

State-Owned Enterprises in China

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Motivation

- China's growth model
 - “Grasp the large, let go of the small” (Hsieh and Song, 2015)
 - A state-dominant financial system contributes to the growth of the state-owned sector
 - Success of state-oriented corporate model
- China's “national champions” (Lin and Milhaupt, 2013)
 - China has become the largest economy in the world in PPP terms
 - As of 2019, China has 129 business groups (including 10 Taiwanese companies) in Fortune's Global 500, among which 80 percent in the list of Chinese firms are SOEs
- On the other hand, abundant evidence showed that SOEs are less productive and less efficient than non-SOEs
 - Dollar and Wei (2007); Zhu (2012); Li, Liu and Wang (2015)
 - Song, Storesletten and Zilibotti (2011)

Fortune Global 2020 Chinese Top 10 Firms

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RANK ^	NAME	REMOVE X	REMOVE X	REMOVE X	REMOVE X	REMOVE X	REMOVE X	REMOVE X	REMOVE X
		REVENUES (\$M)	REVENUE PERCENT CHANGE	PROFITS (\$M)	PROFITS PERCENT CHANGE	ASSETS (\$M)	EMPLOYEES	CHANGE IN RANK	YEARS ON GLOBAL 500 LIST
2	Sinopec Group	\$407,009	-1.8%	\$6,793.2	16.2%	\$317,515.7	582,648	-	22
3	State Grid	\$383,906	-0.8%	\$7,970	-2.5%	\$596,616.3	907,677	2	20
4	China National Petroleum	\$379,130	-3.5%	\$4,443.2	95.7%	\$608,085.6	1,344,410	-	20
18	China State Construction Engineering	\$205,839	13.4%	\$3,333	5.5%	\$294,070	335,038	3	9
21	Ping An Insurance	\$184,280	12.6%	\$21,626.7	33.2%	\$1,180,488.5	372,194	8	11
24	Industrial & Commercial Bank of China	\$177,069	4.8%	\$45,194.5	0.4%	\$4,322,528.4	445,106	2	22
30	China Construction Bank	\$158,884	5.1%	\$38,609.7	0.3%	\$3,651,644.6	370,169	1	21
35	Agricultural Bank of China	\$147,313	5.6%	\$30,701.2	0.1%	\$3,571,541.7	467,631	1	21
43	Bank of China	\$135,091	5.8%	\$27,126.9	-0.4%	\$3,268,837.9	309,384	1	26
45	China Life Insurance	\$131,244	13%	\$4,660.3	-	\$648,393.2	180,401	6	18

Definition of SOEs

- Official definition: Doctrine 81 of SASAC (State-owned Assets Supervision and Administration Commission) of the State Council in 1994
 - absolute controlling if the state owns above 50% of equity
 - relative controlling if the state owns above 30% but below 50% of equity
 - In both cases, state must be the largest shareholder
- In Doctrine 81:

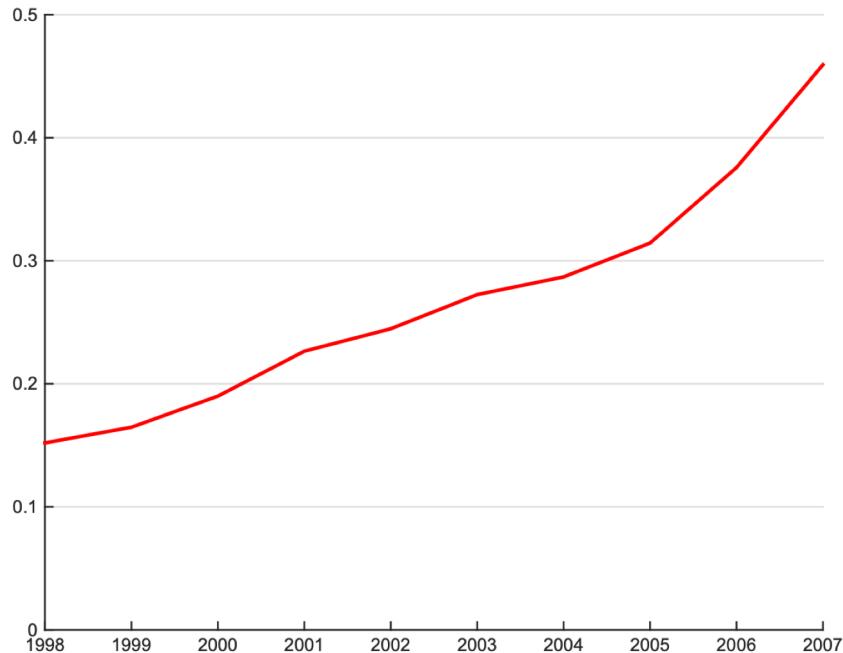
“... when calculating state ownership, we should not aggregate the ownership by different entities, but only consider ownership by each entity separately...”

Misreporting of state ownership in AIS

- In AIS
 - Firm registration type or state control (absolute/relative state control) can be used to identify SOEs.
 - Both self-reported
- Mismatch between firms' actual and notional ownership
 - Some former SOEs do not change their registration ownership type after restructuring (Dollar and Wei, 2007)
 - Out of their surveyed sample of firms (a total of 12400 firms), 169 firms registered as SOEs and 208 firms registered as collectives are already wholly domestic private firms
 - A large number of firms directly/indirectly controlled by SASAC are legally registered as private firms; some private firms are registered as SOEs (Hsieh and Song, 2015)

Hsieh and Song (2015)

- Share of state-owned firms registered as private firms



Note: This figure plots the number of the state-owned firms (by our definition) that are registered as private firms as a share of the number of all state-owned firms.

- Example: Chongqing International Trust
 - A firm legally owned by the local govt of Chongqing according to its registration type
 - De facto: *privately* owned by a crony of the Party Secretary of Chongqing at that time
 - Reported by Sydney Morning Herald, August 7, 2011 (John Garnaut)

Research Questions

- Re-identify state-owned enterprise (SOE)
 - Widely used identifiers of Chinese SOEs
 - WIND database for Chinese listed SOEs
 - Annual Industry Survey (AIS) by the National Bureau of Statistics (NBS)
 - *Systematic* misreporting issues of SOEs in AIS by NBS
- How important is the state sector in Chinese economy?
 - Chinese model of state ownership
- Revisit the real effects of state ownership

Preview of results

- Our revised measure of SOEs (and partial SOEs) identifies a significantly larger number of SOEs than the existing measure (in SAIC).
 - When setting the threshold being 50%, our revised measure covers 84,904 Central SOEs, 80,099 Provincial SOEs and 417,764 City SOEs
 - Number of (Partial) SOEs including firms with state blood (threshold being 0%): 1,364,601
 - Number of SOEs by registration type in SAIC: 391,490
- The aggregated capital of all (partial) SOEs climbed up from 61% in 1999 to 85% in 2017
- Among all (partial SOEs), the total state capital increased from 21% in 1999 to 31% in 2017.

