Anti-Corruption Campaign and the Resurgence of the SOEs in China: Evidence from the Real Estate Sector

Hanming Fang, University of Pennsylvania
Jing Wu, Tsinghua University
***Rongjie Zhang*, Tsinghua University**
Li-An Zhou, Peking University

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Motivation

- The emerging concern on “the State Advances while the Private Sector Retreats”, or the resurgence of the state in the Chinese economy

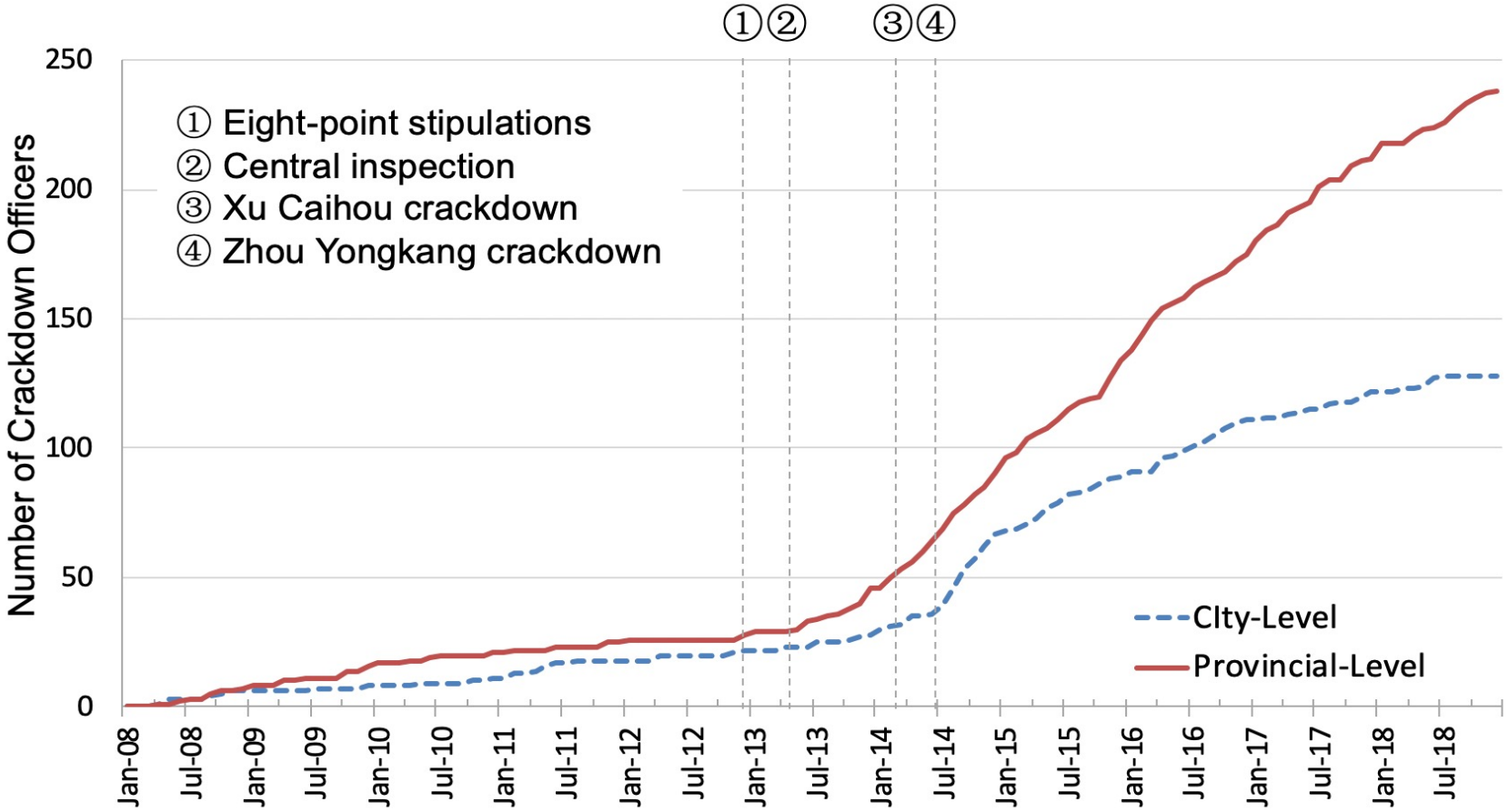
> “*China has maintained extraordinarily rapid growth since 1978 primarily because of the freeing of the private sector and the shrinking of the state*.”
>
> --Nicholas Lardy (2014)

> “*Since 2012, however, this picture of private, market-driven growth has given way to a resurgence of the role of the state in resource allocation and a shrinking role for the market and private firms*.”
>
> --Nicholas Lardy (2019)

- There did not seem to have an official reversal of market-oriented reform around 2012 or 2013

Motivation

- We advance a novel hypothesis about the resurgence of the SOE by exploring its nexus with the historically unprecedented anti-corruption campaign that started around 2012



Motivation

- Our focus: corruption stereotype and its effect
  - In a context of weak rules of law and widespread corruption, people generally form shared beliefs or stereotyping about the incidence of corruption and who pays money to whom in a specific context
  - It is commonly perceived in China that private real estate developers tend to give kickbacks to city government, while it is relatively rare for state-owned enterprises to engage in this type of corruption
- An unintended consequence of the anti-corruption campaign
  - The corruption-stereotyped transactions with private firms will be intentionally avoided by the government officials who fear follow-up corruption investigations, even if these transactions are socially optimal and the officials are inherently clean
  - The anti-corruption campaign induces government officials to stay away from private firms to protect themselves and causes an unintended rise of state-owned enterprises

What we do in this paper

- We focus on the effect of the anti-corruption campaign on China's real estate (RE) sector
  - China's RE sector has been notorious for its heavy involvement of corruption in the past decades
  - According to the court verdicts, most corrupted local officials received bribes from RE developers

- Using a DID method, we investigate how the campaign affects the land purchases by state-owned enterprises versus privately-owned enterprises
  - Empirical analysis using micro-level urban land transaction data and the DID specification
  - Investigate the relationship between the rise of SOE share and the corruption stereotyping

Preview of results

- We document the heavy involvement of private real estate developers in bribes paid to local officials
  - The real estate sector accounted for the highest share in bribe cases, and most bribers were private firms
- We find that private firms purchase less residential land parcels after the anti-corruption campaign than SOEs
  - The share of SOE in residential land buyers significantly increases after the anti-corruption, and increased with the intensity of the campaign
  - We provide both theoretical and empirical evidence that the rise of SOE share is highly correlated with local corruption stereotype
- Suggestive evidence on the potential negative welfare loss
  - A decline of efficiency in the “clean” cities after the campaign (more delay in development and quality deterioration)

Contribution

- A growing literature on the consequences of China's anti-corruption campaign since 2012
  - Reduction in luxury consumption (Qian and Wen, 2015; Ke, Liu, and Tang, 2018; Shu and Cai, 2017), stock price crash risk (Chen et al., 2018; Hu et al. 2020), and corporate frauds (Zhang, 2018)
  - Potentially negative effect, such as drops in investment and business entry (Chen and Zhong, 2017; Xu, 2018; Zheng and Xiao, 2020)
  - The differential impacts on SOEs and POEs (Xu and Yano, 2017; Li, Wang, and Zhou, 2018; Sun, Xu, and Zhang, 2018; Lin et al., 2018; Ding et al., 2020)
- This paper is the first study to examine the role of corruption stereotype in motivating local officials to self-protect and pushing SOEs in an advantageous position
  - Highlighting the rise of SOEs as an unintended consequence of the anti-corruption campaign in China

