The SOE Premium and Government Support in China's Credit Market

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July 12, 2021

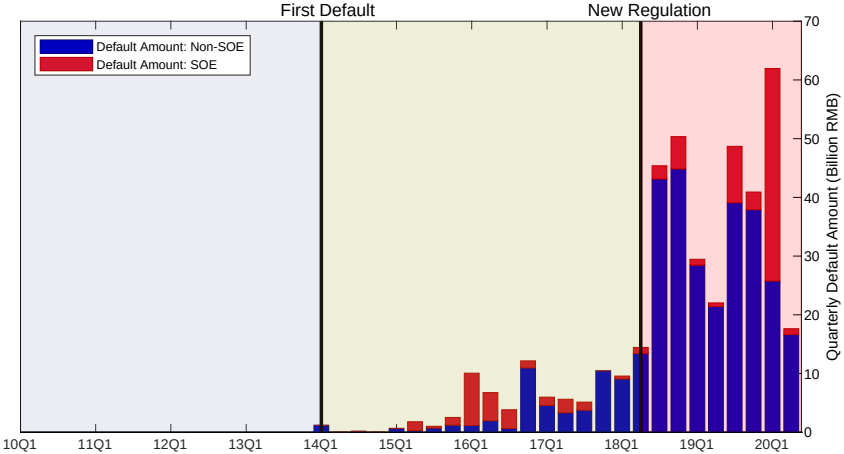
Joint work with Zhe Geng from SAIF

Motivation

- Credit misallocation with respect to state-owned enterprises (SOE):
  - Allocational inefficiency drags on aggregate growth (Hsieh and Klenow (2009)).
- Existing empirical evidences on credit allocation in China:
  - Widely cited: SOEs' preferential access to bank loans.
  - Not well documented: the actual magnitudes.
  - Interconnected debt financing channels: bank loans, bonds, shadow banking.
  - Changing government policies and credit conditions.
- Our paper uses bond pricing to uncover the extent of credit misallocation in China:
  - The SOE premium: difference in credit spreads between non-SOEs and SOEs.
  - Increased importance of the <u>extent</u> of government support in credit pricing.
  - Distortions to *(i)* price discovery and *(ii)* credit allocation.
  - The real impact of allocational inefficiency: profitability and financial health.

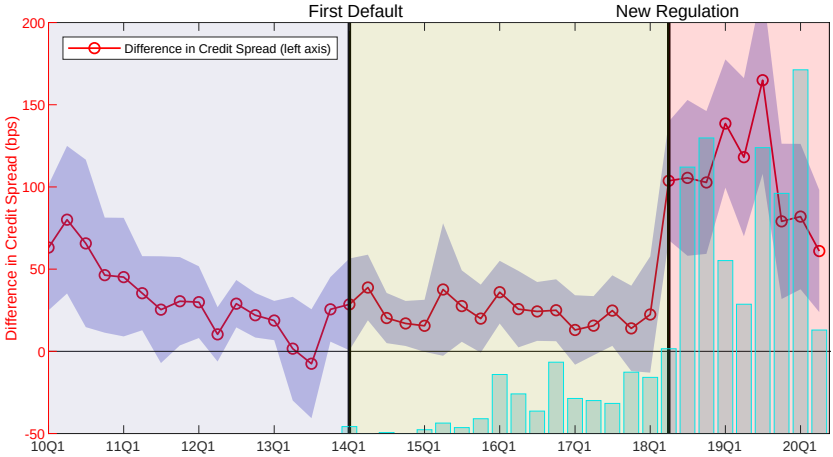
Background on China's Credit Market

- $0.1 trillion in 2008, $4.5 trillion in 2020, second only to the US ($7.3 trillion).
- Two landmark events: March 4, 2014 and Apr 27, 2018.