Preview of results

- Chinese model of state ownership: Hierarchical structure
 - Feature:
 - Vertical integration of firms along the ownership trees
 - Top down system of policy formulation and enforcement in the authoritarian political regime
 - Over time:
 - Decentralization (authoritarian hierarchy)
 - Indirect ownership (ownership hierarchy)
 - Hierarchical distance to the governments in ownership trees
 - Average distance increases over time

Preview of results

- Revisiting the real effects of state ownership
 - Mix ownership structure is associated with higher firm growth and performance
 - Hierarchical distance to the governments is associated with better firm performance but lower growth of firm size (total assets)
 - Consistent with the slogan of former SOE reform “Grasp the large, let go of the small” (Hsieh and Song, 2015)
- We do **not** find significant effects of the hierarchical distance on access to loans after taking into account the state ownership

Outline of the rest of the talk

- Literature
- Unique data
- Misreporting of state ownership
- Reidentify Chinese SOEs
- Revisit the real effect of state ownership
- Conclusion

Literature/Institutional background

- Government ownership in firms: value enhancing (Boubakri et al., 2015) or reducing?
 - Government implicit guarantees against default (Borisova, et al., 2015)
 - Non-profit maximizing social/political objectives
 - Resurgence of state ownership after 2008
 - Government bailout and market failures after 08's global finance crisis
- China's state capitalism model (Megginson, 2017)
 - Poor performance of Chinese SOEs (Bai, Lu and Tao, 2006)
 - Government's helping hands
 - A large amount of cheaper loans (Lin and Tan, 1999; Cong et al., 2019)
 - Subsidies (Shleifer and Vishny, 1998; Harrison et al., 2019)
 - SASAC (State-owned Assets Supervision and Administration Commission)
 - “the world’s largest controlling shareholder” (Lin and Milhaupt, 2013)
 - Recognized both **control rights** and **cash flow rights** in *SOE Asset Law*
 - **Personnel power** over SOEs: *more powerful than a usual shareholder*
 - Party-state as monitor/supervisor of SOEs (Wang, 2014)

Our unique data

- Firm registration and ownership database
 - China's State Administration for Industry and Commerce (SAIC)
 - All registered firms in China
 - Over 40 million (excl. individual businesses)
 - Firm basic info
 - Firm name, registration date, registration capital, firm status (existing, bankrupt), ownership type, industry and location
 - Shareholders
 - Name of shareholders, holding percentage/amount
 - The time of update, change of holding before/after updates
- Annual Industrial Survey (AIS), China's National Bureau of Statistics (NBS)
 - Industrial firms above certain threshold, and all SOEs
 - Annual sales over RMB 5 million (about US\$800K) before 2010/over RMB 20 million after 2010
 - Financial information

Misreporting

- Confusion Matrix: Reported wholly SOEs and state capital (0%)

% of State Capital= 0%			
Wholly SOE	False	True	Firm-year obs.
False	9,118	6,930	16,048
True	13,805	6,067	19,872
Firm-year obs.	22,923	12,997	35,920

- Confusion Matrix: Reported wholly SOEs and state capital (100%)

% of State Capital= 100%			
Wholly SOE	False	True	Firm-year obs.
False	9,762	6,286	16,048
True	8,708	11,164	19,872
Firm-year obs.	18,470	17,450	35,920

Reidentify SOEs

- Methodology
 - Mapping out firm-to-firm equity investment networks
 - Building ownership trees, using central/provincial/city government agencies/firms as root nodes
- Our algorithm

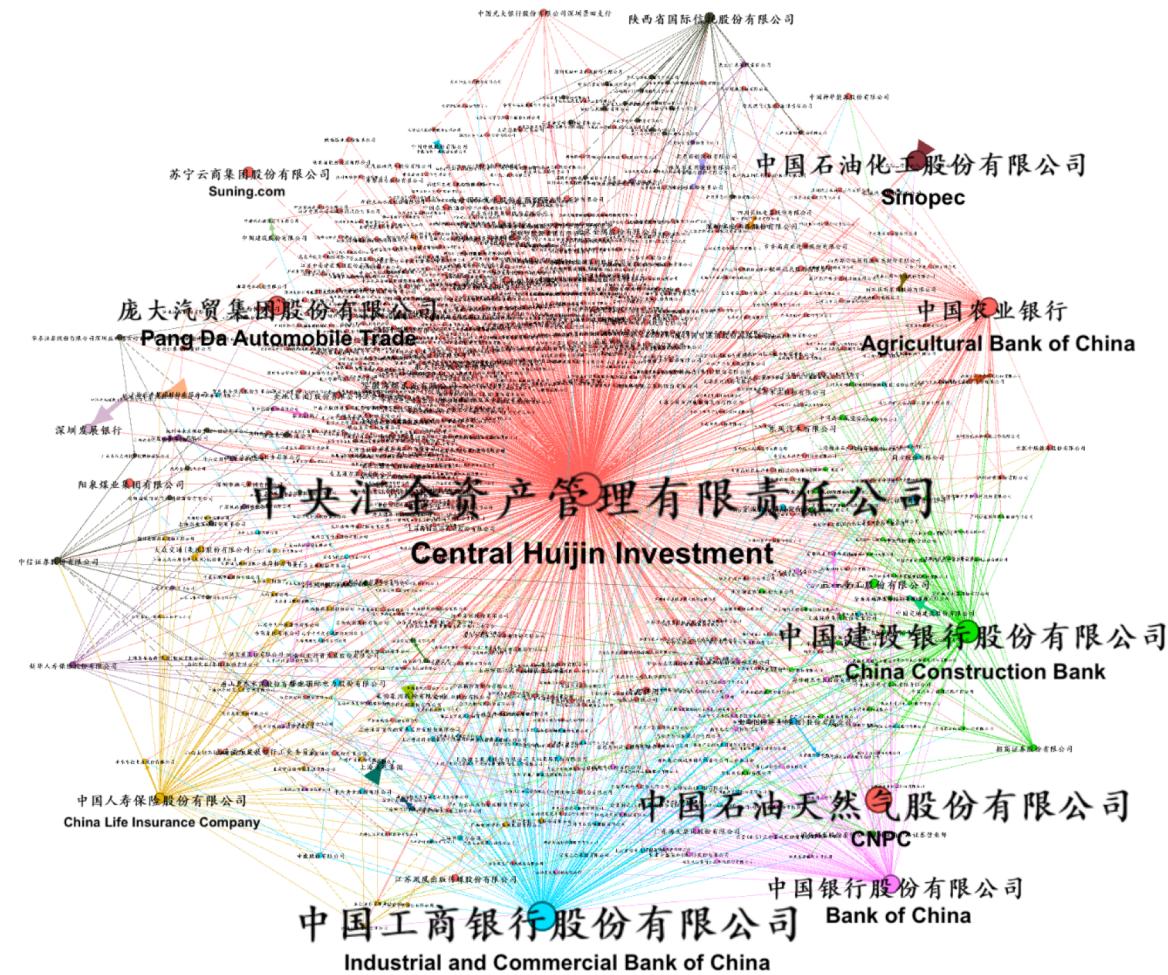
Finding root nodes
(central, provincial, local city)