Contribution

- The time-honored debate in testing two major competing hypotheses about the effects of corruption on the economy
  - The effects of corruption in increasing transaction costs (Klitgaard, 1991; La Porta, et al., 1999; Shleifer and Vishny, 1993)
  - The role of corruption as a "grease of business" in getting around excessive red tapes and regulation hurdles (Leff, 1964; Huntington, 1968) and sorting out efficient firms (Liu, 1985)

- We introduce corruption stereotype and strategic reactions of government officials as a new source of inefficiency associated with anti-corruption campaigns
  - No matter whether corruption serves as a surcharge on transactions or "grease of business" prior to the campaign
  - General implications for contexts outside China

Contribution

- A large literature on statistical discrimination and its effect
  - Most existing literature focuses on on human capital investment and labor markets (Phelps, 1972; Arrow, 1973; Altonji and Pierret, 2001; Fang, 2006)

- We extend statistical discrimination to the context of anti-corruption campaigns
  - Both investigators and the general public share the expectation that certain type of government-business transactions (e.g., involving private enterprises) is more susceptible to corruption
  - Our study shows how such corruption stereotypes induce strategic responses of government officials, which distorts the impacts of anti-corruption campaigns

Housing development in China

- Housing developments involves land transactions, housing construction and sales, and each step is highly regulated by local governments in China

- Heavy regulations generate substantial rent-seeking opportunities for real estate developers
  - Securing the right to develop the lucrative project
  - Purchasing the land at lower prices (Cai, et al., 2013; Nien and Wang, 2018; Chen and Kung, 2019)
  - Making FAR adjustment in housing construction (Cai, et al., 2017; Deng, 2017)
  - Speeding-up the approval/licensing procedures

Summary of city-level corrupted chiefs

- We manually collected information on all party chiefs (*shi wei shu ji*) and mayors (*shi zhang*) of 287 prefectural cities who were on position between Jan 2000 and Dec 2012
  - By the end of 2018, over **15%** of these city-level chief officers had been accused for corruption

		CCP Chiefs	Mayors	Both
By Individuals	Total	1106	1284	1565
	Corrupted	169 (15.3%)	178 (13.9%)	244 (15.6%)

- For each corrupted chief, we manually collected his/her court verdict, indictment charge, and official media reports if available

Summary of city-level corrupted chiefs

- A large portion of corruptions came from the RE sector
  - 197 out of the 244 corrupted city chiefs have been sentenced, while the court verdicts have been released for 180 of the 197 chiefs
  - **166** out of these 180 chiefs got involved in at least one bribery case
  - **107** out of these 166 (or **64.5%**) grafters took at least one bribe related to RE issues, with a total of 213 RE-related corruption cases

	By Grafters	
	Number	Percentage
Real Estate Related Bribery	107	64.5%
Real Estate Unrelated Bribery	38	22.9%
Unable to Identify	21	12.6%
Total	166	100%

  - Only 10 out of these 166 (or **6.0%**) grafters took bribes related to industrial land-related issues, with a total of 20 corruption cases

Summary of city-level corrupted chiefs

- Major charges on the bribers in the 213 RE-related corruption cases are listed below:
  - Consistent with local governments' important role in zoning regulations, land supply, development regulations, taxation, etc.

Appeals	Number	Percentage
Obtaining development projects	88	29.3%
Securing land use rights	45	15.0%
Speeding up the approval procedures in construction	34	11.3%
Enjoying discounts in land leasing prices	30	10.0%
Enjoying favors in taxation and fees-charges	20	6.7%
Increasing compensation from the government	18	6.0%
Receiving preferential polices	17	5.7%
Side-stepping development regulations	16	5.3%
Assisting resolution of disputes in construction	8	2.7%
Negotiating the fines	5	1.7%
Others	19	6.3%

Summary of city-level corrupted chiefs

- Most bribers are private firms
  - 179 of the 213 (or **82.2%**) cases were bribed by private enterprises or by individuals (presumably on behalf of private firms)

	By Bribers	
	Number	Percentage
Private Enterprises or Individuals	179	84.03%
State-owned Enterprises	12	5.63%
Unable to Identify	22	10.33%
Total	213	100%

  - A potential corruption stereotype (or statistical discrimination) on POEs in the RE sector when a anti-corruption campaign starts

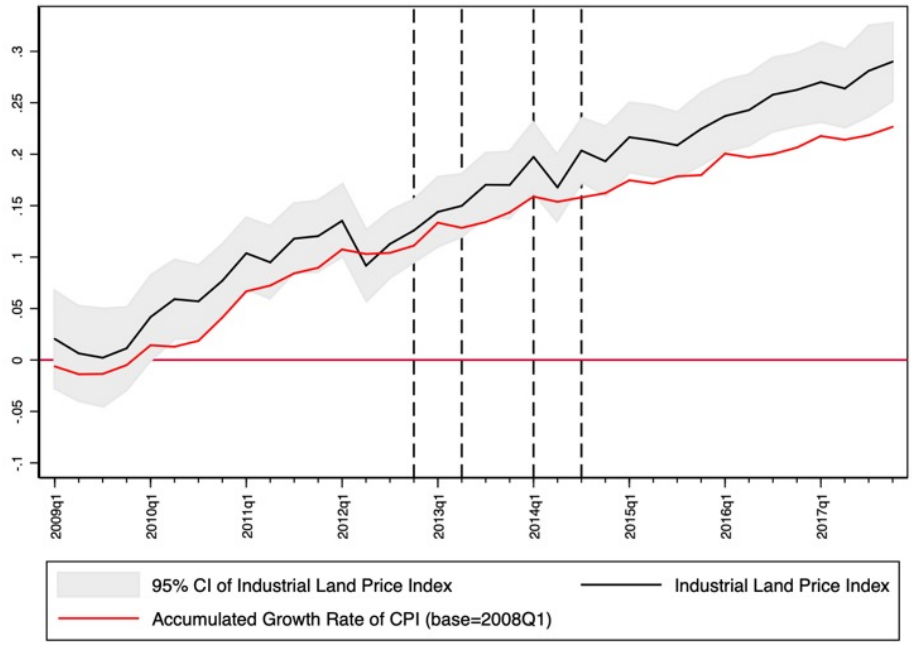
Empirical challenges

- Need to find a setting in which the government officials' incentives are not affected by the anti-corruption campaign

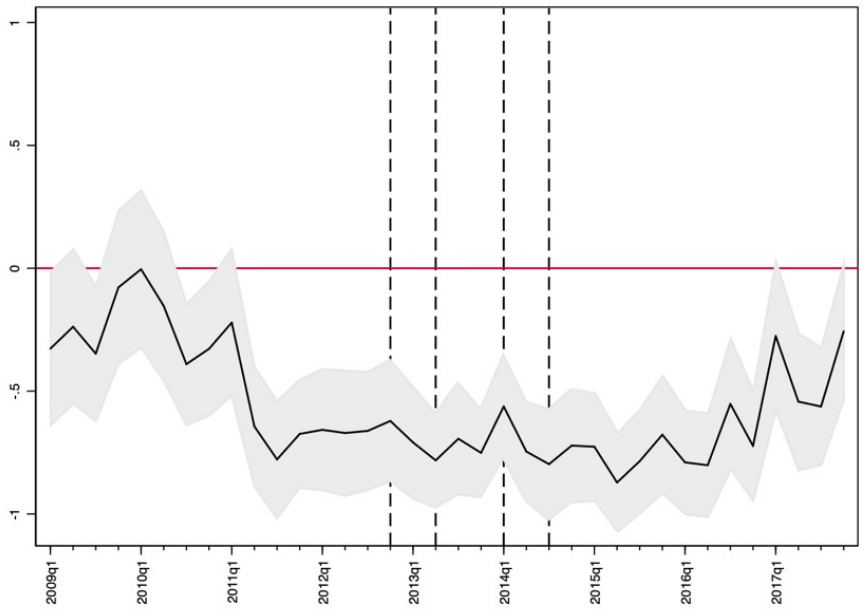
- We use the industrial land market as the control group where the constantly low price of industrial land makes it less susceptible to corruption in the first place and thus unlikely to be impacted by the anti-corruption campaign
  - Local officials lease industrial land at low prices to attract manufacturing firms to boost local development and enhance their chance of promotion (Li and Zhou, 2005; Yao and Zhang, 2015)
  - Among previous bribery cases, we find no cases where manufacturing firms paid bribers to secure the industrial land