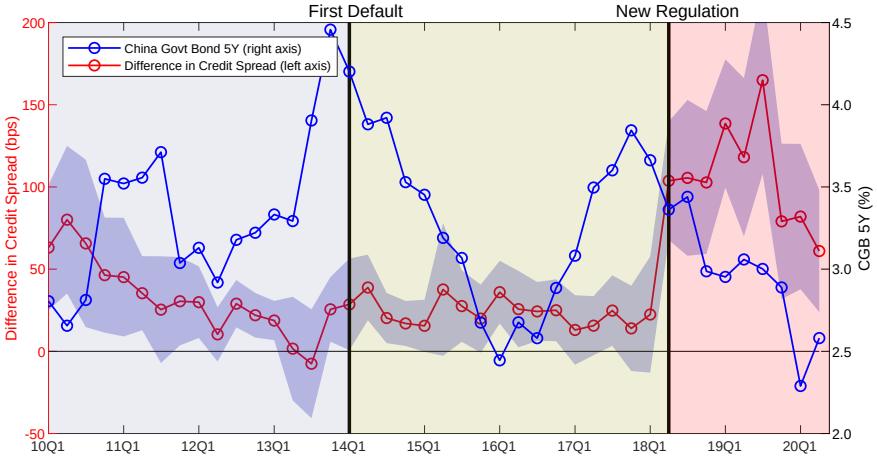
The Time-Varying SOE Premium

$$\text{CreditSpread}_{i,t} = a + \mathbf{b}\,\text{NSOE}_{i,t} + c\,\text{Rating}_{i,t} + \sum_k \text{Controls}^k_{i,t} + \epsilon_{i,t}$$

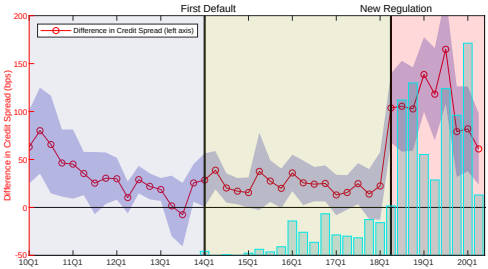


The SOE Premium and Credit Cycles

$$\text{CreditSpread}_{i,t} = a + \mathbf{b}\,\text{NSOE}_{i,t} + c\,\text{Rating}_{i,t} + \sum_k \text{Controls}^k_{i,t} + \epsilon_{i,t}$$



Behind the Explosive SOE Premium



- Government-led credit tightening:
  - Culminated with the release of "New Regulation on Asset Management."
  - Shrunk the financing and re-financing channels of corporate issuers.
- Since November 1, 2018, efforts from the government to reassure the private sector.

- Competing explanations for the explosive SOE premium:
  - **Government support:** Lacking government support, non-SOEs are perceived by investors as more vulnerable than their SOE counterparts.
  - **Credit quality:** Due to over-borrowing and over-expanding, non-SOEs are weak in fundamental strength and ill prepared for the credit contraction.

Our Contributions to the Literature

- The macro literature on credit misallocations and their impact on China's growth:
  - Brandt and Zhu (2000), Dollar and Wei (2007), Hsieh and Klenow (2009), Song, Storesletten, and Zilibotti (2011), Lardy (2019), Cong, Gao, Ponticelli, and Yang (2019), and Huang, Pagano, and Panizza (2020).
  - **Our paper:** Use credit market to uncover the opaque credit allocation, and document the severe segmentation in pricing post 2018Q2 and its real impact.
- The asset-pricing literature studying the information content of credit spreads:
  - Evidence from the US: Collin-Dufresne, Goldstein and Martin (2001), Campbell and Taksler (2003), Bao (2009), Bao, Pan, and Wang (2011), and others.
  - **Our paper:** The information content of credit spreads in China.
- Government support and credit spreads:
  - Berndt, Duffie, and Zhu (2019): Bailout probability and banks' credit spreads.
  - **Our paper:** Government support and credit spreads in China.