Thresholds:
100%, 50%, 30%, 10%, >0%

Trace firms layer by layer using
firm equity connections

Chinese equity ownership networks (illustration)



Reidentify SOEs

- Threshold 100%

1st step: central gov level

2nd step: provincial govt level

3rd step: city govt level

Panel A: Summary of SOEs Layer by Layer in Ownership Trees (Threshold = 100%)

Step	Layer	Avg. Reg cap (RMB mn)	Avg. Firm age	Firm number
<i>Total</i>				37,991
1st Step	1	63606.06	21.04	127
1st Step	2	4822.69	15.97	4301
1st Step	3	187.38	15.28	13587
1st Step	4	68.26	15.89	11869
1st Step	5	55.28	15.56	5835
1st Step	6	53.26	12.38	1597
1st Step	7	57.85	9.20	450
1st Step	8	55.10	8.86	175
1st Step	9	31.89	14.00	46
1st Step	10+	11.58	13.25	4
<i>Total</i>				36,056
2nd Step	1	3838.17	15.19	850
2nd Step	2	449.85	14.33	8658
2nd Step	3	101.81	15.37	14213
2nd Step	4	54.76	15.88	8731
2nd Step	5	32.06	17.12	2600
2nd Step	6	21.76	17.04	655
2nd Step	7	17.56	11.41	283
2nd Step	8	14.43	8.68	54
2nd Step	9	3.50	1.67	12
2nd Step	10+	-	-	0
<i>Total</i>				299,665
3rd Step	1	56.48	19.91	247736
3rd Step	2	42.11	14.64	36875
3rd Step	3	32.63	13.06	11185
3rd Step	4	26.16	11.30	2904
3rd Step	5	34.63	9.31	607
3rd Step	6	35.42	5.96	154
3rd Step	7	65.75	4.44	108
3rd Step	8	12.22	2.72	74
3rd Step	9	10.46	1.00	22
3rd Step	10+	-	-	0

Reidentify SOEs

- Threshold 50%

1st step: central govt level

2nd step: provincial govt level

3rd step: city govt level

Panel B: Summary of SOEs Layer by Layer in Ownership Trees (Threshold = 50%)

Step	Layer	Avg. Reg cap (RMB mn)	Avg. Firm age	Firm number
<i>Total</i>				84,904
1st Step	1	74421.36	20.87	155
1st Step	2	3526.30	13.75	6700
1st Step	3	317.46	13.14	24946
1st Step	4	178.62	13.59	26736
1st Step	5	112.44	12.63	15809
1st Step	6	105.76	10.65	5957
1st Step	7	91.44	8.10	2032
1st Step	8	101.86	5.63	1124
1st Step	9	14.12	4.14	985
1st Step	10+	101.17	5.26	460
<i>Total</i>				80,099
2nd Step	1	4196.99	15.81	1014
2nd Step	2	521.47	13.14	13087
2nd Step	3	163.82	13.10	28865
2nd Step	4	123.54	12.90	21792
2nd Step	5	78.38	12.98	8676
2nd Step	6	52.62	10.98	4169
2nd Step	7	88.76	9.01	1739
2nd Step	8	123.61	8.94	322
2nd Step	9	82.01	9.23	114
2nd Step	10+	88.04	6.72	321
<i>Total</i>				417,764
3rd Step	1	72.89	18.77	301500
3rd Step	2	65.60	13.06	71002
3rd Step	3	71.00	11.41	29627
3rd Step	4	131.23	10.08	10043
3rd Step	5	81.21	7.50	3509
3rd Step	6	54.92	5.82	906
3rd Step	7	38.41	6.38	439
3rd Step	8	462.10	5.28	308
3rd Step	9	100.22	4.07	262
3rd Step	10+	16.13	2.52	168

Reidentify SOEs

- Threshold 30%

1st step: central govt level

2nd step: provincial govt level

3rd step: city govt level

Panel C: Summary of SOEs Layer by Layer in Ownership Trees (Threshold = 30%)

Step	Layer	Avg. Reg. cap (RMB mn)	Avg. Firm age	Firm number
<i>Total</i>				116,972
1st Step	1	76193.32	20.89	157
1st Step	2	2905.32	12.67	8558
1st Step	3	353.01	12.16	32406
1st Step	4	183.01	12.45	36218
1st Step	5	105.66	11.61	22298
1st Step	6	109.55	9.63	9240
1st Step	7	118.66	7.38	3752
1st Step	8	354.54	5.47	1764
1st Step	9	237.99	4.84	811
1st Step	10+	136.84	3.63	1768
<i>Total</i>				113,336
2nd Step	1	4163.32	15.73	1023
2nd Step	2	563.18	12.60	15576
2nd Step	3	195.05	12.28	38121
2nd Step	4	130.18	11.84	31125
2nd Step	5	96.66	11.64	14649
2nd Step	6	79.98	11.05	6795
2nd Step	7	94.27	10.62	3444
2nd Step	8	59.62	7.56	1548
2nd Step	9	74.82	7.51	453
2nd Step	10+	72.29	7.45	602
<i>Total</i>				489,872
3rd Step	1	86.07	18.17	328221
3rd Step	2	80.96	12.20	92492
3rd Step	3	81.63	10.54	42720
3rd Step	4	114.54	8.96	16130
3rd Step	5	78.58	6.88	6504
3rd Step	6	54.94	5.68	2150
3rd Step	7	51.63	4.56	916
3rd Step	8	126.61	5.47	363
3rd Step	9	49.52	3.77	250
3rd Step	10+	1263.03	3.26	126

Reidentify SOEs

- Threshold 10%

1st step: central govt level

2nd step: provincial govt level

3rd step: city govt level

Panel D: Summary of Partial SOEs Layer by Layer in Ownership Trees (Threshold = 10%)

Step	Layer	Avg. Reg. cap (RMB mn)	Avg. Firm age	Firm number
<i>Total</i>				185,579
1st Step	1	76591.02	20.63	163
1st Step	2	2477.75	11.87	11078
1st Step	3	419.96	11.31	43182
1st Step	4	203.97	11.25	53659
1st Step	5	112.11	10.43	36445
1st Step	6	131.53	8.08	19550
1st Step	7	137.20	6.65	9704
1st Step	8	145.34	5.73	5636
1st Step	9	184.22	5.56	2651
1st Step	10+	120.00	3.97	3511
<i>Total</i>				168,166
2nd Step	1	4092.47	15.56	1002
2nd Step	2	721.15	12.17	18021
2nd Step	3	266.81	11.79	48255
2nd Step	4	159.71	11.07	46234
2nd Step	5	132.82	10.21	25742
2nd Step	6	132.30	8.67	13764
2nd Step	7	89.52	6.59	6832
2nd Step	8	73.43	5.08	3287
2nd Step	9	58.79	5.26	1804
2nd Step	10+	42.22	5.75	3225
<i>Total</i>				614,789
3rd Step	1	107.58	17.54	360319
3rd Step	2	108.51	11.52	121630
3rd Step	3	114.22	9.56	68071
3rd Step	4	107.68	8.00	32667
3rd Step	5	82.94	6.68	15575
3rd Step	6	80.81	5.56	7559
3rd Step	7	63.27	6.36	4332
3rd Step	8	59.55	6.61	2266
3rd Step	9	163.04	5.23	962
3rd Step	10+	57.11	4.08	1408