Empirical challenges

- We use the industrial land market as the control group
  - The long-term growth of industrial land price at the national level is comparable to that of CPI
  - The relative volume of industrial land supply against residential land is generally stable around the anti-corruption campaign



Transaction price index of industrial land



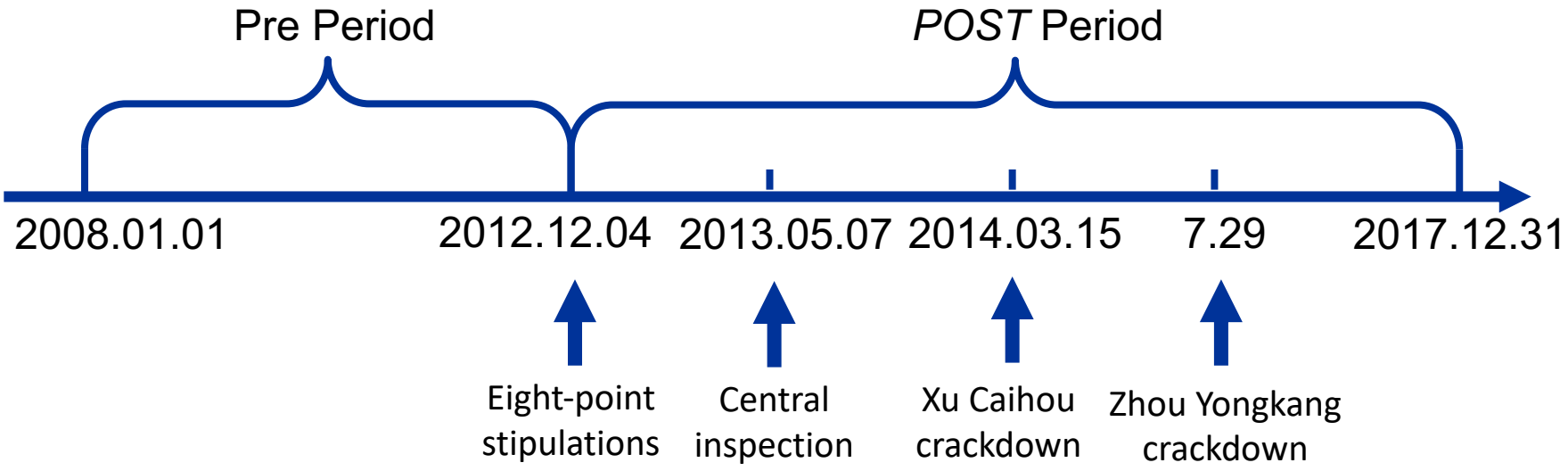
City-level supply ratio
of residential over industrial land

Empirical strategy

- Difference-in-differences specification

$$SOE_{ijt} = \beta_1 TREAT_{ijt} * POST_{ijt} + \beta_2 TREAT_{ijt} + \beta_3 POST_{ijt} + X_i + \alpha_j + \delta_q + \epsilon_{ijt}$$

  - Treatment group: ***residential*** land parcels sold via public auctions, whose subsequent development is subject to a ***high probability*** of corruptions/rent-seeking
  - Control group: ***industrial*** land parcels sold via public auctions, whose subsequent development is subject to ***low probability*** of corruptions

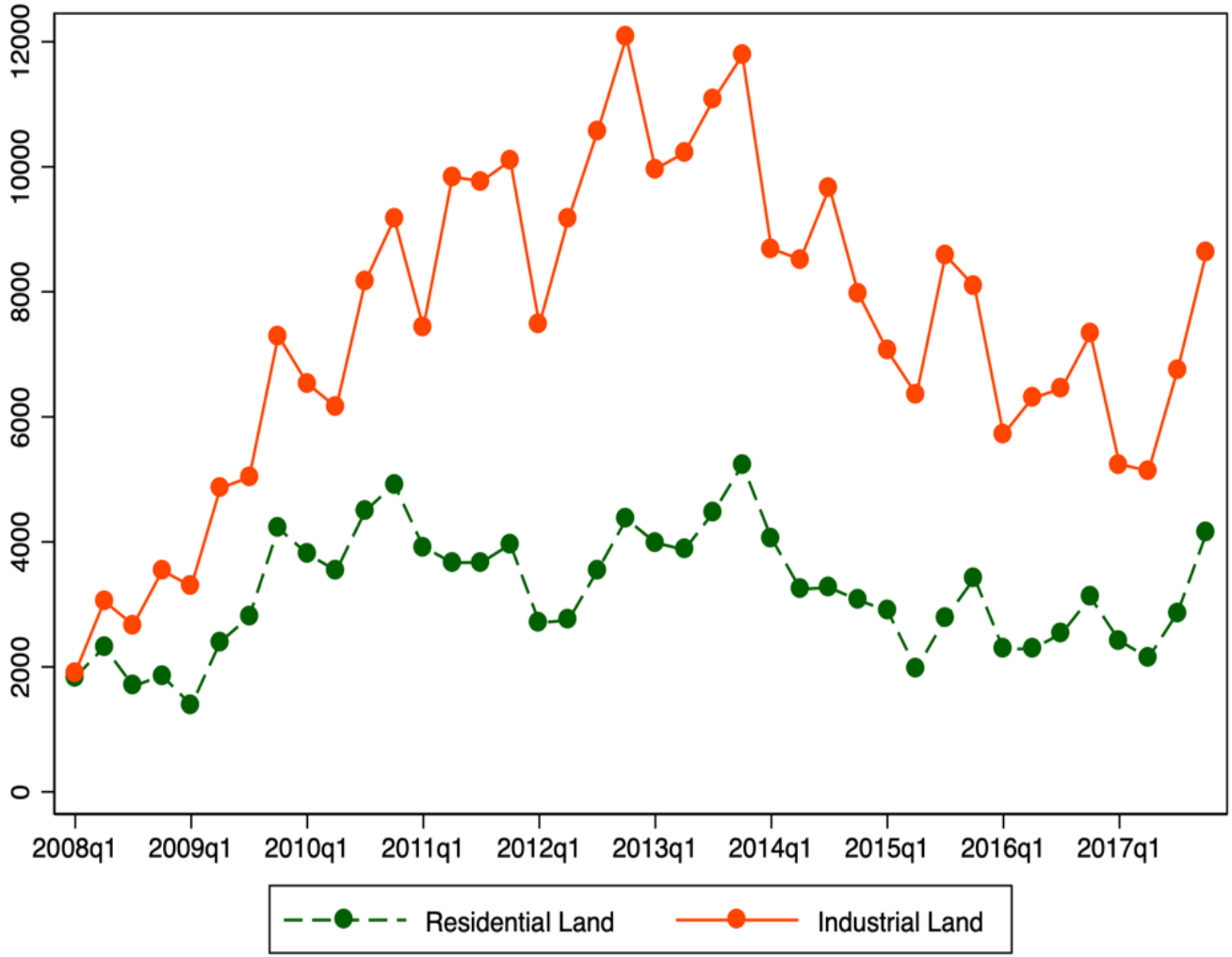


Data

- Micro-level land transaction data
  - Full-sample of residential (excluding public housing and quasi-public housing land parcels) and industrial-usage land parcel transactions between 2007 and 2017 in 287 Chinese cities, from the official website of Ministry of Land and Resources
  - The *ultimate* ownership (SOE or non-SOE) of each buyer firm is identified through the official dataset of State Administration for Market Regulation, based on controlling shares or at least 30% shares
  - Detailed information on the land parcel attributes, such as area size
  - Transaction data and prices of land parcels
  - Other firm characteristics of the buyer firms (listing status, years since opening, local firm or not, initial registered capital, etc.)

