction_Contribution

- Prove that stock prices in China have become as informative about future profits as they are in the US;
- Prove that the special nature of China's stock market has led to lower price information content of state-owned enterprises;
- Show that China is a good asset allocation target;
- Put forward policy recommendations: China can lower barriers and increase the liquidity of the stock market by introducing foreign capital and benefit from it

2.Data

- **earnings, equity market value, investment, and asset book value**
- CSMAR/Wind: 1995-2016.
- earnings variable $E_{i,t}$: the net profit reported for firm i earned over calendar year t.
- equity market capitalization $M_{i,t}$: multiply firm i's A-share price at the end of year t by the total number of shares outstanding, including tradable A, B, and H shares and nontradable shares
- investment I: capital expenditure
- SOE: The proportion of state-owned shares is higher than 40%

3.Methods

Assumptions:

- A1: as prices become more in- formative, they should predict future profit more strongly.
- A2: as prices become more in- formative, they should predict investment more strongly.
- A3: if managers are learning from prices, then as prices become more informative about future profit, the efficiency of capital allocation should increase.
- A4: stock price informativeness and investment efficiency are lower for firms with greater state ownership, especially after 2008

3.Methods

- The potential of China's stock market as a capital allocation channel:
  - the informativeness of prices(Dual listing and QFII ownership)
  - the efficiency of investment
  - the cost of equity capital
- The first two events show that China's stock market prices are highly informative.
- The last one shows that China currently has a relatively high cost of capital and at the same time can provide higher excess returns, which is a good asset allocation channel.

3.Methods

- Bai et al. (2016):
- **The informativeness of prices**: the extent to which market valuations differentiate firms that will have high profits from those that will not
- $\frac{E_{i,t+k}}{A_{i,t}} = a_t + b_t log\left(\frac{M_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$
- $1_{i,t}^S$: Dummy variable representing the industry
- The predicted variation of profit from prices:
- $b_t \times \sigma_t\left(log\left(\frac{M}{A}\right)\right)$

3.Methods

- Bai et al. (2016): managers choose investment to maximize value. As prices become more informative, they should predict investment more strongly.
- **The efficiency of investment:**
- $\frac{I_{i,t+k}}{A_{i,t}} = a_t + b_t log\left(\frac{M_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t\left(\frac{I_{i,t}}{A_{i,t}}\right) + e_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$
- the predicted variation of investment from prices:
- $b_t \times \sigma_t\left(log\left(\frac{M}{A}\right)\right)$

