Hayek, Local Information and Commanding Heights: Decentralizing Chinese State-Owned Enterprises

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The drama of socialism

- Key event in 20th century:
  - emergence, expansion, and then decline of socialism.
- Many view socialist economies as competitive/superior:
  - USSR would probably match the income level of US by 1990, and overtake it by 2010 (Samuelson 1973).
  - Soviet economy is proof that …. A socialist command economy can function and even thrive (Samuelson 1989)
- Debate on market socialisms attracted attention of top economists:
  - Lange, Lerner, von Mises, Hayek.
  - Still discussions of market socialism (Bardhan and Roemer, 1992, 1993; Shleifer and Vishny, 1994b; Stiglitz, 1994).

Why doesn't socialism work?

- Main arguments that capitalism would be more efficient than socialism (Boettke 2004):
  - Stronger protection of private property rights → Stronger incentives.
    - Shleifer & Vishny 1994; Megginson & Netter 2001; Djankov & Murrell 2002;; Estrin et al. 2009 ….
  - Efficiency of utilizing specific information (Hayek 1945)
    - Rarely empirically examined.
- Focus on the 2nd reason of socialist inefficiency.

What we do

- Decentralization:
  - Oversight of an SOE to a lower level of government.
- The availability of local information:
  - Distance between the oversight gov't and the SOE.
  - A big literature of distance capturing information asymmetry
    - (Bloom, Sadun and Van Reenen, 2012; Giroud 2013; Peterson and Rajan 1994, 2002; Mian, 2006; Agarwal and Hauswalkd, 2010 Coval and Moskowitz 1999; Garmaise and Moskowitz, 2004; Grinblatt and Keloharju 2001; Hau, 2001)
- Whether SOEs tend to decentralize more
  - when the distance (between the oversight government and the SOE) is greater.
  - Esp. when the information problem is more severe.
- Consider alternative hypothesis:
  - Decentralization only non-commanding-heights.
  - decentralization for collusion/corruption.
    - The oversight agency conjecture
    - The local capture conjecture.

What Hayek (1945) has to say

- "if … the economic problem of society is mainly one of rapid adaptation to changes in the particular circumstances of time and space, it would seem to follow that the ultimate decisions must be left to the people
  - who are familiar with these circumstances,
  - who know directly of the relevant changes and of the sources immediately available to meet them.
- We cannot expect that this problem will be solved by first communicating all this knowledge to **a central board**, which, after integrating *all* knowledge, issues its orders.
- **<u>We must solve it by some form of decentralization</u>**."

Implications of Hayek (1945)

- More efficient for the gov't with a longer distance to the SOE to decentralize.
- when firms' performance is harder to predict, or higher communication costs,

  →the same distance, a higher tendency to decentralize to better utilize local information.

Limits to decentralization

- SOEs may still be centralized for other reasons.
  - internalizing externality of the SOE,
  - Utilizing expertise of top-notch experts who can specialize in complex and difficult problems (Garicano 2000).
  - Controlling commanding heights.
  - Agency costs considerations: centralization/decentralization for official rents.

Background: timing of decentralization

- Declining SOE performances in mid 1990s
  - The profits and taxes per unit of net capital stock and working capital in SOEs had fallen from 24% in 1978 to 7% in 1996 (Qian, 2000).
- A large wave of SOE restructuring from 1997 (Xu, Zhu, Lin, 2005; Hsieh and Song 2015).
- “Grab the big and let go of the small.”
- Decentralization of SOEs at all oversight levels occurred throughout the sample period.

Overall objective: improving SOE efficiency

- State Economic and Trade Commission et al. (1994): “the adjustment of the oversight status of SOEs should aim for separating the government from the enterprise, transforming the operating mechanisms, and establishing modern enterprise system, with the aim of **facilitating efficient flow** of production factors, **optimizing the allocation of state assets**, and **improving the operating efficiency of capital**.”

Discretion; cannot refuse

- The central government left significant discretion to local governments in implementing SOE reforms:
  - the central gov't offering general guidelines, allowing local governments discretion to experiment (Brandt & Rawski, 2008).
  - For local SOEs, it is left to the local government to choose among various types of restructuring methods.
    - In Shandong province, decentralization is explicitly listed as one of the 6 reform methods (franchise, privatization, transfer, decentralization, merger and acquisition, and bankruptcy) (Shangdong Government, 2003).
- Decentralization could not be refused by lower governments (Chongqing Government, 1997).