Reidentify SOEs

- Threshold >0%

1st step: central govt level

2nd step: provincial govt level

3rd step: city govt level

Panel E: Summary of Partial SOEs Layer by Layer in Ownership Trees (Threshold = 0%)

Step	Layer	Avg. Reg. cap (RMB mn)	Avg. Firm age	Firm number
<i>Total</i>				303,559
1st Step	1	75386.92	20.29	169
1st Step	2	2528.91	11.69	13377
1st Step	3	489.31	10.81	55950
1st Step	4	217.66	10.33	77519
1st Step	5	141.04	8.97	62616
1st Step	6	115.36	7.11	40741
1st Step	7	132.86	5.57	24920
1st Step	8	80.51	4.92	14239
1st Step	9	97.25	4.52	7504
1st Step	10+	86.40	4.25	6524
<i>Total</i>				282,570
2nd Step	1	4162.77	15.49	971
2nd Step	2	841.27	12.20	20052
2nd Step	3	340.80	11.41	59001
2nd Step	4	229.94	10.34	65590
2nd Step	5	179.08	8.79	50142
2nd Step	6	125.45	6.50	35288
2nd Step	7	151.92	5.10	22549
2nd Step	8	94.14	4.81	12409
2nd Step	9	174.38	4.53	7394
2nd Step	10+	105.43	5.75	9174
<i>Total</i>				778,472
3rd Step	1	135.09	17.14	388266
3rd Step	2	175.10	11.01	155714
3rd Step	3	123.67	8.67	108558
3rd Step	4	81.78	6.96	65748
3rd Step	5	91.75	6.28	31740
3rd Step	6	1204.08	5.51	15398
3rd Step	7	108.64	5.44	7630
3rd Step	8	92.66	5.43	3185
3rd Step	9	81.48	6.02	1254
3rd Step	10+	51.67	8.99	979

Comparison of revised/existing def of SOEs: 2017

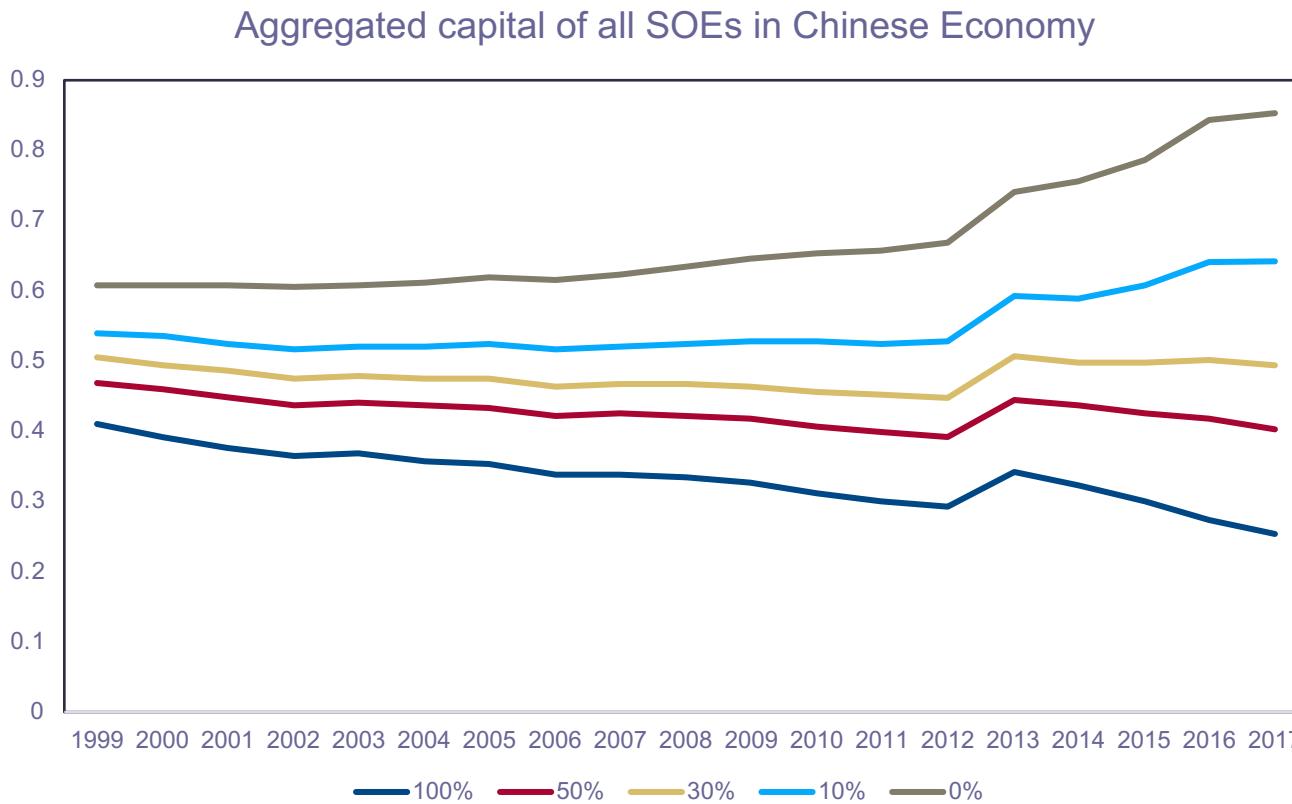
■ Numbers of SOEs

	Revised SOEs					Existing measure of SOEs in SAIC
	100%	50%	30%	10%	0%	
Central SOEs	37,991	84,904	116,972	185,579	303,559	
Provincial SOEs	36,056	80,099	113,336	168,166	282,570	
City SOEs	299,665	417,764	489,872	614,789	778,472	
TOTAL	362,693	539,238	628,554	743,821	866,757	391,490