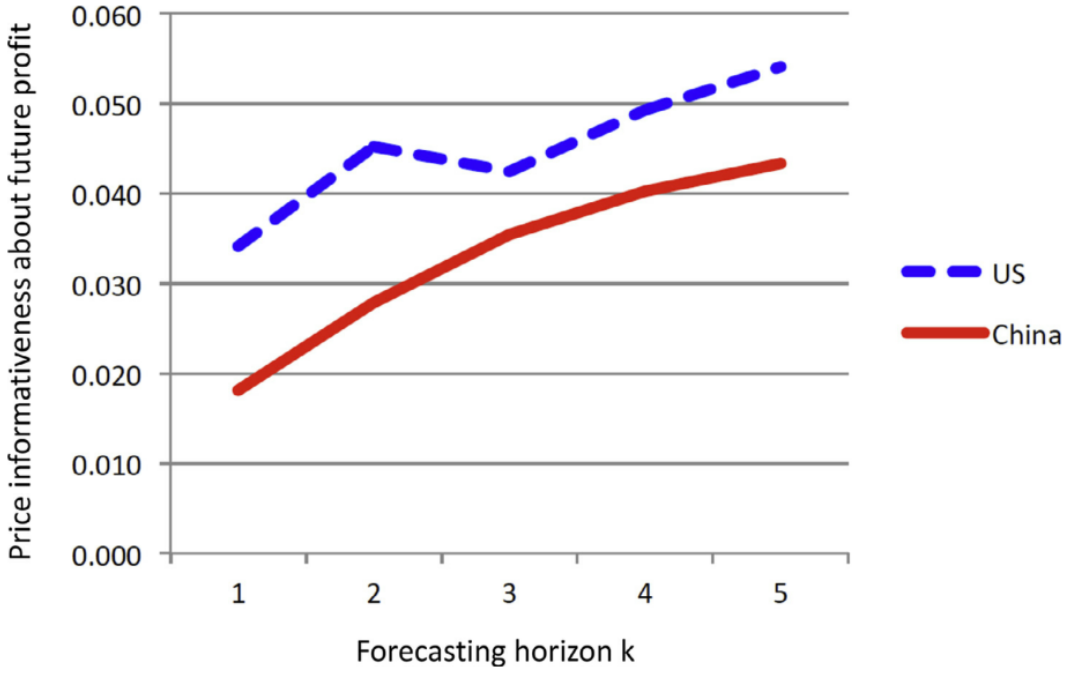
3.Methods

- Bai et al. (2016): managers choose investment to maximize profit. If managers are learning from prices, then as prices become more informative about future profit, the efficiency of capital allocation should increase.
- **The efficiency of capital allocation:** the extent to which firms with greater investment go on to have higher earnings
- $\frac{E_{i,t+k}}{A_{i,t}} = a_t + b_t\left(\frac{I_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$
- the predicted variation of profit from investment:
- $b_t \times \sigma_t\left(log\left(\frac{I}{A}\right)\right)$

4.Results_Stock price informativeness about future profit

- $\frac{E_{i,t+k}}{A_{i,t}} = a_t + \boldsymbol{b_t log}\left(\frac{\boldsymbol{M_{i,t}}}{\boldsymbol{A_{i,t}}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$
- K=1,2,3,4,5

- As the forecast period is longer, the information content is higher.



4.Results_Stock price informativeness about future profit

- H_0: the coefficients in the US and China are equal
- H_1: the US coefficient is greater
- 2001: stock price informativeness in China begins to increase after joining WTO.
- 2005: the CSRC introduced the Split-Share Structure Reform to unlock nontradable shares gradually, broadening the investor base.
- From 2005 on, China's stock price informativeness tends to approach or even exceed that of the US.

4.Results_Stock price informativeness about future profit

- Since 2005, there has been no significant difference in the content of price information between China and the United States

	$k = 3$					$k = 5$				
	China		US		p-val	China		US		p-val
	Pred var	t-stat	Pred var	t-stat		Pred var	t-stat	Pred var	t-stat	
1995	0.018	(2.82)	0.056	(8.85)	0.0	0.028	(3.98)	0.057	(5.57)	1.1
1996	0.035	(5.43)	0.039	(5.82)	34.9	0.028	(2.65)	0.084	(9.16)	0.0
1997	0.037	(6.01)	0.049	(8.29)	7.1	0.020	(2.69)	0.022	(1.72)	46.3
1998	0.021	(4.44)	0.060	(12.07)	0.0	0.001	(0.12)	0.024	(2.14)	3.3
1999	0.006	(1.43)	−0.005	(−0.52)	85.3	-0.002	(−0.41)	0.029	(3.55)	0.1
2000	0.001	(0.37)	−0.027	(−2.21)	98.7	−0.010	(−2.12)	0.047	(6.84)	0.0
2001	0.011	(2.98)	0.044	(6.88)	0.0	0.006	(1.27)	0.059	(8.09)	0.0
2002	0.006	(1.59)	0.062	(14.79)	0.0	0.016	(2.28)	0.065	(9.84)	0.0
2003	0.021	(6.04)	0.059	(14.64)	0.0	0.032	(4.58)	0.057	(6.99)	1.0
2004	0.038	(6.71)	0.037	(6.02)	57.0	0.050	(5.97)	0.073	(7.20)	3.9
2005	0.043	(6.12)	0.041	(5.50)	54.6	0.041	(4.53)	0.046	(4.57)	34.5
2006	0.050	(7.08)	0.039	(3.60)	82.2	0.090	(4.45)	0.067	(8.97)	86.3
2007	0.048	(5.97)	0.061	(10.35)	9.9	0.062	(4.65)	0.063	(8.99)	47.9
2008	0.059	(6.71)	0.046	(12.29)	90.3	0.073	(6.73)	0.055	(9.53)	93.3
2009	0.057	(5.48)	0.064	(15.23)	24.6	0.046	(6.21)	0.063	(12.23)	3.1
2010	0.051	(7.22)	0.055	(12.06)	33.6	0.077	(7.16)			
2011	0.031	(8.38)	0.041	(10.41)	3.4	0.076	(7.59)			
2012	0.035	(7.70)								
2013	0.047	(8.26)								