Aware of the information problem

- Governments were aware of the information problem in managing SOEs and how decentralization might be a solution.
  - Shangdong Government (2003): “for SOEs suitable to be under the oversight of municipal and county governments, *especially those small and medium SOEs that are located far away with which the provincial government has difficulty directly managing*, they should be restructured under the oversight of the municipality, and all matters related to taxes and subsidies, labor, and statistics should be delegated accordingly.” (Italics mine)

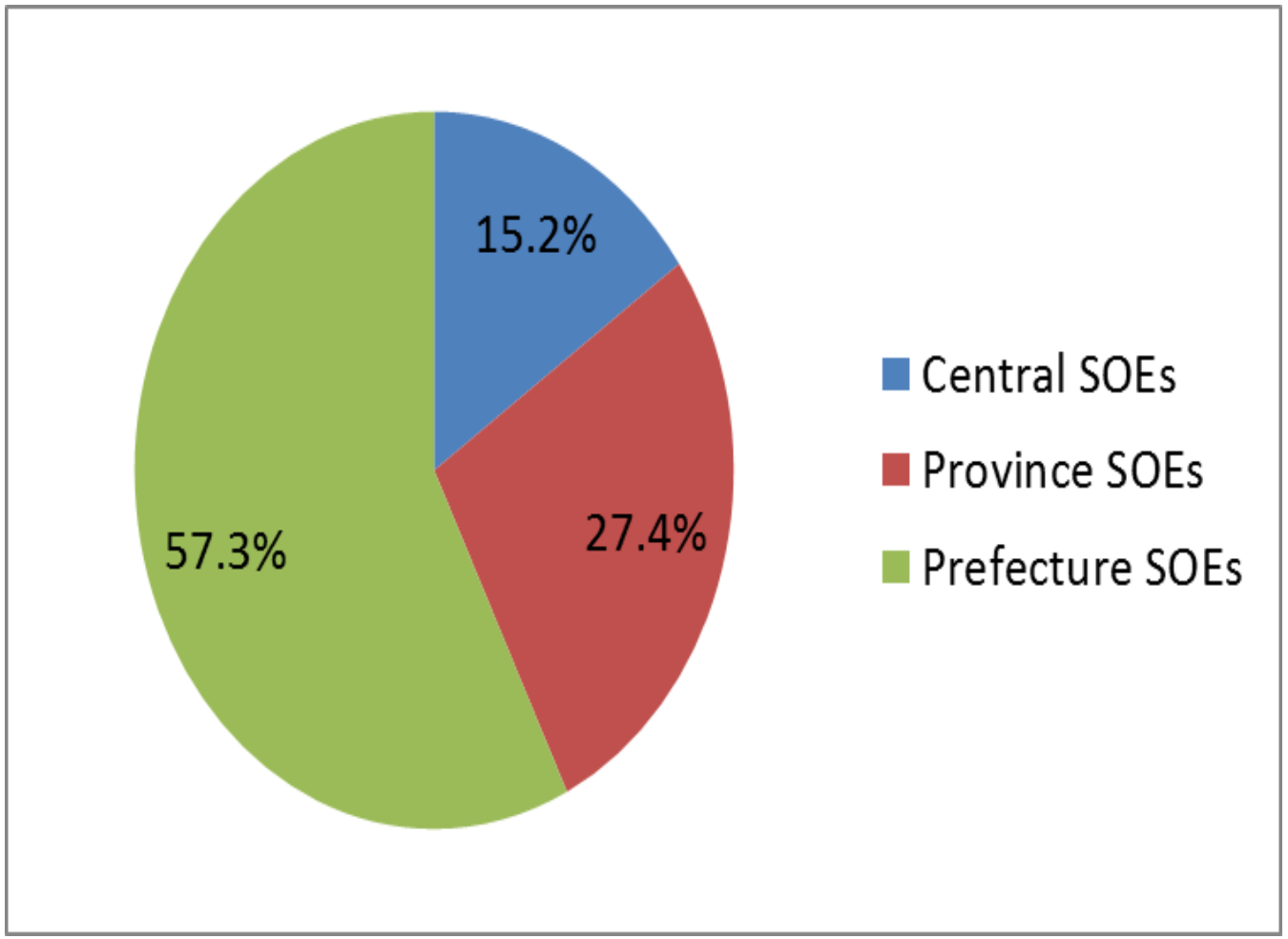
The same objectives after decentralization

