Macroprudential Policy and Spillovers:

Evidence from Chinese Corporate Credit in Tax Havens

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Overview

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Motivation

- Recent evidence on the role of tax havens as conduits for emerging market (EM) firms to access developed market capital:
  - The level of investment from the US to the BRICS in corporate bonds, after adjusted reallocation, increases from \$19 to \$126 billion in 2017 (\$3 to \$48 billion for China). (Coppola et al. 2021)
  - The story is not as simple as tax avoidance. (Buckley et al. 2015)
- Growing evidence on macroprudential policies and cross-border spillovers in emerging economies:
  - Macroprudential tools can accomplish specific domestic goals. However, they can generate unintended spillovers through international borrowing. (Forbes, 2020)

Research question

I examine corporate bonds issued by Chinese firms incorporated in tax havens and explore if there is a link between macroprudential regulation and Chinese corporate credit going through tax havens.

Does China's domestic credit tightening provoke spillovers of corporate debt in tax havens?

Literature

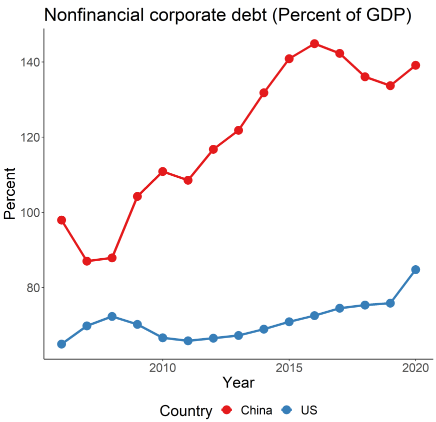
- The economic impact of tax havens: Coppola et al. 2021; Lane and Milesi-Ferretti, 2018
  $\Rightarrow$ Growing importance of financial centers in intermediating global capital flows
- Macroprudential regulations and leakages: Bhargava, Górnicka and Xie, 2021; Ahnert et al. 2021; Aiyar et al. 2014
  $\Rightarrow$ Cross country spillovers of macroprudential regulations on bank lending
- Offshore corporate bond issuance by emerging market economies: Bacchetta, Cordonier and Merrouche, 2021; Bruno and Shin, 2017; Caballero, Panizza and Powell, 2015
  $\Rightarrow$ Carry trade opportunity and discussions on capital controls
- Chinese state-owned enterprises (SOE): Geng and Pan, 2019; Yuan, Ouyang and Zhang, 2022
  $\Rightarrow$ SOE premiums and credit allocation

My research in the context of literature

Contributions:

- Additional firm-level evidence on the considerable amount of Chinese corporate capital flowing through tax havens
- Explorations of the motive of EM firms issuing offshore bonds in tax havens
- Evidence on spillovers of macroprudential regulation of domestic securities market

Context: expanding non-financial corporate debt



Data source: IMF Global Debt Database

- Chinese non-financial corporate debt has been surging since the early 2010s.
- One of the most notable development is the growing amount of bond financing.
- Domestic debt securities issued by non-financial companies increased from \$0.4 in 2010 to \$2.8 trillion in 2017.
- Second largest bond market after the US

Context: credit tightening in 2018

Policy event: “New Regulation on Asset Management” in April 2018

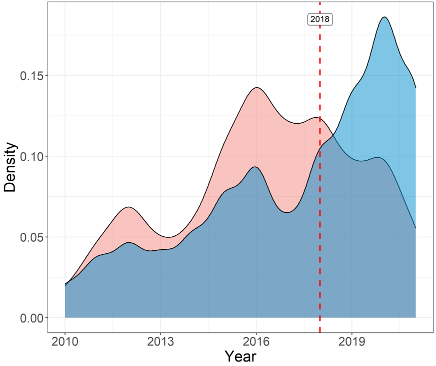
Main target: collective investment vehicles (asset management industry)

- It is a special-purpose entity to hold corporate bonds and repackage them as financial products for retail and institutional investors.
- They held most of China’s corporate bonds. However, they were very loosely regulated. Here

Measures are comprehensive, with a focus on reducing excessive risks in the asset management industry.