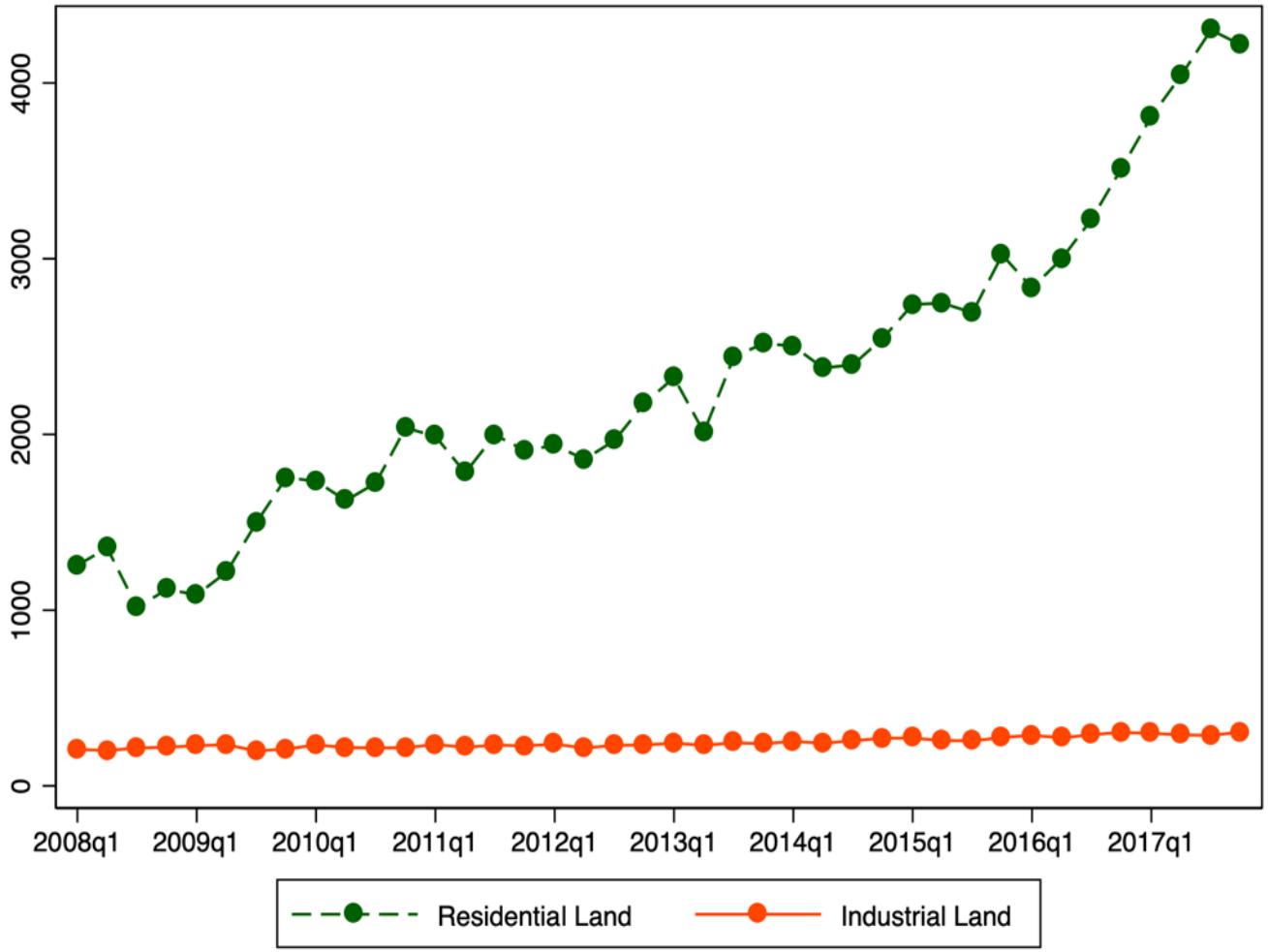
Data

- Quarterly number of land parcels sold during the sample period



Data

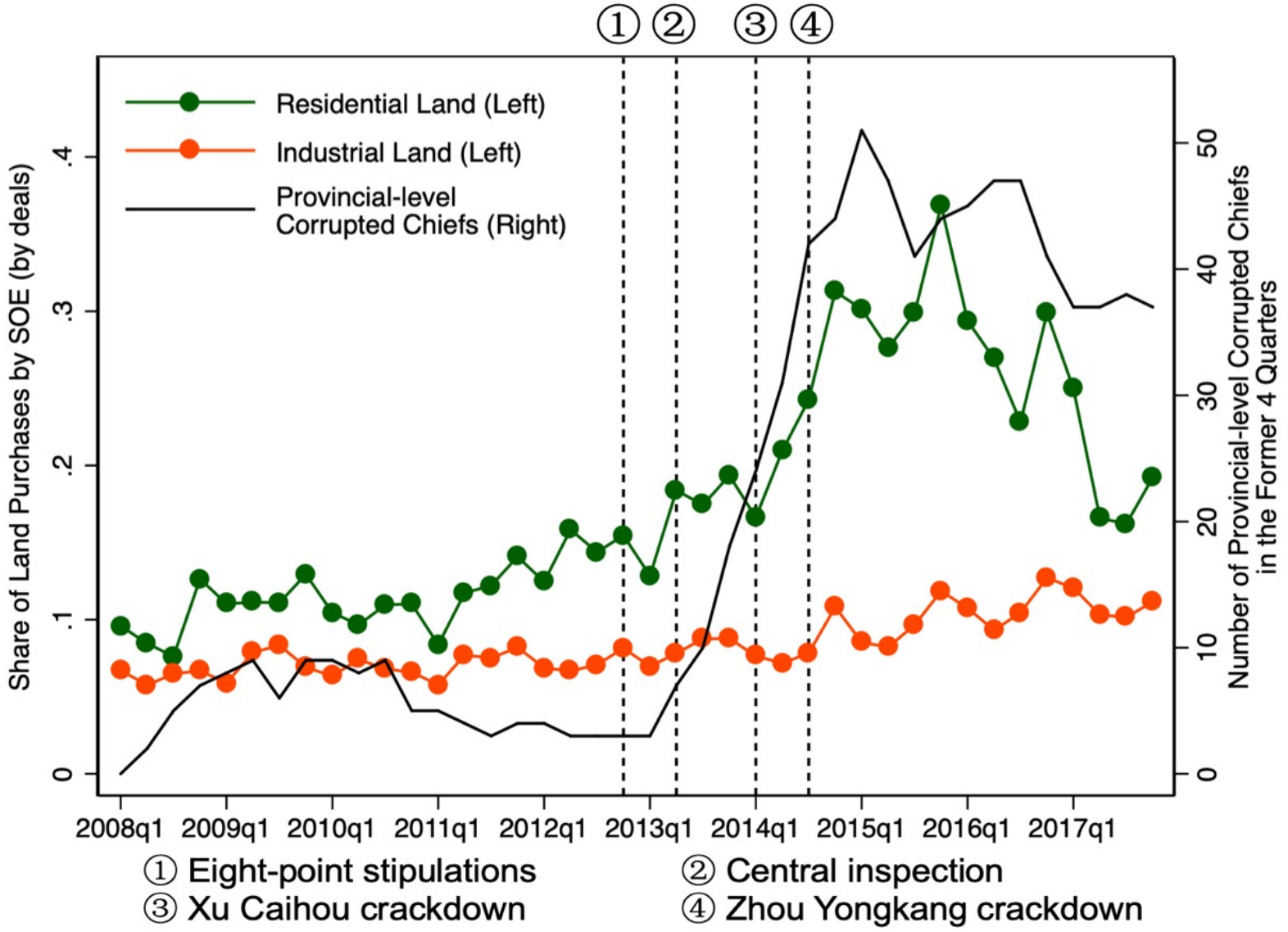
- Quarterly average price of land parcels (in yuan per sq.m.)