■ Discrepancy of SOEs

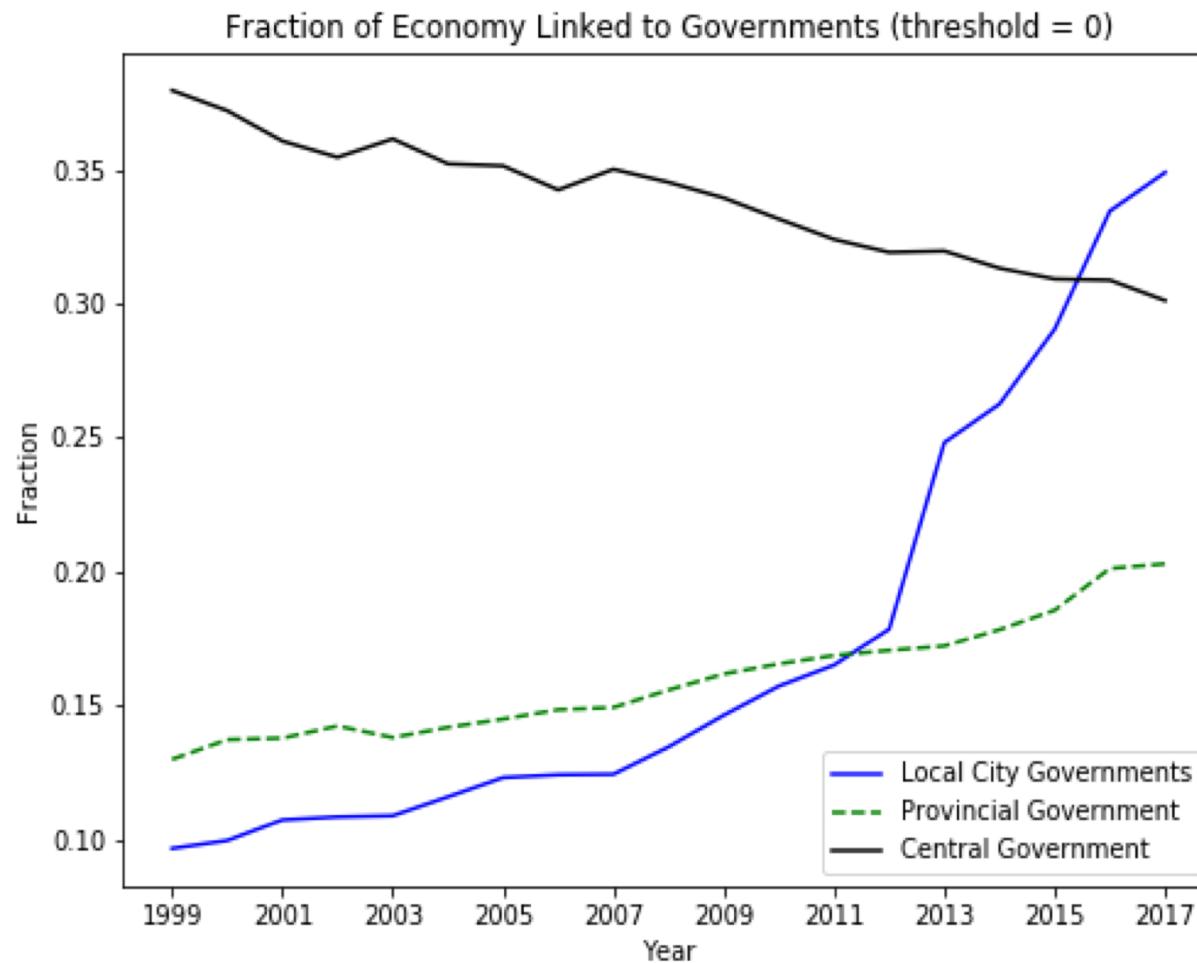
	Revised SOEs	Revised non-SOEs	Total Existing SOEs
Existing SOEs	167,544	223,946	391,490
Existing non-SOEs	461,010		
Total Revised SOEs	628,554		

Total capital of all SOEs (and partial SOEs)

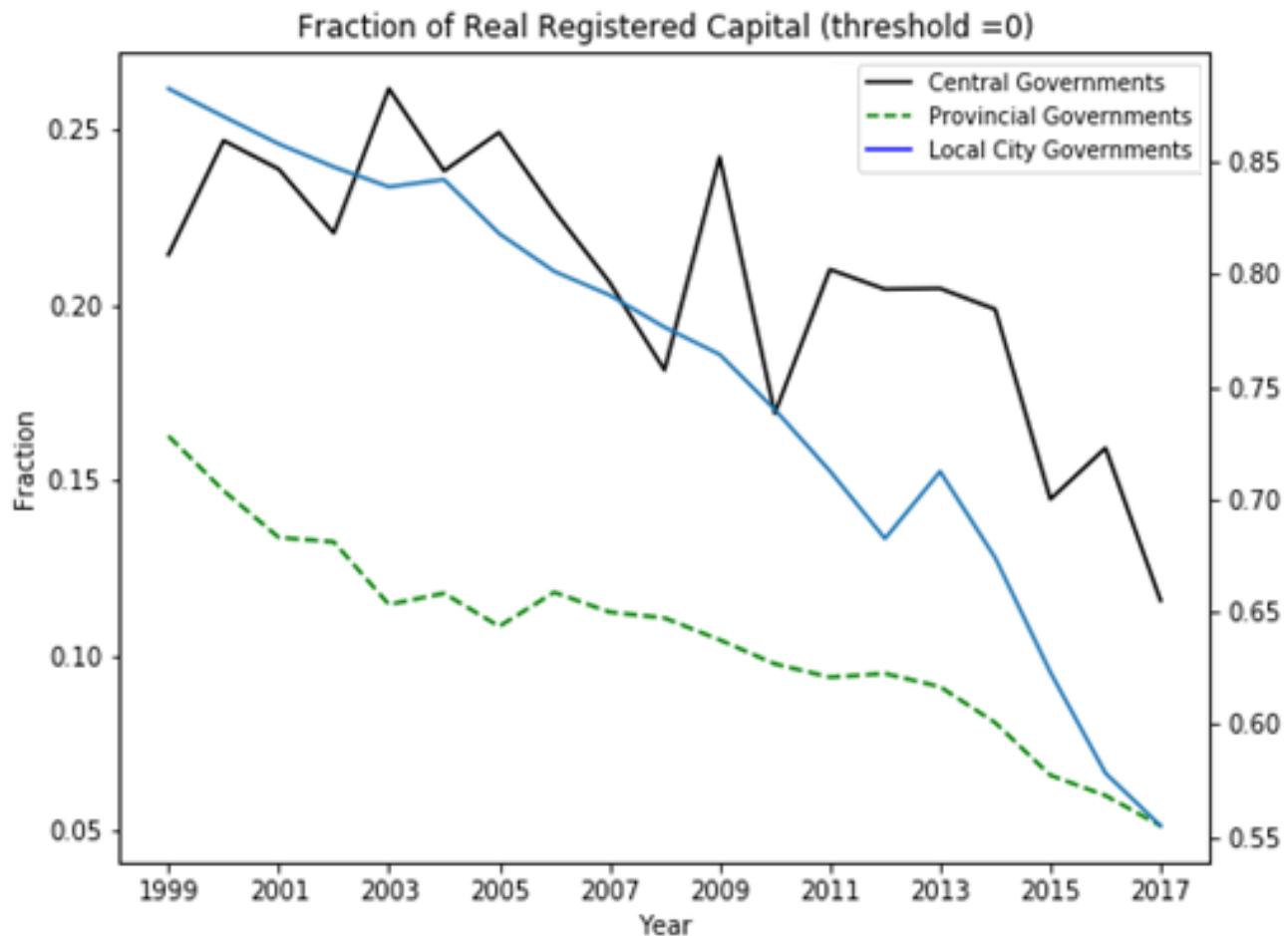


- Aggregated capital of all SOEs (0% as threshold) *increases* from 61% in 1999 to 85% in 2017
- Aggregate capital of wholly SOEs (100% as threshold) *reduces* from 41% in 1999 to 25% in 2017