Context: state-owned vs. non-state-owned firms

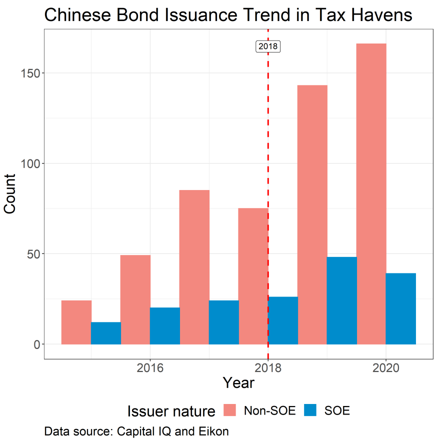
Chinese Onshore Bond Issuance Trend



Data source: CSMAR

- The market had a run on bonds issued by non-state owned firms (non-SOE). (Geng and Pan, 2019) Histogram
- Government support matters, not credit quality.
- Non-SOEs have experienced shrinkage in their financing channel.

Context: bond issuance in tax havens



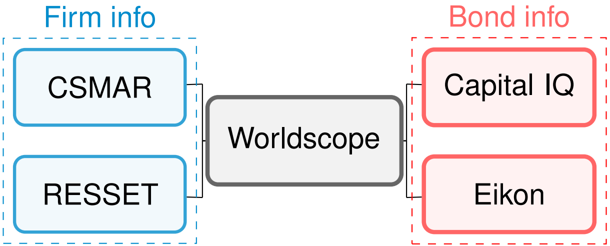
- Non-SOEs represent the majority of firms issuing bonds in tax havens, in contrast to the onshore bond market.
- The number of issuances almost doubled from 2018 to 2019.
- Non-SOEs tap into the international market to raise capital.

Data

Data

Databases:

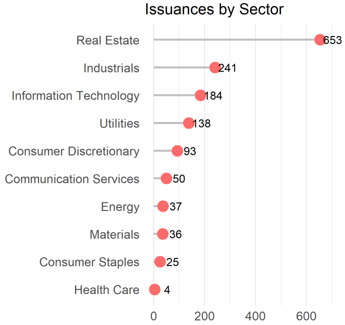
- Bond issuance in tax havens: Capital IQ and Eikon
- Balance sheet data: China Stock Market & Accounting Research Database (CSMAR) and RESSET.
- Firm identifiers: Worldscope (RIC, LEI, SEDOL, CUSIP6, ISIN, name, date of incorporation, website)
- Tax havens: Coppola et al. 2021 (excluding Hong Kong)

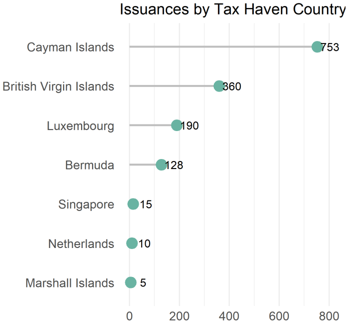


Data: bond issuance in tax haven

What does it look like? Supplementary Currency

- Issuances by Chinese firms: 1461 during 2015-2020 (about 28% of the total number of issuances 5131).
- This boils down to 555 firm-year observations. (A firm can issue multiple bonds during one year.)





Data source: Capital IQ and Eikon

Data: firm balance sheet data

I focus on **publicly listed firms** (non-financial) in China and Hong Kong for two reasons

1. Leakages are more pronounced for large firms. (Bhargava, Górnicka and Xie, 2021)
2. Data coverage is more comprehensive.

Balance sheet data is merged with bond issuance data:

- Merged based on firm identifiers: 408
- Merged manually: 71
- Cannot be merged manually: 76 (reasons: delisted, publicly listed outside China or Hong Kong, or not publicly listed.)

Final sample: 4457 firms, 26760 firm-year observations

Empirical Analysis

Identification strategy

- **Main strategy**: difference-in-difference (DID)
  - I intend to use policy change as a source of shock to the availability of market credit to SOE and non-SOE firms. Graph
- **Endogeneity of macroprudential policy** (work in progress)
  - Omitted variable bias: Factors that are correlated with regulations but not explicitly included in the empirical specification, such as other regulations that have taken place at the same time.

Empirical analysis

DID estimations:

1. **The effectiveness of the regulation** (onshore):
   - *Hypothesis 1*: I expect non-SOEs to reduce borrowing from domestic securities market, but not for risky non-SOEs nor for those with funding channels through tax havens.
   - *Hypothesis 2*: I expect non-SOEs to switch back to bank borrowing, but not for risky non-SOEs nor for those with funding channels through tax havens.
2. **Spillovers** (offshore):
   - *Hypothesis 3*: I expect non-SOEs to be more likely to issue bonds in tax havens after the macroprudential policy.