Growing Literature on China's Credit Market

- Overview: Hu, Pan and Wang (2019) and Amstad and He (2019).
- Government guarantee in
  - SOE bonds: Jin, Wang and Zhang (2018).
  - Chengtou Bonds: Bai and Zhou (2018) and Liu, Lyu and Fu (2017).
- Other topics:
  - Wang, Wei, and Zhong (2015) on yield-chasing retail investors.
  - Mo and Subrahmanyam (2019) on liquidity.
  - Chen, Chen, He, Liu and Xie (2019) on pledgeability.
  - Chen, He, and Liu (2020) on the growth of Chengtou bonds.
  - Ding, Xiong, and Zhang (2020) on issuance overpricing.
  - Gao, Huang, and Mo (2020) on credit enhancement.
  - Huang, Liu, and Shi (2020) on the determinants of short-term credit spreads.

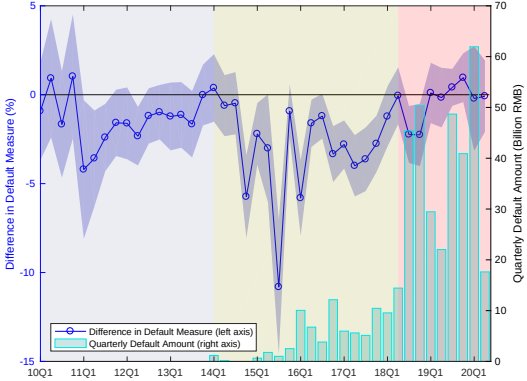
Key Measures: Credit Quality and Government Support

- **Default Measure (DM)**: inverse of Merton's distance to default (DD).
  - Measured quarterly, using firms' equity and balance-sheet information:

$$\mathrm{DM}_t = \mathrm{DD}_t^{-1} \quad \text{and} \quad \mathrm{DD} = \frac{\left(\mu - \frac{1}{2}\sigma_A^2\right) T - \ln\left(K/V_0\right)}{\sigma_A \sqrt{T}}$$

  - Issuers with higher DM: lower credit quality and more likely to default.
- **The Non-SOE Dummy (NSOE)**: divides firms into two solid blocks.
  - Defined by the affiliation, state or non-state, of the end-controller of the firm.
  - Government: central or local SASAC, government institutions, and SOEs.
- **Government Holdings (GovtHoldings)**: a continuous measure.
  - Government's equity ownership of a firm, measured at quarterly frequency.
  - Built from the ground up and has not been studied for credit pricing.
  - Informative both across and within the samples of SOEs and non-SOEs.