Summary statistics

	Residential		Industrial	
	Mean	SD	Mean	SD
Whether the buyer is an SOE firms (in %)	17.69	38.16	8.38	27.71
Whether the buyer is a LISTED company (in %)	7.48	26.31	3.28	17.81
Whether the buyer is a LOCAL company (in %)	79.22	40.58	87.02	33.61
Length since the opening of the buyer company (in years)	18.89	99.31	8.47	45.69
Floor Area Ratio of the parcel	2.55	1.12	1.142	0.56
Floor AREA of the parcel (in 10 thousand sq.m.)	3.64	4.08	3.58	4.92
Stereotype	0.110	0.115	0.144	0.140

Stylized facts



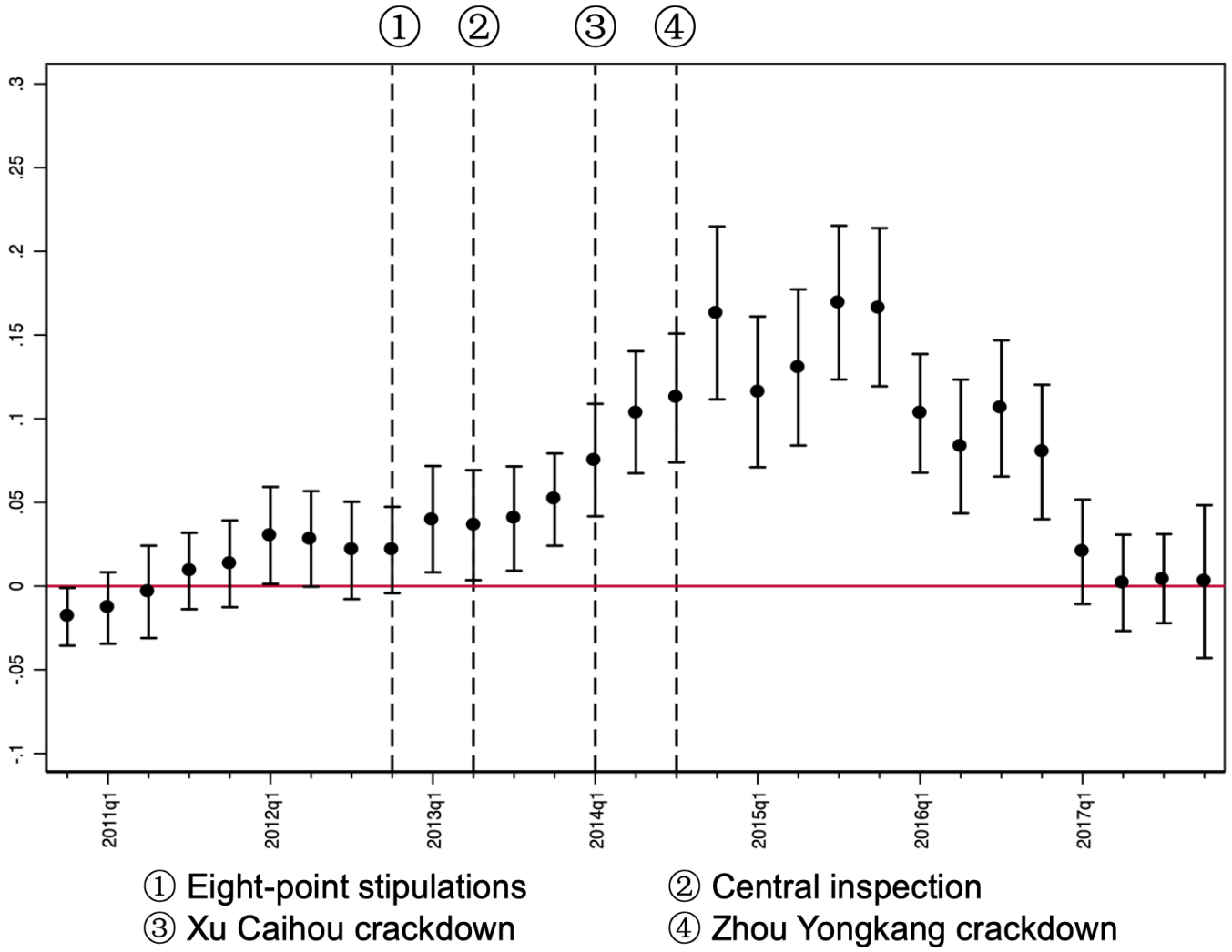
Basic results

- SOEs purchased more residential land parcels after the anti-corruption campaign (0.0721/0.119=60.6%)

Variables	(1) *SOE*	(2) *SOE*	(3) *SOE*	(4) *SOE*	(5) *SOE*
*POST * TREAT*	0.0721***	0.0734***	0.0734***	0.0743***	0.0744***
	(0.00575)	(0.00604)	(0.00604)	(0.00596)	(0.00608)
POST	-0.0148	-0.0126	-0.0127	-0.00250	-0.00827
	(0.00971)	(0.00920)	(0.00920)	(0.00885)	(0.00879)
TREAT	0.0656***	0.0634***	0.0634***	0.0617***	0.0615***
	(0.00406)	(0.00403)	(0.00404)	(0.00398)	(0.00396)
Observations	406,866	399,990	399,990	406,862	399,985
R-squared	0.088	0.109	0.109	0.103	0.118
Land Parcel Attributes	YES	YES	YES	YES	YES
City FE	YES	NO	NO	YES	NO
Year by Quarter FE	YES	YES	YES	NO	NO
Province by Year-Quarter FE	NO	NO	NO	YES	YES
City Chief FE	NO	By person	By term	NO	By term

Check on the pre-trend

- There is no pre-trend associated with the treatment group



Heterogeneity

- The effect is stronger for larger residential land parcels
- The effect is dominated by local (instead of central) SOEs
- The effect exists in both listing and auction transactions

	(1)	(2)	(3)	(4)	(5)
	All Transactions			Listing	Auction
Variables	SOE	Central SOE	Local SOE	SOE	SOE
*TREAT * POST*	0.0614***	0.00206	0.0840***	0.0713***	0.0629***
	(0.00594)	(0.00162)	(0.00584)	(0.00691)	(0.0157)
*TREAT * POST* * ln(*AREA*)	0.0212***				
	(0.00309)				
POST	-0.0125	0.00284	-0.0139*	-0.00715	-0.0412*
	(0.00891)	(0.00384)	(0.00810)	(0.00907)	(0.0225)
TREAT	0.0628***	0.00365***	0.0752***	0.0690***	0.0137
	(0.00380)	(0.00136)	(0.00387)	(0.00440)	(0.0107)
Observations	399,985	399,985	399,985	357,763	38,837
R-squared	0.120	0.039	0.124	0.118	0.244
Land Parcel Attributes	YES	YES	YES	YES	YES
Chief by Term FE	YES	YES	YES	YES	YES
Province by Year-Quarter FE	YES	YES	YES	YES	YES