- Decentralization does *not* in general alter the main tasks of the oversight government.
- Economic growth and/or tax revenue have been by far the most important priority of different levels of governments under China's political system of yardstick competition
  - Maskin, Qian and Xu, 2000; Li and Zhou, 2005; Brandt and Rawski, 2008; Shih et al., 2012; Xu 2011).
- After decentralization, the lower government still aims to maintain high growth (and/or tax revenues) in order to improve promotion prospect.
  - Similar concern if also aiming for social stability.

Stronger internalization

- Local government likely internalizes costs and benefits of decentralization.
- The cash flow rights *largely* transferred to the local government after decentralization ➔ The local government internalizes the costs and benefits of having the decentralized SOEs under its oversight.
- The State Council (State Council, 1998)
  - "after decentralization, all rights regarding the SOE's finance, labor and wage, social welfare, personnel are transfer to the local government; also transferred include state asset, liability, equity, and working and retired employees, their wages and social security fund; further transferred are the loss and subsidy quotas ….; after decentralization, all income taxes are no longer turned over to the central government, and instead they are turned to local finance."

Figure 2. Affiliation of SOEs in the Sample Beginning Year



Key considerations for decentralization

- Two layers of government,
  - Upper and Lower
- The gov't has private benefits of controls.
  - Enjoys cash flow rights (i.e., tax remittance & discretion over the SOE's profit).
    - Local taxes; claims to asset returns.
  - Appoint key positions of the SOE.
  - Rights over key strategic decisions of the SOE.
    - Prevent bankruptcy to maintain employment for social stability.

- Oversight rights also entail *costs*.
  - If the SOE loses money and needs subsidy, the oversight government shoulders the burden.
- Decision rights for decentralization in the hand of original oversight government.
  - Top-down.
  - Cannot completely rule out lobbing for decentralization.

- focuses on controlling important SOEs because
  - limited attention span & info processing ability (Bolton and Dewatripont, 1994),
  - comparative advantage in handling complex tasks (Garicano 2000).
  - Decentralize less important SOEs: “grab the big and let go the small.”
- SOE reforms to reduce fiscal burdens:
  - declining profitability over time.
  - the late 1990s reform: to revitalize SOEs.
  - *the oversight government to first decentralize poorly-performing SOEs*.
- ***Prediction 1*. The incumbent oversight government is more likely to decentralize less important and ill-performing SOEs**.

- ***Prediction 2*. The longer the distance between the oversight government and the SOE, the more likely the oversight government is to decentralize the SOE.**

- In order to make SOEs more efficient, decentralize where the efficiency gain is larger.
- Long distance → larger gains (Hayek 1945; Giroud 2013).

- ***Prediction 3*. The positive relationship between decentralization and distance would be stronger for firms with higher performance heterogeneity, and for firms facing greater communication costs**

- For the same distance, information asymmetry depends on
  - Public information available to the government (Aghion et al. 2007),
  - communication costs (Bloom et al. 2009).
- Centralized control rely on public information of the principal (Acemoglu et al. 2007)
- More firm performance heterogeneity (or when communication costs are higher)

  → firm-specific local information is more important.

  → more important to give oversight rights to governments that are closer to firms (Hayek 1945; Acemoglu et al. 2007).

The commanding heights conjecture

- pursuing goals of the central government.
- Lenin, 1922: control the commanding heights.
- End of WWII to the collapse of Soviet Union:
  - Most countries have some versions of commanding heights.
  - UK Attlee gov't, De Gaule of France, Nehru of India, Japan, … all socialist countries.
  - Key industries: defense, iron and steel, railroads, ship-building, utilities, and telecom
- For commanding-heights SOEs, key concerns are control or fear of loss of control.
  - To contain the local agency costs of ignoring key objectives, control directly. (Williamson's VI for containing opportunism.)
- ***The commanding-heights conjecture***.
  - More important SOEs are less likely to be decentralized. Moreover, the positive distance-decentralization link should be weaker for the central SOEs in the strategic industries.