4.Results_Privately owned firms versus SOEs

- Hypothesize: stock price informativeness about future profit is lower for SOEs than for privately owned firms because state subsidies make earnings harder to predict, especially after the postcrisis economic stimulus program.
- $$\frac{E_{i,t+k}}{A_{i,t}} = a_{0t} + a_{1t}X_{i,t} + \left(b_{0t} + (\boldsymbol{b_1}1_{t<2009} + \boldsymbol{b_2}1_{t\geq 2009})X_{i,t}\right) \times log\left(\frac{M_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$$
- X: State-owned shareholding ratio

4.Results_Privately owned firms versus SOEs

- Government support to SOEs in China became more pronounced with the postcrisis stimulus, which made earnings at firms with greater state ownership harder to predict.

	$k = 3$			$k = 5$		
	b_1	b_2	$b_2 - b_1$	b_1	b_2	$b_2 - b_1$
	0.009 (1.63)	−0.055 (−6.79)	−0.064 (−6.52)	0.012 (1.29)	−0.115 (−7.18)	−0.127 (−7.07)
Cross-sectional	0.012	−0.062	−0.075	−0.004	−0.132	−0.128

4.Results_Privately owned firms versus SOEs

- Examine the extent to which the variation in stock price informativeness with respect to state ownership in China is **driven by cross-sectional variation**
- $\frac{E_{i,t+k}}{A_{i,t}} = a_{0t} + a_{1t}X_{i,t} + \left(b_{0t} + \boldsymbol{b_{1t}}X_{i,t}\right) \times log\left(\frac{M_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$

	$k=3$			$k=5$		
	b_1	b_2	$b_2 - b_1$	b_1	b_2	$b_2 - b_1$
	0.009 (1.63)	−0.055 (−6.79)	−0.064 (−6.52)	0.012 (1.29)	−0.115 (−7.18)	−0.127 (−7.07)
Cross-sectional	0.012	−0.062	−0.075	−0.004	−0.132	−0.128

4.Results_Dual listing and QFII ownership and stock price

- **Dual listing:** the same company is listed on two different stock exchanges for financing. The typical dual listing phenomenon in China is "A+H" listing. The conditions for companies to list on the mainland stock market are stricter than those in Hong Kong
- **QFII ownership**: foreign institutions that meet the relevant qualification requirements of the CSRC and the SAFE, have been approved by the CSRC to invest in the Chinese securities market, and have obtained quota approval from the SAFE.

3.Results_Dual listing and QFII ownership and stock price

What is the impact of dual listing/QFII on China's stock market?

- $\frac{E_{i,t+k}}{A_{i,t}} = a_{0t} + a_{1t}X_{i,t} + \left(b_{0t} + \boldsymbol{b_1}X_{i,t}\right) \times log\left(\frac{M_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$
- X: dummy for dual listing/the fraction of firm shares held by QFIIs + control variables
- Control variable:
- dual listing: state ownership and QFII ownership
- QFII ownership: state ownership and dual listing

4.Results_ Dual listing and QFII ownership and stock price

- While promoting dual listing as a way for firms to raise additional equity capital may be to some extent counterproductive in that it appears to degrade price informativeness, the presence of international investors in China may boost stock price informativeness
- The effect is coming from cross-sectional rather than time-series variation

	H shares listed		
	k=3	k=5	Controls
	−0.015 (−4.09)	−0.035 (−5.23)	No
	−0.010 (−2.48)	−0.024 (−3.42)	Yes
Cross-sectional	−0.008	−0.029	Yes
	QFII ownership		
	k=3	k=5	Controls
	0.005 (0.93)	0.003 (0.39)	No
	0.007 (1.34)	0.008 (0.89)	Yes
Cross-sectional	0.023	0.024	Yes

4.Results_ Stock price informativeness about future investment

- Normal estimating:
- $\frac{I_{i,t+k}}{A_{i,t}} = a_t + \boldsymbol{b_t log}\left(\frac{M_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t\left(\frac{I_{i,t}}{A_{i,t}}\right) + e_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$
- the predicted variation of investment from prices becomes increasingly significantly positive from 2003 on for k = 3 and k = 5