Alternative explanation I: Confounding policies

- Confounding policies: consider the enforcement of anti-corruption

VARIABLES	(1) *SOE*	(2) *SOE*	(3) *SOE*
*TREAT * POST_Eight-point stipulations*	-0.0645		
	(0.0752)		
*TREAT * POST_Central inspection*	0.0424***		
	(0.0103)		
*TREAT * POST_Xu Caihou's fall*	0.0875***		
	(0.0171)		
*TREAT * POST_Zhou Yongkang's fall*	0.0977***		
	(0.00793)		
*TREAT * POST *After_ProvInspect*		0.0436***	
		(0.0107)	
*TREAT * POST *Crackdown_Prov*			0.0200***
			(0.00567)
*TREAT * POST*		0.0449***	0.0610***
		(0.00920)	(0.00670)
Observations	399,985	399,985	399,985
R-squared	0.119	0.119	0.119
Land Parcel Attributes	YES	YES	YES
Chief by Term FE	YES	YES	YES
Province by Year-Quarter FE	YES	YES	YES

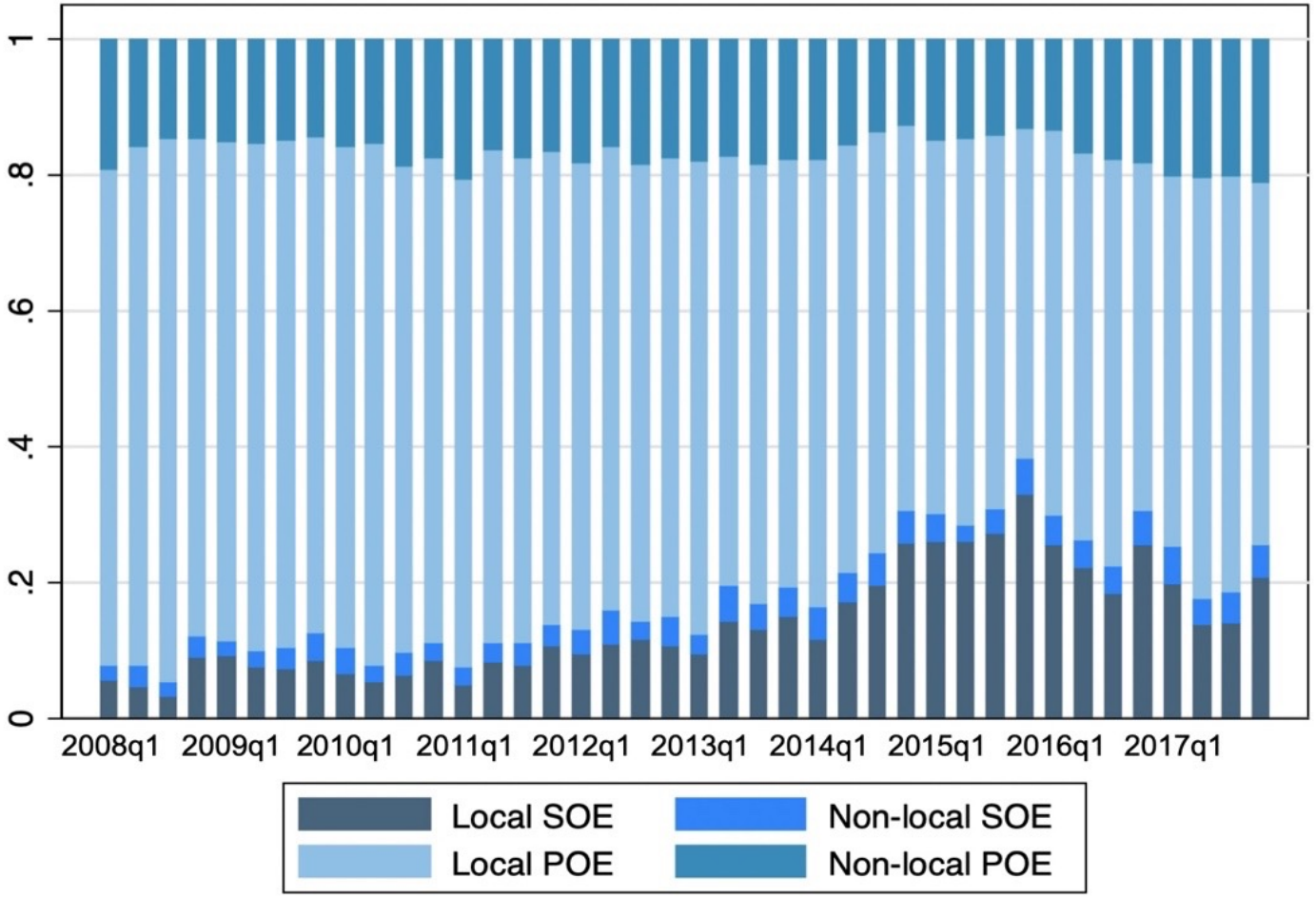
Alternative explanation II: Financial Access

- Financial access: the hike in SOE share is not purely driven by changes in SOEs' willingness-to-pay for residential land parcels
  - A firm-quarterly panel of all non-financial listed firms in mainland China between 2008Q1 and 2017Q4

	(1)	(2)
Variables	*New Debt*	*Debt Cost*
*RE * POST*	0.0161***	0.0198***
	(0.00430)	(0.00301)
RE * POST * SOE	**-0.0128****	**-0.0160*****
	(0.00573)	**(0.00443)**
LEV	0.00267***	-0.000400***
	(3.98e-05)	(3.87e-05)
ROE	-0.00118***	3.32e-05
	(6.90e-05)	(4.93e-05)
ASSET	0.00826***	-0.00783***
	(0.00102)	(0.000942)
Observations	73,317	34,065
R-squared	0.662	0.379
Firm FE	YES	YES
Year by quarter FE	YES	YES

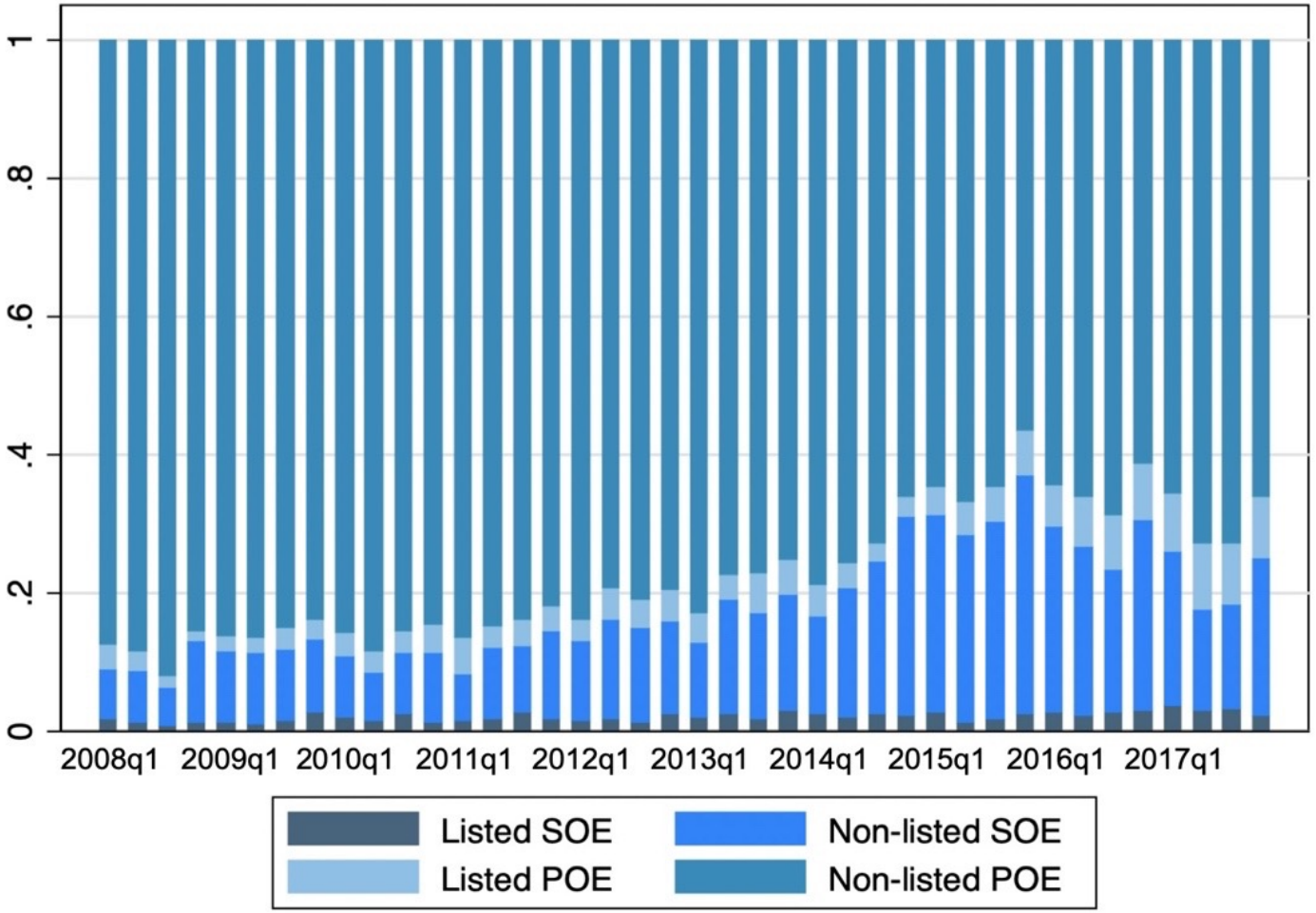
Alternative explanation II: Financial Access