The oversight agency cost conjecture

- When the oversight government can enjoy more rents, especially at nearby locations, ➔ retain control.
- A positive distance-decentralization (DD) link. (Also Hayek)
- The positive DD link more pronounced when the communication costs are higher. (Also Hayek).
- The positive DD link more pronounced when the local rents are higher. (Unique. Hayek: no relationship with rents.)
- But cannot predict the DD link as a function of firm-performance heterogeneity.
- Institutional background of reducing fiscal burdens and reforming for efficiency: against this conjecture.

The local capture conjecture

- Decentralization due to costs and benefits calculation of the lower government, who lobbies for decentralization.
- The institutional background of top-down decentralization ➔ this is unlikely to be important.
- Distance between the SOE and the lower government.
- Predictions:
  - Negative relationship between distance(SOE, Lower) and decentralization. [Also Hayek]
  - The negative relationship between distance-to-Lower and decentralization should be more pronounced where rents are higher. [Unique. Hayek: no dependence on rents]

Complications of other forms of SOE restructuring

- A key complication for empirical analysis:
  - Large-scale wave of firm restructuring (M&As, bankrupty, corporatization, privatization, …)
  - Cannot distinguish them convincingly:
    - The majority of SOE restructuring show up in out data as “exit the sample”:
    - Could be M&A, privatization, corporatization, bankruptcy …
  - Create a broad category, *Restructuring*, capturing privatization and “exit prematurely from the sample”.
  - Mlogit for simultaneous choices.

Data and Sample

- Annual Survey of Industrial Firms, 1998- 2007
  - All SOEs
  - All non-state firms with sales 5+ million Yuan.
- only keep the SOEs.
  - State equity ownership of 25+%. (robust with other definitions in general)
- Central, provincial, municipal, county gov't.
- Delete:
  - Base: those lying at the bottom of the hierarchy
  - without at least two continuous years of data
    - Lagging variables as controls, …
- Final sample: 20,394 SOEs.

Decentralization

- Decentralization: those firm-years that experience the oversight gov't status changing to a lower level.
- In total, 1,516 firms (7.4% of the SOE sample) experience decentralization.

Empirical strategy

- Base:
  - Prob(Decentralization=1) = f(X, distance),
  - with a sample of all SOEs, excluding county SOEs.
- Potential endogeneity of distance
- Use an exogenous change in distance to instrument distance
  - “Third Front Construction” (三线建设 or TFC） relocation of firms in the 1960s and 1970s.
  - 1(TFC) as IV for distance.
  - Use weak IV robust inference to ensure that the estimate is reliable even in the presence of weak IV.

Panel A. Baseline Results	Probit				Multinomial Logit	
	Whole Sample	Central SOE	Province SOE	Municipal SOE	Whole Sample	
	Dependent variable: Decentralized$_{(t)}$				Decentralized$_{(t)}$	Restructured$_{(t)}$
Distance $_{(t-1)}$	0.0053***	0.0040**	0.0041***	0.0044***	0.0049***	0.0004
	(0.0009)	(0.0019)	(0.0009)	(0.0007)	(0.0010)	(0.0010)
Firm asset $_{(t-1)}$	-0.0030***	-0.0030***	-0.0025**	-0.0023***	-0.0023***	-0.0177***
	(0.0006)	(0.0011)	(0.0010)	(0.0008)	(0.0006)	(0.0011)
ROS $_{(t-1)}$	-0.0082***	-0.0102	-0.0103***	-0.0027	-0.0052***	-0.1115***
	(0.0016)	(0.0069)	(0.0027)	(0.0019)	(0.0015)	(0.0053)
Firm importance $_{(t-1)}$	-0.0455**	-7.1265*	-0.3474**	-0.0185	-0.0388*	-0.0824***
	(0.0197)	(4.0337)	(0.1384)	(0.0137)	(0.0200)	(0.0216)
Fully state-owned $_{(t-1)}$	-0.0059***	-0.0149**	-0.0135***	0.0004	-0.0039***	-0.0314***
	(0.0015)	(0.0067)	(0.0028)	(0.0013)	(0.0011)	(0.0041)
GDP per capita $_{(t-1)}$	0.0048	-0.0080	-0.0724**	0.0208	0.0032	0.0227***
	(0.0053)	(0.0057)	(0.0297)	(0.0353)	(0.0051)	(0.0076)
State sector share $_{(t-1)}$	0.0027	-0.1214***	0.1095*	0.0712	-0.0030	0.1436*
	(0.0396)	(0.0262)	(0.0614)	(0.0438)	(0.0353)	(0.0754)
Unemployment rate $_{(t-1)}$	-0.0893	0.2130	0.0036	-0.0895	-0.0449	0.0979
	(0.1008)	(0.2278)	(0.3104)	(0.2186)	(0.1031)	(0.2910)
gov't, year & industry dummy	YES	YES	YES	YES	YES	YES
Observations	68,421	9,911	19,864	38,646	84,493	84,493