Total capital of all SOEs (and partial SOEs)



Firms directly invested by government (first layer)



RHS: city government; LHS: central/provincial government

Summary stats

- Central/provincial govt owned firms: larger firm size
- City govt owned firms: larger firm age

Panel A: SOEs: Threshold=100%

Variable	Obs.	Mean	Std. Dev.	Min	25%	50%	75%	Max
<i>1st Step: Central SOEs (by SASAC of the State Council; Ministry of Finance)</i>								
Reg cap (RMB mn)	35,635	81,096	1.553e+06	0	50	524	5,000	1.550e+08
Firm age	37,564	15.39	9.939	0	6	16	24	67
<i>2nd Step: Provincial SOEs (100% owned by provincial governments)</i>								
Reg cap (RMB mn)	34,693	25,161	198,126	0	75	580.5	4,360	1.100e+07
Firm age	35,588	15.35	10.91	0	5	15	24	67
<i>3rd Step: Additional 100% State-owned companies by local city or county governments</i>								
Reg cap (RMB mn)	284,803	5,344	57,637	0	22	87	644	9.872e+06
Firm age	288,784	18.86	10.39	0	11	21	25	67

Panel B: SOEs: Threshold = 50%

Variable	Obs.	Mean	Std. Dev.	Min	25%	50%	75%	Max
<i>1st Step: Central SOEs (by SASAC of the State Council; Ministry of Finance)</i>								
Reg cap (RMB mn)	80,838	58,001	1.255e+06	0	100	1,000	5,795	1.550e+08
Firm age	84,097	12.71	9.637	0	4	12	20	67
<i>2nd Step: Provincial SOEs (100% owned by provincial governments)</i>								
Reg cap (RMB mn)	77,492	24,174	197,155	0	100	800	5,000	1.990e+07
Firm age	79,255	12.82	10.05	0	4	12	21	67
<i>3rd Step: Additional 100% State-controlled companies by local city or county governments</i>								
Reg cap (RMB mn)	399,819	7,320	128,896	0	30	109.5	1,000	6.690e+07
Firm age	405,714	16.87	10.43	0	8	18	24	67

Panel C: SOEs: Threshold = 30%

Variable	Obs.	Mean	Std. Dev.	Min	25%	50%	75%	Max
<i>1st Step: Central SOEs (by SASAC of the State Council; Ministry of Finance)</i>								
Reg cap (RMB mn)	111,990	50,119	1.078e+06	0	100	1,000	7,000	1.550e+08
Firm age	115,928	11.56	9.415	0	3	10	19	67
<i>2nd Step: Provincial SOEs (100% owned by provincial governments)</i>								
Reg cap (RMB mn)	109,915	23,571	191,383	0	100	1,000	5,000	1.990e+07
Firm age	112,259	11.91	9.730	0	3	10	19	67
<i>3rd Step: Additional 100% State-controlled companies by local city or county governments</i>								
Reg cap (RMB mn)	470,466	8,565	161,197	0	40	170	1,246	6.690e+07
Firm age	477,284	15.78	10.50	0	6	17	24	67

State ownership and firm growth

VARIABLES	(1)	(2)	(3)
	Growth of Total Asset		
	<i>Central Government</i>	<i>Provincial Government</i>	<i>City Government</i>
0-10%	0.0632*** (0.0149)	0.0675*** (0.0175)	0.0147* (0.00855)
10-30%	0.0972*** (0.0207)	0.0514** (0.0238)	-0.0192* (0.0110)
30-50%	0.0741*** (0.0257)	0.0767*** (0.0246)	-0.0354*** (0.0126)
50-100%	0.0505** (0.0201)	0.0934*** (0.0222)	-0.0333*** (0.0113)
100%	-0.000790 (0.0138)	0.00666 (0.0230)	-0.0391*** (0.00829)
Leverage	0.0234*** (0.00235)	0.0234*** (0.00235)	0.0233*** (0.00236)
ROA	0.335*** (0.00360)	0.335*** (0.00360)	0.335*** (0.00360)
Firm age	0.00769*** (0.000985)	0.00767*** (0.000984)	0.00741*** (0.000985)
Firm size	-0.445*** (0.00135)	-0.445*** (0.00135)	-0.445*** (0.00135)
Firm Fixed Effect	Yes	Yes	Yes
City * Year FE	Yes	Yes	Yes
CIC2 * Year FE	Yes	Yes	Yes
Observations	1,930,574	1,930,574	1,930,574
R-squared	0.451	0.451	0.451