- Local POEs are replaced by local SOEs, instead of nationwide SOEs that are, arguably, more competitive from the financial aspect



Alternative explanation II: Financial Access

- Non-listed POEs are replaced by non-listed SOEs, instead of listed SOEs with easier access to financing resources



Alternative explanation III: Expectations

- Expectations about housing market: the hike in SOE share is not purely driven by changes in house price growth expectations

Variables	(1) *SOE*	(2) *SOE*
*POST * TREAT * Previous HPG*	0.0149***	
	(0.00342)	
*POST * TREAT * Following HPG*		0.0173***
		(0.00369)
*POST * TREAT*	**0.0501*** **	**0.0657*** **
	(0.00951)	**(0.0101)**
TREAT	-0.0226*	-0.0260**
	(0.0120)	(0.0120)
POST	0.0991***	0.0784***
	(0.00875)	(0.00810)
Observations	150,897	153,240
R-squared	0.136	0.134
Land Parcel Attributes	YES	YES
Chief by Term FE	YES	YES
Province by Year-Quarter FE	YES	YES

Alternative explanation IV: Policies

- Housing market policies: we introduce the dummy LowHA to represent cities with relatively low housing affordability index
- Although the triple interaction term is significantly positive, the hike in SOE shares is not entirely driven by local housing policies

	(1)
Variables	*SOE*
*POST * TREAT*	**0.0617*** **
	(0.00685)
*POST * TREAT * LowHA*	0.0225**
	(0.00981)
TREAT	-0.0148
	(0.00980)
POST	0.0651***
	(0.00413)
Observations	400,469
R-squared	0.088
Land Parcel Attributes	YES
Chief by Term FE	YES
Province by Year-Quarter FE	YES

Other robustness checks

- The results remain robust if we further control for buyers' other attributes (listing status, years since opening, local firm or not), or parcels' transaction prices, or include quasi-public lands, or include commercial lands, or exclude LGFVs

Variables	(1) *SOE*	(2) *SOE*	(3) *SOE*	(4) *SOE*	(5) *SOE*
*POST * TREAT*	0.0878***	0.0622***	0.0785***	0.0867***	0.0627***
	(0.00684)	(0.00588)	(0.00548)	(0.00544)	(0.00541)
POST	-0.0162*	-0.00484	-0.0115	-0.00834*	-0.00170
	(0.00907)	(0.00863)	(0.00872)	(0.00436)	(0.00843)
TREAT	0.0552***	0.0250***	0.0793***	0.0953***	0.0473***
	(0.00442)	(0.00422)	(0.00504)	(0.00509)	(0.00355)
Observations	305,779	399,912	457,499	531,095	390,102
R-squared	0.171	0.123	0.125	0.130	0.097
Land Parcel Attributes	YES	YES	YES	YES	YES
Buyer Attributes	YES	NO	NO	NO	NO
Land Price	NO	YES	NO	NO	NO
Including Quasi-Public Lands	NO	NO	YES	NO	NO
Including Commercial Lands	NO	NO	NO	YES	NO
Including LGFVs	NO	NO	NO	NO	YES
Chief by Term FE	YES	YES	YES	YES	YES
Province by Year-Quarter FE	YES	YES	YES	YES	YES

Theoretical model of corruption stereotype

- The politicians in land auctions:
  - A politician (city party secretary or mayor) is either "clean" or "dirty"
  - Whether the politician is clean or dirty is private information, but outsiders may update their belief about the type of the politician
  - The *ex-ante* probability that a politician is dirty is p_0
  - In a land transaction, a μ fraction of the POEs offer a bribe b to the politician
  - A clean politician will pick a winner according to whoever has the higher value of the land, regardless of whether the developer is SOE or POE
  - A dirty politician's decision may be distorted by the potential bribes he/she can receive from POE developers, and would give the POE net kickbacks K after the auction in exchange of the bribe

Theoretical model of corruption stereotype

- Let V_p and V_s denote the value of the POE and SOE bidders
  - Suppose *Vp* and *Vs* are drawn from a symmetric joint distribution and that the auction admits a symmetric monotonic equilibrium

- Prior to the anti-corruption campaign
  - The probability that a clean politician will choose the SOE:

$$q_c = Pr(V_s > V_p)$$

  - The probability that a dirty politician will choose the SOE:

$$q_d = Pr(V_s > V_p + K) + (1 - \mu)Pr(V_p < V_s < V_p + K)$$

  - For each land parcel auction, $q_c > q_d$

Theoretical model of corruption stereotype

- A politician's "reputation score" of being a dirty politician
  - Suppose that at the start of the campaign, a politician has already sold N_p land parcels to POEs and $N_s \equiv N - N_p$ parcels to SOEs
  - Bayesian updating implies that the reputation score $\hat{p}$ is given by:

$$\hat{p}(N_s, N) = \frac{p_0 q_d^{N_s} (1 - q_d)^{N - N_s}}{p_0 q_d^{N_s} (1 - q_d)^{N - N_s} + (1 - p_0) q_c^{N_s} (1 - q_c)^{N - N_s}}$$

- The anti-corruption investigation
  - The probability that a politician with a dirty reputation score *p* being investigated by the CCDI is *J(p),* where *J'* > 0 and *J"* < 0
  - Being investigated, regardless of whether the politician is eventually found to be clean or dirty, incurs a hassle cost of *H* for the politician
  - If the politician is actually dirty, he/she will incur a jail cost of *Δ*

Theoretical model of corruption stereotype

- Key assumption: the beliefs are adaptive
  - CCDI updates beliefs according to probabilities that dirty and clean politicians award land parcels to SOEs, q_d and q_c
- The change of reputation score:
  - If the politician awards the land to a POE, the score will deteriorate to $\hat{p}_+(\hat{p})$; if the politician awards the land to an SOE, the score will improve to $\hat{p}_-(\hat{p})$
- The "shadow cost" of awarding the land parcel to a POE:
  - For a clean politician:

$$C_c(\hat{p}_c) = [J(\hat{p}_+(\hat{p}_c)) - J(\hat{p}_-(\hat{p}_c))]H \approx J'(\hat{p}_c)[\hat{p}_+(\hat{p}_c) - \hat{p}_-(\hat{p}_c)]H$$