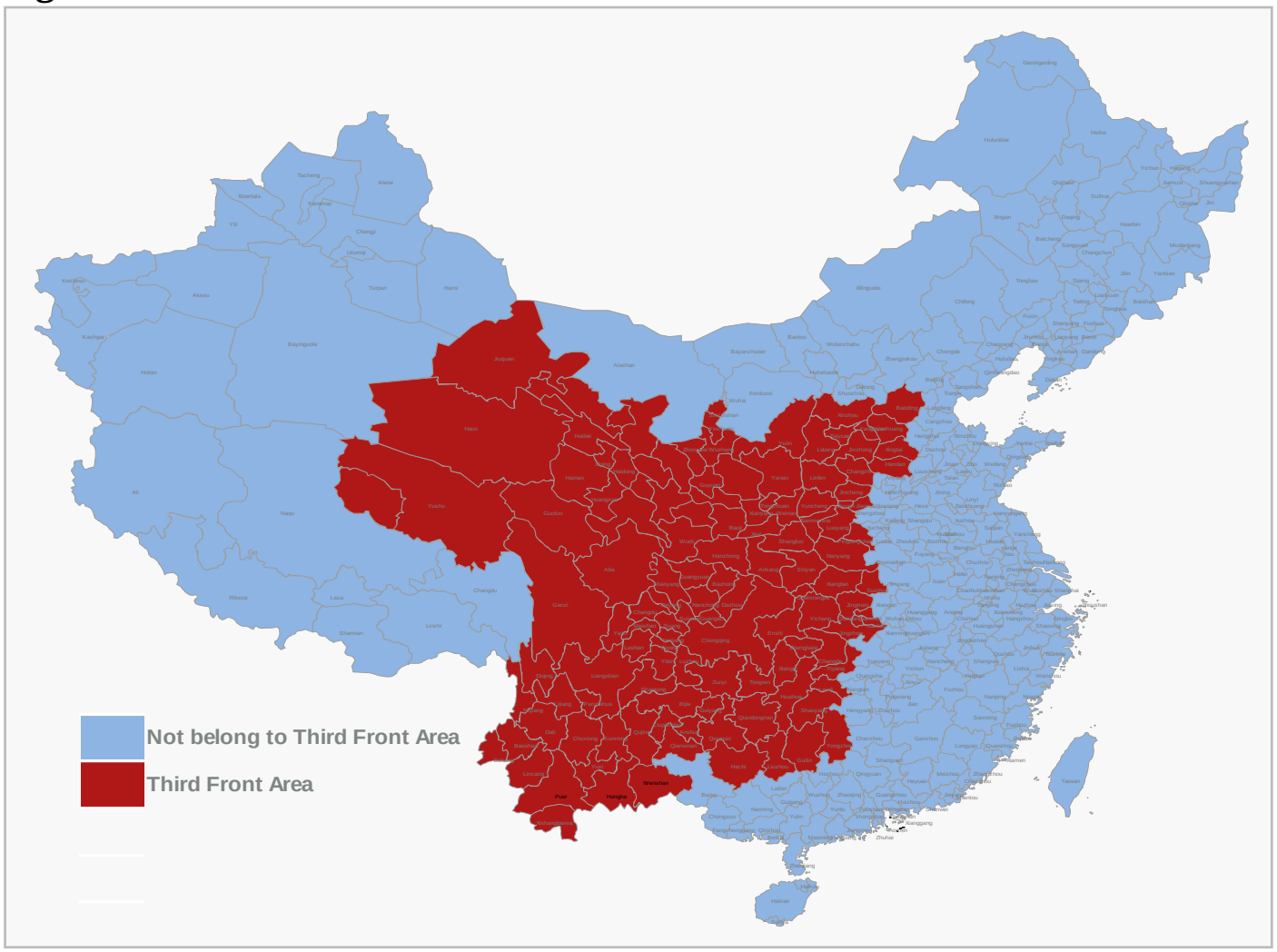
Other checks

- Controlling for characteristics of the oversight and the lower government.
- Duration model for decentralization.
- Full and partial SOEs.
- Definition of SOEs:
  - Base: based on state equity share of 25+%.
    - Robust: 50%, 10%, 90%.
  - Also tried SOE definition based on registration type:
    - For obvious types, just classify; for shareholding limited company, and limited liability company, then use state equity share. ➔ main results similar.
  - Also tried Hsieh-Song (2015): state equity share, & legal person share with state as the controlling shareholder.
- Add multiple episodes of decentralization.
- Treatment of potential data coding errors on decentralization.

Table 3. Determinants of Decentralization: Placebo Test and Third Front Construction as IV

	Placebo test		IV Probit model, MLE method		2SLS
	(1) whole Sample	(2) excluding small placebo city	(3) 1st stage	(4) 2nd stage	(5) 2nd stage
			Distance	Decentralized	Decentralized
Placebo Distance (t-1)	0.0001	-0.0001			
	(0.0010)	(0.0013)			
Distance (t-1)				0.0443***	0.0291*
				(0.0119)	(0.015)
TFC			0.2073**		
			(0.089)		
Controls	YES	YES	YES	YES	YES
Observations	68,421	55,920	68,421	68,421	68,421
Kleibergen-Paap F statistic					5.396
Anderson-Rubin F statistic (P value)					3.50 (0.061)
90% confidence interval					[0.0054, 0.0674]

Figure 3: Third Front Construction Area



Note: This figure depicts the “Third Front Construction” area in China.

Table J-1. Determinants of TFC	
	Dependent variable: TFC
Firm asset $_{(t-1)}$	0.0089***
	(0.002)
ROS $_{(t-1)}$	-0.0069
	(0.009)
Firm importance $_{(t-1)}$	-0.0305
	(0.048)
Fully state-owned $_{(t-1)}$	0.0428***