	$k=1$		$k=3$		$k=5$	
	Pred var	t-stat	Pred var	t-stat	Pred var	t-stat
1995	0.009	(1.23)	0.034	(2.48)	0.067	(3.04)
1996	0.022	(2.72)	0.058	(3.54)	0.104	(3.27)
1997	0.011	(1.70)	0.051	(3.72)	0.087	(4.30)
1998	0.006	(1.26)	0.039	(3.42)	0.051	(2.63)
1999	−0.003	(−0.67)	0.006	(0.64)	0.008	(0.52)
2000	−0.002	(−0.70)	−0.002	(−0.20)	−0.026	(−1.73)
2001	0.000	(−0.09)	0.001	(0.17)	0.036	(1.47)
2002	0.000	(0.10)	−0.009	(−1.01)	0.055	(2.06)
2003	0.002	(0.50)	0.032	(2.43)	0.085	(3.56)
2004	0.006	(1.59)	0.048	(3.24)	0.086	(3.20)
2005	0.002	(0.56)	0.040	(3.20)	0.099	(3.87)
2006	0.008	(1.86)	0.030	(2.25)	0.113	(3.96)
2007	0.006	(1.44)	0.040	(2.75)	0.170	(4.67)
2008	−0.003	(−0.83)	0.047	(3.14)	0.195	(5.56)
2009	0.006	(1.73)	0.090	(5.24)	0.217	(6.32)
2010	0.010	(2.62)	0.086	(5.59)	0.235	(7.09)
2011	0.011	(3.05)	0.069	(5.66)	0.153	(6.04)
2012	0.003	(1.12)	0.045	(4.31)		
2013	0.007	(2.50)	0.034	(3.55)		
2014	0.001	(0.22)				
2015	0.001	(0.42)				

4.Results_ Stock price informativeness about future investment

- Special estimating:
- $\frac{I_{i,t+k}}{A_{i,t}} = a_{0t} + a_{1t}X_{i,t} + \left(b_{0t} + (\boldsymbol{b_1}1_{t<2009} + \boldsymbol{b_2}1_{t\geq 2009})X_{i,t}\right) \times log\left(\frac{M_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t\left(\frac{I_{i,t}}{A_{i,t}}\right) + e_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$
- $\frac{I_{i,t+k}}{A_{i,t}} = a_{0t} + a_{1t}X_{i,t} + \left(b_{0t} + \boldsymbol{b_1}X_{i,t}\right) \times log\left(\frac{M_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t\left(\frac{I_{i,t}}{A_{i,t}}\right) + e_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$
- After 2009, SOE investment became less predictable by prices than investment of privately owned firms

	$k=3$			$k=5$		
	b_1	b_2	b_2-b_1	b_1	b_2	b_2-b_1
	−0.009	−0.063	−0.054	−0.042	−0.157	−0.115
	(−0.61)	(−3.62)	(−2.49)	(−1.37)	(−3.28)	(−2.14)
Cross-sectional	0.020	−0.084	−0.104	0.027	−0.203	−0.230

4.Results_ Efficiency of capital allocation

- Normal estimating:
- $\frac{E_{i,t+k}}{A_{i,t}} = a_t + \boldsymbol{b_t}\left(\frac{I_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$
- Most of the time, capital allocation is effective and can bring benefits to the company in the future

	$k=1$		$k=3$		$k=5$	
	Pred var	t-stat	Pred var	t-stat	Pred var	t-stat
1995	0.003	(0.90)	0.005	(0.88)	0.008	(0.95)
1996	0.007	(2.56)	0.004	(0.58)	0.002	(0.29)
1997	0.018	(5.08)	0.014	(2.66)	0.015	(2.48)
1998	0.011	(4.81)	0.012	(3.54)	0.011	(1.82)
1999	0.010	(3.94)	0.012	(3.60)	0.013	(2.07)
2000	0.011	(5.32)	0.012	(4.32)	0.000	(0.00)
2001	0.011	(5.48)	0.018	(4.62)	0.002	(0.44)
2002	0.010	(4.87)	0.007	(2.19)	0.005	(0.78)
2003	0.018	(7.65)	0.009	(2.82)	0.009	(1.36)
2004	0.014	(5.91)	0.010	(2.19)	0.004	(0.87)
2005	0.010	(4.78)	0.004	(0.84)	0.010	(1.22)
2006	0.015	(3.67)	0.006	(1.20)	−0.005	(−0.40)
2007	0.027	(4.31)	0.020	(2.40)	0.010	(0.75)
2008	0.017	(4.58)	0.017	(2.16)	−0.008	(−1.01)
2009	0.012	(3.26)	0.004	(0.52)	0.003	(0.49)
2010	0.019	(6.67)	0.026	(3.64)	0.025	(2.29)
2011	0.014	(4.30)	0.013	(3.27)	0.013	(1.48)
2012	0.013	(4.74)	0.014	(2.81)		
2013	0.006	(2.72)	0.016	(2.38)		
2014	0.013	(5.68)				
2015	0.019	(7.37)				