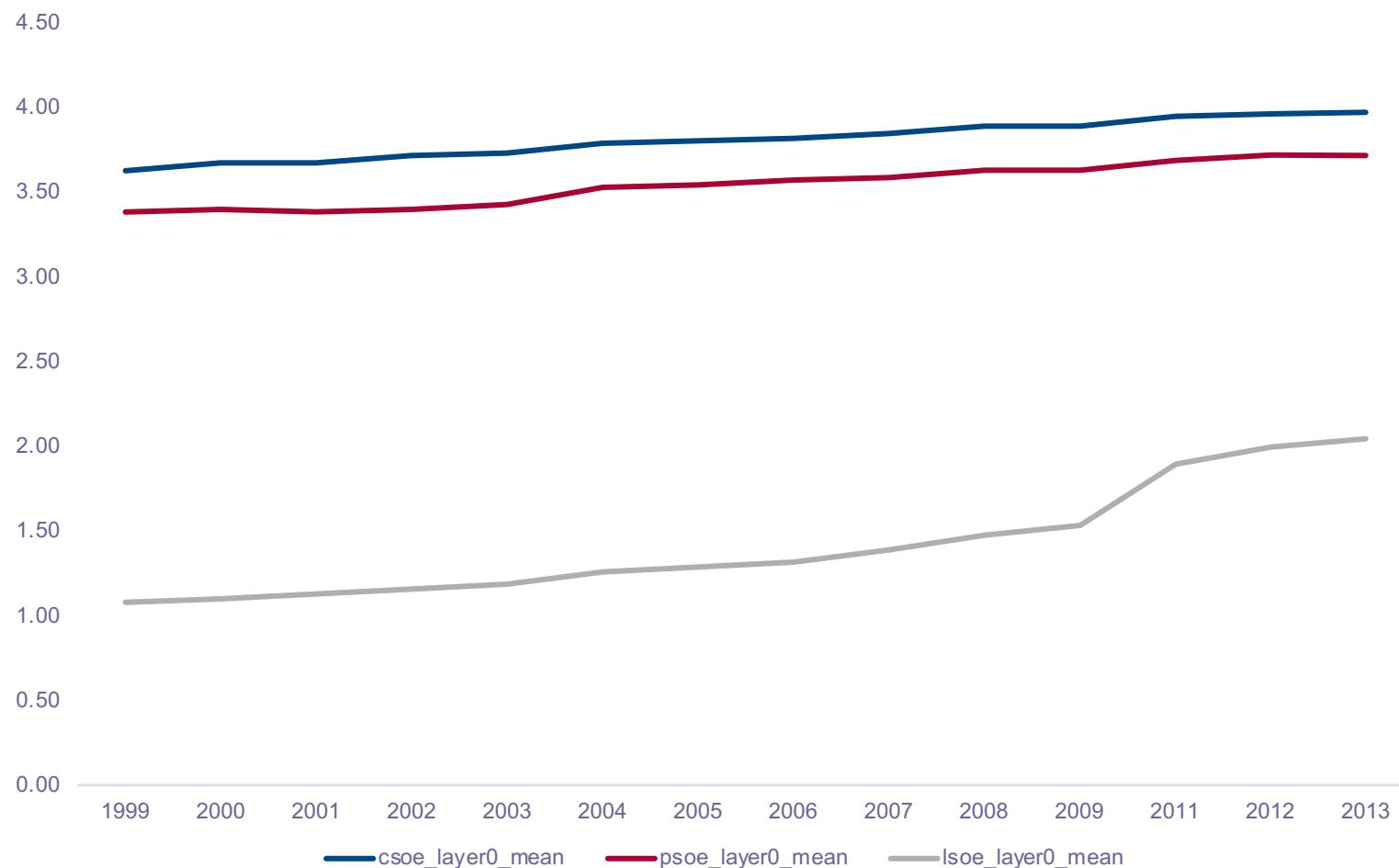
State ownership and firm performance

VARIABLES	(1)	(2)	(3)
	Profit Rate		
	<i>Central Government</i>	<i>Provincial Government</i>	<i>City Government</i>
0-10%	0.0111** (0.00541)	0.0151*** (0.00517)	0.0109*** (0.00253)
10-30%	0.00812 (0.00568)	-0.000187 (0.00927)	-0.00449 (0.00326)
30-50%	0.00271 (0.00776)	0.0159* (0.00830)	-0.0248*** (0.00549)
50-100%	0.00339 (0.00704)	0.00766 (0.00786)	-0.00579 (0.00366)
100%	-0.0302*** (0.00629)	-0.00105 (0.00738)	0.000195 (0.00310)
Leverage	-0.00489*** (0.000511)	-0.00489*** (0.000511)	-0.00492*** (0.000511)
Firm age	0.000139 (0.000280)	0.000191 (0.000280)	0.000139 (0.000280)
Firm size	0.00341*** (0.000201)	0.00341*** (0.000201)	0.00341*** (0.000201)
Firm FE	Yes	Yes	Yes
Year * City FE	Yes	Yes	Yes
Year * CIC2 FE	Yes	Yes	Yes
Observations	1,985,324	1,985,324	1,985,324
R-squared	0.673	0.673	0.673

State ownership and firm productivity

VARIABLES	(1)	(2)	(3)
	Total Factor Productivity (TFP)		
	<i>Central Government</i>	<i>Provincial Government</i>	<i>City Government</i>
0-10%	0.0586** (0.0280)	0.0700** (0.0295)	0.0432*** (0.0154)
10-30%	0.0622* (0.0354)	0.0479 (0.0450)	0.00697 (0.0203)
30-50%	0.0893* (0.0461)	0.133*** (0.0493)	0.0477* (0.0249)
50-100%	0.0941** (0.0421)	-0.0693* (0.0376)	0.0408** (0.0205)
100%	0.0167 (0.0259)	0.0113 (0.0387)	-0.0175 (0.0154)
Leverage	-0.0304*** (0.00340)	-0.0305*** (0.00340)	-0.0305*** (0.00340)
Firm age	-0.0216*** (0.00191)	-0.0218*** (0.00191)	-0.0217*** (0.00191)
Firm size	0.0430*** (0.00144)	0.0430*** (0.00144)	0.0430*** (0.00145)
Firm FE	YES	YES	YES
Year * City FE	YES	YES	YES
Year * CIC2 FE	YES	YES	YES
Observations	1,771,360	1,771,360	1,771,360
R-squared	0.758	0.758	0.758

Average distance to governments of AIS firms invested by governments



Effect of hierarchical distance to governments

VARIABLES	<i>Firm Owned by Central Government</i>			
	(1) Firm Growth	(2) Profit Rate	(3) ROA	(4) TFP
Distance from the root	-0.0183*** (0.00205)	0.00673*** (0.00155)	0.00386*** (0.000956)	0.0247** (0.00959)
10-30%	-0.0157*** (0.00483)	-0.00319 (0.00359)	0.00556** (0.00253)	0.0568*** (0.0215)
30-50%	-0.0314*** (0.00596)	-0.00411 (0.00459)	0.00345 (0.00301)	-0.000133 (0.0268)
50-100%	-0.0409*** (0.00500)	-0.00465 (0.00403)	0.00358 (0.00259)	0.0616** (0.0240)
100%	-0.0391*** (0.00526)	-0.0272*** (0.00419)	-0.00482* (0.00248)	-0.0228 (0.0253)
Leverage	-0.0374*** (0.00663)	-0.0865*** (0.00442)	-0.0856*** (0.00310)	-0.162*** (0.0273)
Firm age	-0.0209*** (0.00208)	0.00356** (0.00140)	-0.00604*** (0.000788)	-0.107*** (0.00807)
Firm size	-0.0275*** (0.00116)	0.00511*** (0.000773)	-0.00491*** (0.000521)	0.140*** (0.00472)
Ownership FE	Yes	Yes	Yes	Yes
Year*City FE	Yes	Yes	Yes	Yes
Year*CIC2 FE	Yes	Yes	Yes	Yes
Observations	58,821	65,153	65,255	58,903
R-squared	0.126	0.250	0.215	0.204