	(0.007)
GDP per capita $_{(t-1)}$	-0.2291***
	(0.009)
State sector share $_{(t-1)}$	0.0456
	(0.054)
Unemployment rate $_{(t-1)}$	0.4351
	(0.326)
gov't, year & industry dummy	YES
Observations	68,421
Pseudo R-squared	0.096

Table 4. Panel A. The distance-decentralization link and communication costs or firm-performance heterogeneity

Key indicators of communication costs or information intensity being:			
	Province road mileages$_{(t-1)}$	ROS dispersion$_{(t-1)}$	TFP Olley-Pakes dispersion$_{(t-1)}$
Distance $_{(t-1)}$	0.0096***	0.0027**	-0.0000
	(0.0011)	(0.0011)	(0.0019)
Distance $_{(t-1)}$ * Key indicators	-0.0003***	0.0146***	0.0045***
	(0.0000)	(0.0053)	(0.0014)
Key indicators	0.0016***	-0.0876***	-0.0223**
	(0.0004)	(0.0313)	(0.0099)
Controls	YES	YES	YES
Observations	68,421	68,421	63,534
Pseudo R-squared	0.114	0.117	0.116

Strategic industries

- Based on government documents from the State Council, talks by top officials (Li Rongrong, Shao Ning) of the State Assets Supervision and Administration Commission of the State Council.
- Also academic research based on China and Russia.
- Strategic Industry I: (1) Oil and gas, petroleum; (2) nuclear fuel, aviation nd aerospace, arms and ammunition; (3) electricity, heat, gas, and water supply.
- Strategic Industry II: the above, plus (4) automobile, locomotive, ship.

	Interactions of distance with Strategic Industries, by oversight level		
	Central SOE	Province SOE	Municipal SOE
Distance $_{(t-1)}$	0.0041**	0.0043***	0.0044***
	(0.0018)	(0.0009)	(0.0007)
Strategic ind. *Distance $_{(t-1)}$	-0.0053***	-0.0021	0.0005
	(0.0018)	(0.0026)	(0.0012)
Controls	YES	YES	YES
Observations	9,911	19,864	38,646
Pseudo R-squared	0.086	0.126	0.173