Default Measures

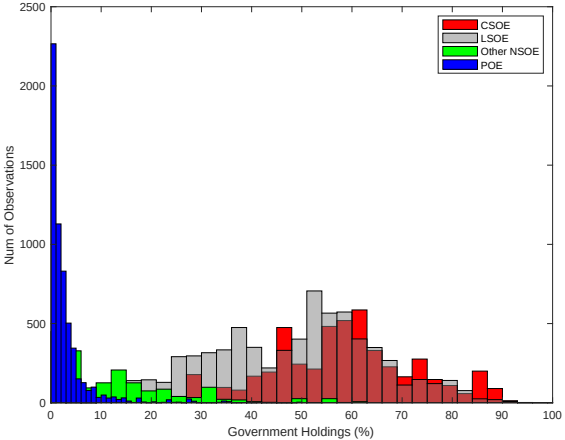


Default Measure: NSOE – SOE

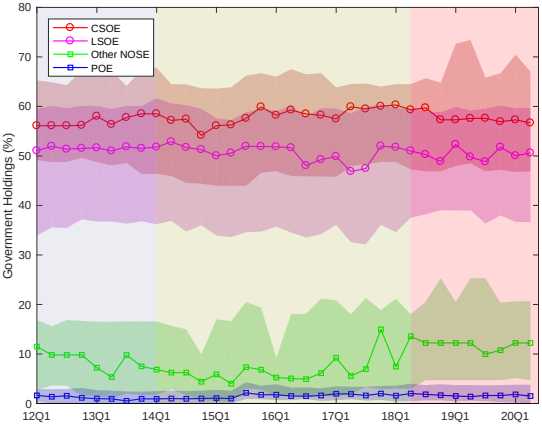
$$\text{DM}_{i,t} = a + \mathbf{b}\,\text{NSOE}_{i,t} + c\,\text{Rating}_{i,t} + \sum_k \text{Controls}^k_{i,t} + \epsilon_{i,t}$$

	DM (%)		
	Phase I	Phase II	Phase III
NSOE	-1.50***	-3.08***	-0.55
	[-2.95]	[-4.23]	[-0.91]
Rating	0.79*	-0.18	1.60***
	[1.94]	[-0.51]	[3.13]
Obs	4,344	10,072	5,350
Adj R^2	0.151	0.660	0.331

Government Holdings



Bond×Quarter Distribution



Quarterly Distribution

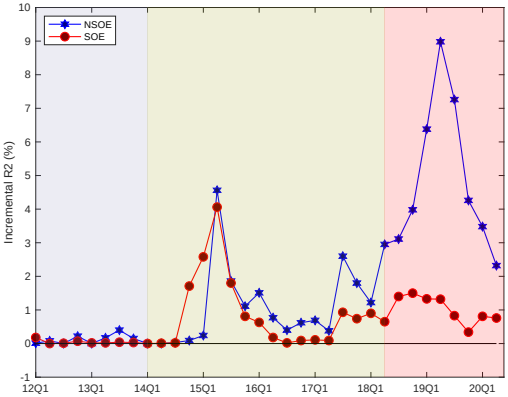
Explaining the SOE Premium: Credit Quality vs Government Support

$$\text{CreditSpread}_{i,t} = a + \mathbf{b}\,\text{NSOE}_{i,t} + \mathbf{c}\,\text{DM}_{i,t} + \mathbf{d}\,\text{GovtHoldings}_{i,t} + e\,\text{Rating}_{i,t} + \sum_k \text{Controls}^k_{i,t} + \epsilon_{i,t}$$

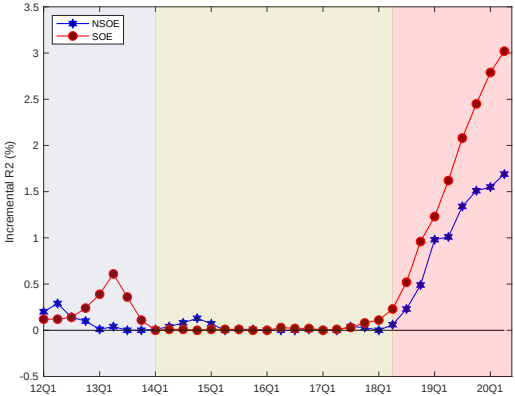
	Phase I			Phase II			Phase III		
NSOE	0.20*** [3.08]	0.20*** [2.95]	0.20** [2.46]	0.21*** [3.58]	0.25*** [4.32]	0.18* [1.68]	1.06*** [7.78]	1.09*** [7.76]	-0.09 [-0.48]
DM		-0.13 [-0.40]			1.26*** [4.52]			4.78*** [5.24]	
GovtHoldings			0.00 [0.01]			-0.08 [-0.37]			-2.81*** [-7.82]
Rating	0.51*** [6.39]	0.51*** [6.29]	0.51*** [6.23]	0.53*** [10.96]	0.53*** [11.23]	0.52*** [11.01]	1.24*** [4.84]	1.16*** [4.73]	1.20*** [4.66]
Obs	4,344	4,344	4,344	10,072	10,072	10,072	5,348	5,348	5,348
Adjusted R^2	0.543	0.543	0.543	0.468	0.476	0.468	0.385	0.402	0.398