Effect of hierarchical distance to governments

VARIABLES	<i>Firm Owned by Provincial Government</i>			
	(1) Asset Growth	(2) Profit Rate	(3) ROA	(4) TFP
Distance from the root	-0.0117*** (0.00204)	0.00332** (0.00160)	0.00334*** (0.00101)	-0.00214 (0.00952)
10-30%	-0.0264*** (0.00572)	-0.00644 (0.00419)	0.000462 (0.00300)	-0.00526 (0.0255)
30-50%	-0.0346*** (0.00588)	-0.00676 (0.00458)	0.00140 (0.00299)	0.0553** (0.0274)
50-100%	-0.0413*** (0.00563)	-0.0148*** (0.00412)	-0.00823*** (0.00274)	-0.0891*** (0.0249)
100%	-0.0456*** (0.00602)	-0.0220*** (0.00474)	-0.0130*** (0.00279)	-0.212*** (0.0289)
Leverage	-0.0590*** (0.00728)	-0.0947*** (0.00460)	-0.0870*** (0.00320)	-0.0997*** (0.0286)
Firm age	-0.0236*** (0.00229)	0.00839*** (0.00147)	-0.00486*** (0.000884)	-0.150*** (0.00914)
Firm size	-0.0279*** (0.00130)	0.00209** (0.000834)	-0.00582*** (0.000526)	0.149*** (0.00527)
Ownership FE	Yes	Yes	Yes	Yes
Year*City FE	Yes	Yes	Yes	Yes
Year*CIC2 FE	Yes	Yes	Yes	Yes
Observations	51,914	57,696	57,750	51,929
R-squared	0.143	0.252	0.230	0.250

Effect of hierarchical distance to governments

VARIABLES	<i>Firm Owned by City Government</i>			
	(1) Growth of total asset	(2) Profit Rate	(3) ROA	(4) TFP
Distance from the root	0.00119 (0.00185)	0.00146 (0.00128)	0.00229** (0.00106)	0.0242*** (0.00790)
10-30%	-0.0271*** (0.00472)	-0.0106*** (0.00348)	-0.00225 (0.00262)	-0.0380* (0.0223)
30-50%	-0.0420*** (0.00511)	-0.0176*** (0.00395)	0.00121 (0.00305)	-0.0148 (0.0247)
50-100%	-0.0459*** (0.00480)	-0.0169*** (0.00360)	-0.00274 (0.00260)	-0.0911*** (0.0220)
100%	-0.0407*** (0.00441)	-0.0160*** (0.00331)	0.00614*** (0.00235)	-0.0955*** (0.0207)
Leverage	-0.0424*** (0.00467)	-0.0667*** (0.00304)	-0.0831*** (0.00223)	-0.301*** (0.0190)
Firm age	-0.0129*** (0.00176)	0.00493*** (0.00113)	-0.00350*** (0.000766)	-0.124*** (0.00693)
Firm size	-0.0277*** (0.000930)	0.00484*** (0.000626)	-0.00934*** (0.000451)	0.112*** (0.00395)
Ownership FE	Yes	Yes	Yes	Yes
Year*City FE	Yes	Yes	Yes	Yes
Year*CIC2 FE	Yes	Yes	Yes	Yes
Observations	90,978	99,518	99,600	91,712
R-squared	0.098	0.217	0.248	0.260

State ownership and access to loans

- Transactional-level loans by one of the largest state-owned banks in China
- Weighted loan spreads/maturity; and total loan amount at firm-year level
 - Some firms might have multiple loans from this bank in a given year

VARIABLES	(1)	(2)	(3)
	Weighted Loan Spreads		
	<i>Central Government</i>	<i>Provincial Government</i>	<i>City Government</i>
0-10%	-0.00248*** (0.000607)	-0.00142** (0.000608)	-0.00193*** (0.000610)
10-30%	-0.000786 (0.000787)	-0.00187** (0.000739)	-4.26e-05 (0.000775)
30-50%	-0.00180 (0.00116)	-0.00229*** (0.000861)	-0.000275 (0.00128)
50-100%	-0.00206** (0.00102)	-0.00215** (0.000928)	-0.00204* (0.00112)
100%	-0.00149* (0.000862)	-0.00210** (0.000817)	-0.00146 (0.00103)
Leverage	-0.00105*** (0.000376)	-0.00107*** (0.000377)	-0.00106*** (0.000376)
ROA	0.000712 (0.000524)	0.000703 (0.000524)	0.000723 (0.000523)
Firm age	-0.000737*** (0.000138)	-0.000728*** (0.000139)	-0.000724*** (0.000138)
Firm size	-0.00135*** (7.96e-05)	-0.00134*** (8.02e-05)	-0.00138*** (7.91e-05)
Log maturity	0.00530*** (0.000227)	0.00531*** (0.000228)	0.00529*** (0.000229)
Log loan amt	-0.000729*** (8.84e-05)	-0.000726*** (8.85e-05)	-0.000730*** (8.86e-05)
Firm FE	NO	NO	NO
Year FE	YES	YES	YES
CIC2 FE	YES	YES	YES
Observations	10,410	10,410	10,410
R-squared	0.435	0.435	0.434

Hierarchical distance to govts and access to loans

VARIABLES	(1)	(2)	(3)
	Weighted Loan Spreads		
	<i>Central SOEs</i>	<i>Provincial SOEs</i>	<i>City SOEs</i>
Distance from the root	0.000310 (0.000487)	0.000167 (0.000445)	0.000530 (0.000517)
10-30%	0.00143 (0.00114)	-0.000599 (0.00132)	0.00308** (0.00120)
30-50%	0.000991 (0.00150)	-0.00131 (0.00133)	0.00237 (0.00176)
50-100%	0.000984 (0.00136)	-0.00112 (0.00123)	0.00102 (0.00164)
100%	0.00174 (0.00138)	-0.00237 (0.00158)	0.00114 (0.00137)
Leverage	-0.00140 (0.00228)	-0.000784 (0.00216)	-0.00221 (0.00212)
Firm age	0.000689 (0.000565)	0.00126** (0.000560)	0.00140** (0.000617)
Firm size	-0.00142*** (0.000355)	-0.00100*** (0.000375)	-0.00195*** (0.000404)
Log maturity	0.00399*** (0.000626)	0.00470*** (0.000837)	0.00372*** (0.00135)
Log loan amt	-0.000106 (0.000316)	-0.000662* (0.000371)	-0.000381 (0.000461)
Firm FE	NO	NO	NO
Year FE	YES	YES	YES
CIC2 FE	YES	YES	YES
Observations	336	318	321
R-squared	0.509	0.554	0.535

To conclude

- We are the first to provide the whole set of identifiers of all SOEs among all the registered firms (over 40 million) in China
 - Our measure of SOEs captures a significantly larger number of SOEs than the existing measure (by registration type)
 - Total state capital in all SOEs, by 2017, increases to 31%.
- Over time, state ownership shows two trends
 - Decentralization (authoritarian hierarchy)
 - Indirect ownership (ownership hierarchy)
- Revisiting the real effects of state ownership
 - Our revised identification of SOEs provides better understanding of state ownership
 - Mixed ownership is positively associated with higher firm growth/performance
 - Being more distanced to governments is positively associated with higher firm growth (but not performance)