4.Results_ Efficiency of capital allocation

- Hypothesize: the efficiency of capital allocation is lower at firms with greater state ownership, especially in the post-2009 subperiod.
- $\frac{E_{i,t+k}}{A_{i,t}} = a_{0t} + a_{1t}X_{i,t} + \left(b_{0t} + (b_1 1_{t<2009} + b_2 1_{t\geq 2009})X_{i,t}\right) \times \left(\frac{I_{i,t}}{A_{i,t}}\right) + c_t\left(\frac{E_{i,t}}{A_{i,t}}\right) + d_t^S 1_{i,t}^S + \varepsilon_{i,t+k}$
- Allocational efficiency at firms with greater state ownership was indeed lower after the postcrisis stimulus
- The panel results are largely driven by cross-sectional variation

	$k=3$			$k=5$		
	b_1	b_2	$b_2 - b_1$	b_1	b_2	$b_2 - b_1$
	0.178 (3.55)	−0.390 (−4.73)	−0.567 (−6.28)	0.201 (2.29)	−0.569 (−3.60)	−0.770 (−4.56)
Cross-sectional	0.052	−0.270	−0.322	0.065	−0.472	−0.537

3.Results_Cost of capital

- When considering investment, managers need to consider both the benefits we discussed earlier and **the cost of capital**.
- H_{01}: **Chinese investors** operate in a developing market with a relatively high degree of economic risk, and they have relatively few opportunities for international diversification, they **require a higher equity premium in China than do their counterparts in the US**.
- H_{02}: because of repatriation risks and other illiquidity concerns, **investors require a positive alpha from China's stock market relative to traditional US and global equity benchmark portfolios.**

3.Results_Cost of capital

- About H_{01}
- China CNY: the CNY returns on China's stock market in excess of the CNY riskless rate
- US USD: the USD returns on US's stock market in excess of the USD riskless rate
- Chinese investors require higher equity returns than do US investors.
- There is a meaningfully higher cost of capital for firms in China

	China CNY	US USD
Mean	12.76	7.83
Volatility	31.53	15.32

3.Results_Cost of capital

- About H_{02}
- China's stock market delivered an alpha of almost 1% per month to USD investors over the period.
- These high potential returns for global investors also amount to a high cost of capital for Chinese firms.

US factors			Global factors		
1-factor	3-factor	5-factor	1-factor	3-factor	5-factor
0.97	0.97	0.90	0.99	0.90	0.81
(1.39)	(1.35)	(1.25)	(1.47)	(1.28)	(1.14)

3.Results_Cost of capital

- China's stock returns have very low correlation with the other markets.
- China has much to gain from lowering explicit and implicit barriers to its stock market and accelerating reforms that would attract foreign capital.

	China USD
Corr. with US	0.19
Corr. with Europe	0.23
Corr. with Japan	0.13

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为贯彻落实党中央、国务院决策部署，进一步扩大金融业对外开放，2020年5月7日，中国人民银行、国家外汇管理局发布《境外机构投资者境内证券期货投资资金管理规定》（中国人民银行　国家外汇管理局公告〔2020〕第2号，以下简称《规定》），明确并简化境外机构投资者境内证券期货投资资金管理要求，进一步便利境外投资者参与我国金融市场。

5.Conclusions

- Stock prices in China have become as informative about future profits as they are in the US;
- Price informativeness and investment efficiency for state-owned enterprises fell below that of privately owned firms after the postcrisis stimulus;
- Chinese firms face a higher cost of equity capital than US firms.