The Content of Price Discovery Diverges

Default Measure, Incremental R2

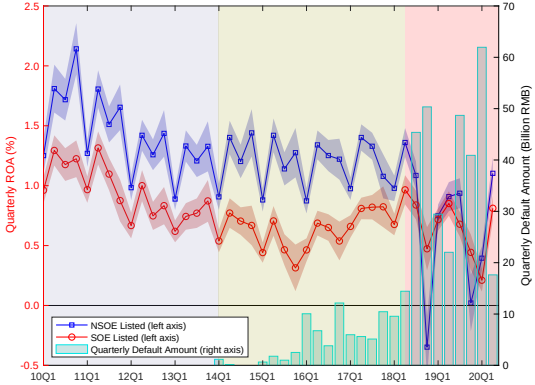


Government Holdings, Incremental R2



The Real Impact

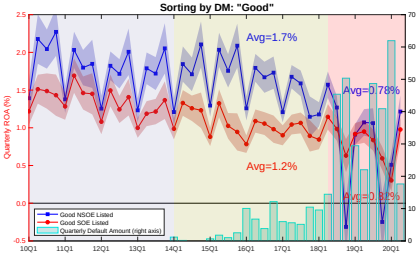
Return on Assets

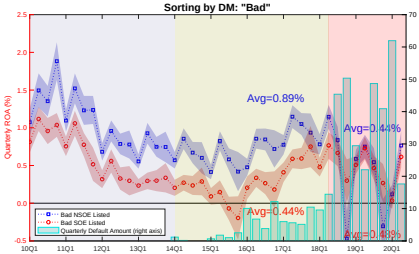


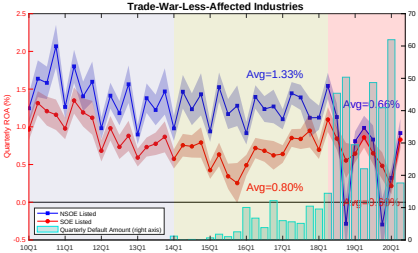
$$\text{ROA}_{i,t} = a + \mathbf{b}\,\text{NSOE}_{i,t} + c\,\text{EquitySize}_{i,t} + \epsilon_{i,t}$$

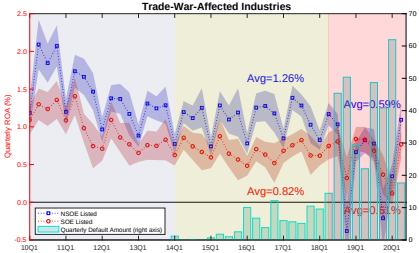
	Quarterly ROA (%)		
	Phase I	Phase II	Phase III
NSOE	0.56***	0.52***	0.13
	[7.76]	[8.83]	[1.07]
EquitySize	0.18***	0.19***	0.35***
	[6.00]	[6.33]	[8.69]
Constant	-3.54***	-4.33***	-7.40***
	[-4.85]	[-6.04]	[-9.76]
Obs	15,724	18,533	10,868
Adj R^2	0.065	0.063	0.095

The Real Impact









Conclusions and Remaining Questions

- From 2010-2020, we find a market of evolving and improving price discovery:
  - Post 2014Q1, credit quality becomes important in credit pricing.
  - Post 2018Q2, the extent of government support becomes more important.
    - The main driver behind the explosive SOE premium.
    - The beginning of the end: "faith" in the SOE label.
    - Distortions to price discovery with respect to credit quality.
- The real impact of the allocational inefficiency.
  - Post 2018Q2, non-SOEs lost their advantage over SOEs in profitability.
  - The explosive SOE premium is a reflection, not the unique cause.
- Remaining questions:
  - What is the exact nature of government support?
  - Call for a "unified" approach: extend the default measure to incorporate collateral and/or (implicit) state guarantee.
  - Decompose the SOE premium: credit risk and risk premium.