	The share of central strategic SOEs	
	1998	2007
	Central SOEs in strategic industries I	Central SOEs in strategic industries I
By total number		
In all industrial firms	0.3%	0.24%
In all SOEs	0.9%	2.98%
By employees		
In all industrial firms	0.2%	1.3%
In all SOEs	4.7%	8.8%
By value-added		
In all industrial firms	0.2%	4.5%
In all SOEs	13.2%	23.3%
Number of firms	434	404

Panel C:		Key indicators of corruption being:		Key Indicators of firm rents being:		
		Entertainment and travel cost	Corruption cases	Firm ROS	Firm average wage	Industry-level HI
Distance to oversight gov	0.0054***	0.0080***	0.0038**	0.0052***	0.0062***	0.0053***
	(0.0009)	(0.0028)	(0.0016)	(0.0008)	(0.0011)	(0.0008)
Distance to OS *Key indicator		-0.2011	0.0422	-0.0016*	-0.0004	0.0016
		(0.2126)	(0.0475)	(0.0009)	(0.0004)	(0.0267)
Distance to lower gov	-0.0013***	-0.0009	0.0012	-0.0012***	-0.0022**	-0.0012***
	(0.0003)	(0.0013)	(0.0021)	(0.0003)	(0.0010)	(0.0004)
Distance to lower gov * Key indicators		-0.0310	-0.0775	0.0008	0.0003	-0.0055
		(0.0916)	(0.0622)	(0.0013)	(0.0004)	(0.0217)
Key indicators		1.1729	-0.0813	-0.0031	-0.0025	0.0527
		(1.5026)	(0.3120)	(0.0035)	(0.0017)	(0.0873)
Controls	YES	YES	YES	YES	YES	YES
Observations	68,421	68,421	64,802	68,421	67,832	68,421
Pseudo R-squared	0.114	0.115	0.117	0.114	0.116	0.114

	Regression results on the determinants of centralization
	Provincial, municipal, and County SOE
	Dependent variable: Centralized $_t$
Distance to oversight government $_{(t-1)}$	0.0004*
	(0.0002)
Distance to upper-level government $_{(t-1)}$	-0.0008***
	(0.0002)
Firm asset $_{(t-1)}$	0.0007***
	(0.0002)
Firm importance $_{(t-1)}$	0.0050***
	(0.0009)
Fully state-owned $_{(t-1)}$	0.0007*
	(0.0004)
State sector share $_{(t-1)}$	-0.0138***
	(0.0043)
Unemployment rate, GDP per capita, ROS $_{(t-1)}$	YES
year & industry & upper gov't dummy	YES
Observations	141,621
Pseudo R-squared	0.143

Conclusions

- Strong support for the Hayek thesis of the importance of local information for decentralization
  - Especially when local information looms large:
    - Larger firm heterogeneity in performance
    - Higher communication costs
  - The utilization of local knowledge indeed is a key for understanding efficiency of firms in general and economic system in particular.
- The central gov't does care for controlling commanding heights,
  - weakens the explanatory power of the Hayek force for that SOE segment.
  - A small share of all industrial firms (i.e., less than 5%).
- Support for the two agency-cost-based conjectures is weak.
- The Chinese government pursued two goals:
  - improving efficiency for the vast majority of SOEs,
  - control the commanding heights.

Contribution to the literature

- The first empirical paper that links and tests Hayek's idea of the importance of local information for governing SOEs
  - how information affects decentralization in Western firms (Acemoglu et al., 2007; Bloom et al., 2012, 2014; Giroud, 2013).
  - in the state sector, the commanding heights considerations weakens the explanatory power of the Hayek hypothesis.
- Add to the literature of SOE reforms by examining decentralization.
  - A large literature on reforming SOEs by privatization
    - (Megginson and Netter 2001; Djankov and Murrell 2002; Estrin et al., 2009).
  - Two of the most comprehensive books dealing with the SOE reforms, World Bank (1995) and Yergin and Stanislaw (1999), focus on privatization and completely ignore decentralization.
  - Perhaps the first paper offering comprehensive evidence of SOE reforms through decentralization.
- Also contributes to the literature of firm decentralization. A huge theoretical literature, but few empirical studies.
  - (Bardhan, 2016; Mookherjee, 2015; Aghion and Tirole, 1997; Garicano, 2000; Dessein, 2002; Alonso et al., 2008).
  - (Acemoglu et al., 2007; Bloom et al., 2012, 2014; Giroud, 2013).