  - For a dirty politician:

$$C_d(\hat{p}_d) = [J(\hat{p}_+(\hat{p}_d)) - J(\hat{p}_-(\hat{p}_d))](H + \Delta) \approx J'(\hat{p}_d)[\hat{p}_+(\hat{p}_d) - \hat{p}_-(\hat{p}_d)](H + \Delta)$$

Theoretical model of corruption stereotype

- For a clean politian:
  - Assume that the proportion θ share of the shadow cost will be reflected in the award decision
  - The probability that the clean politian award the land to an SOE:

$$\tilde{q}_c(\hat{p}_c) = Pr(V_s > V_p - \theta C_c(\hat{p}_c))$$

  - And we have:

$$\tilde{q}_c(\hat{p}_c) > q_c \quad for\ all\ \hat{p} \in (0,1)$$

- **Propositions:**
  - **The land is more likely to be assigned to an SOE under the anti-corruption campaign if the politician is clean**
  - **The land assignment is less efficient under the anti-corruption campaign if the politician is clean**

Theoretical model of corruption stereotype

- For a dirty politian:
  - A dirty politician may still be tempted to give the POE net kickbacks *K* after the auction, if the POE were to offer a bribe *b* to the politician
  - He/she would also take the proportion *θ* share of the shadow cost in the award decision
  - The probability that the dirty politian award the land to an SOE:

$$\tilde{q}_d(\hat{p}_d) = \Pr\left(V_s > V_p - \theta C_d(\hat{p}_d) + K\right) + (1-\mu)Pr\left(V_p - \theta C_d(\hat{p}_d) < V_s < V_p - \theta C_d(\hat{p}_d) + K\right)$$

- **Propositions:**
  - **The effect of the anti-corruption campaign on a dirty politician's land awarding decision is not clear**

Effect of corruption stereotype

- Awarding more residential land parcels to POEs before the campaign causes a higher probability of crackdown in the campaign, especially for the party chiefs
- The number of land parcels sold to SOEs is insignificant
- Consistent with the corruption stereotype against POEs

	(1) Party Chief & Mayor	(2) Party Chief	(3) Mayor
VARIABLES	*Crackdown*	*Crackdown*	*Crackdown*
Landnum_POE	0.0188***	0.0316**	0.00572
	(0.00701)	(0.0136)	(0.0107)
Landnum_SOE	-0.00644	0.00673	-0.0207
	(0.0222)	(0.0534)	(0.0328)
Observations	1,253	609	644
R-squared	0.357	0.545	0.474
City FE	YES	YES	YES
Personal Attributes	YES	YES	YES

Effect of corruption stereotype

- The proxy of corruption stereotype
  - We measure the severity of real-estate-related bribery by POEs before the anti-corruption campaign
  - We manually collect all the court verdicts issuing real-estate-related bribery cases from the website of *China Judgement Online*
  - We search for the court verdicts based on the following three rules
    - The court verdict is the first instance of a criminal case
    - The charge is about accepting bribes, including institutional bribery and influence-using bribery
    - At least one of the bribes accepted by the grafter is related to real estate development
  - We record all the real-estate-related bribery cases that happened before Dec 4, 2012 (4,710 cases in total), and identify the ultimate ownership type of each briber
  - *Stereotype* is defined as the accumulated number of real-estate-related cases involving bribes-paying POEs normalized by the total number of POEs who bought residential land in the province

Effect of corruption stereotype

- Distinguishing “dirty” and “clean” officials
  - “Dirty officials” refer to city party chiefs or mayors who were caught for corruption charges, either on the post or after they left the office, during the campaign by the end of 2020
  - The other city party chiefs and mayors are defined as “clean officials” in the empirical analysis
  - Admittedly, even if a city official remains “clean” until the end of 2020, we as outside observers can never say he or she is truly “clean”
  - Nevertheless, the “clean officials” should also include inherently clean ones and thus should be more “clean” than the group of “dirty” ones that have already been prosecuted

- The comparison of “clean” and “dirty” city officials is more of a matter of degree than a black-white difference

Effect of corruption stereotype

- The higher severity of POE-involvement in bribery in a province before the campaign makes it less likely for POEs to secure residential land after the campaign
- This pattern only significantly exists for clean officers

	(1)	(2)	(3)
	All Officers	Dirty Officers	Clean Officers
Variables	SOE	SOE	SOE
*POST * TREAT * Stereotype*	0.137***	0.0851	0.185**
	(0.0511)	(0.0844)	(0.0766)
Observations	399,985	144,681	255,293
R-squared	0.119	0.141	0.117
Land Parcel Attributes	YES	YES	YES
Chief by Term FE	YES	YES	YES
Province by Year-Quarter FE	YES	YES	YES
Interaction Terms	YES	YES	YES
Controls for the DDD Terms	YES	YES	YES

Effect of corruption stereotype

- The higher promotion probabilities also makes it less likely for POEs to secure residential land after the campaign

	(1) *SOE*	(2) *SOE*	(3) *SOE*	(4) *SOE*
Variables				
*POST * TREAT * High_ccp*	0.0402***			
	(0.0138)			
*POST * TREAT * High_may*		0.0236		
		(0.0145)		
*POST * TREAT * Retire_ccp*			-0.0295**	
			(0.0140)	
*POST * TREAT * Retire_may*				-0.0541***
				(0.0158)
Observations	337,960	336,616	339,484	337,220
R-squared	0.115	0.114	0.115	0.114
Land Parcel Attributes	YES	YES	YES	YES
Chief by Term FE	YES	YES	YES	YES
Province by Year-Quarter FE	YES	YES	YES	YES

Efficiency Implications

- Suggestive evidence on housing development efficiency

$$OUTCOME_{ijt} = \beta_1 * CLEAN_{ijt} * POST_{ijt} + \beta_2 * CLEAN_{ijt} + \beta_3 * POST_{ijt} + X_i + \alpha_j + \delta_t + \varepsilon_i$$

- Data: we merged the residential land transaction data with the following housing development projects on the parcels
  - Source: CREIS
  - Eight sample cities: Beijing, Chongqing, Kunming, Jinan, Shanghai, Wuhan, Xi'an, and Zhengzhou
- Two major outcomes:
  - Delay of housing development: the number of days between land transaction and public sales of the housing project
  - Development quality: the ratio of the average resale housing price of the project in 2019 over the land price per floor area

Efficiency Implications

- Cities with "clean officials" experience an increase of efficiency loss after the anti-corruption campaign
  - A 25.5% increase for the development delay
  - A 169.9 percentage points decrease for the resale-land price ratio

VARIABLES	(1) ln(LAG)	(2) Price_Ratio
*POST * CLEAN*	0.255*	-1.696*
	(0.133)	(0.723)
CLEAN	-0.347***	0.788
	(0.0799)	(1.387)
POST	-0.0528	2.413
	(0.342)	(1.605)
Observations	1,743	1,382
R-squared	0.218	0.491
City FE	YES	YES
Year by quarter FE	YES	YES
Land Parcel Attributes	YES	YES

Conclusions

- We advance a novel hypothesis about the resurgence of the SOE by exploring its nexus with the anti-corruption campaign that started around 2012, by presenting supporting evidence from the Chinese real estate sector
- We first document the heavy involvement of private real estate developers in paying bribes to local officials before the campaign
- We find that SOEs purchased more residential land parcels than private developers after the anti-corruption campaign
- The decreasing share of POEs at least partially result from corruption stereotype against private firms, which lead to efficiency loss