Baseline (onshore)

$$Y_{it} = \beta_1 NSOE_i \times Post_t + \delta_i + \delta_t + \Gamma X_{it} + \epsilon_{it} \quad (1)$$

- Y_{it}: ln(market borrowing)$_{\text{it}}$, ln(bank borrowing)$_{\text{it}}$ for firm *i* in year *t*
- $NSOE_i$: a dummy of one if a firm *i* is non-state-owned and zero otherwise
- $Post_t$: a dummy of one if it is the year of 2018 or afterward
- X_{it} control variables: ln(total assets)$_{\text{it}}$, ROA$_{\text{it}}$ (return on assets), tangibility$_{\text{it}}$, liability$_{\text{it}}$
- δ_i and δ_t: firm and year fixed effects
- Standard errors are clustered by firm and by year.

$$Y_{it} = \beta_2 NSOE_i \times Post_t \times FirmCharac_{it-1} + \delta_i + \delta_t + \Gamma X_{it} + \epsilon_{it} \quad (2)$$

Firm characteristic variable:

- Issuance in tax havens$_{\text{i,2015-2017}}$: dummy of one if a firm has issued bond in tax havens before the regulation (2015-2017)

Onshore: Borrowing from Market and Bank

	(1)	(2)	(3)	(4)
	ln(market borrowing)$_{it}$		ln(bank borrowing)$_{it}$	
$\text{NSOE}_i \times \text{Post}_t$	-0.917***	-0.974***	1.128***	1.177***
	(0.209)	(0.212)	(0.146)	(0.148)
$\text{Post}_t \times \text{Issuance in tax havens}_{i,2015\text{-}2017}$		-3.287**		-0.656
		(1.032)		(0.686)
$\text{NSOE}_i \times \text{Post}_t \times \text{Issuance in tax havens}_{i,2015\text{-}2017}$		2.087^{+}		-1.395^{+}
		(1.254)		(0.835)
N	30225	30225	28125	28125
adj. R^2	0.413	0.413	0.625	0.625
Controls	Yes	Yes	Yes	Yes
Fixed Effects (Firm, Year)	Yes	Yes	Yes	Yes

Standard errors in parentheses
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Offshore: Bond Financing in Tax Haven

$$D_{it} = \beta_1 NSOE_i \times Post_t + \delta_i + \delta_t + \Gamma X_{it} + \epsilon_{it}$$

- D_{it}: a dummy of one if a firm *i* issues bond in tax havens in year *t*
- $NSOE_i$: a dummy of one if a firm *i* is non-state-owned and zero otherwise
- $Post_t$: a dummy of one if it is the year of 2018 or afterward
- X_{it} control variables: ln(total assets)$_{it}$, ROA$_{it}$ (return on assets), tangibility$_{it}$, liability$_{it}$, ln(market borrowing)$_{it}$, ln(market borrowing)$_{it-1}$
- δ_i and δ_t: firm and year fixed effects
- Standard errors are clustered by firm and by year.

$$D_{it} = \beta_2 NSOE_i \times Post_t \times FirmCharac_{it-1} + \delta_i + \delta_t + \Gamma X_{it} + \epsilon_{it} \quad (2)$$

Firm characteristic variables:

- Real Estate$_i$: dummy of one if a firm is in real estate sector

Offshore: Bond Financing in Tax Haven

	(1)	(2)	(3)	(4)
	Issuance in Tax Haven$_{it}$			
$\text{NSOE}_i \times \text{Post}_t$	0.007*	0.009*	-0.008**	-0.011**
	(0.003)	(0.004)	(0.003)	(0.004)
$\text{Post}_t \times \text{Real Estate}_i$			0.048***	0.055***
			(0.008)	(0.010)
$\text{NSOE}_i \times \text{Post}_t \times \text{Real Estate}_i$			0.161***	0.187***
			(0.010)	(0.012)
N	30979	23097	30979	23097
adj. R^2	0.314	0.335	0.349	0.371
Controls	No	Yes	No	Yes
Fixed Effects (Firm, Year)	Yes	Yes	Yes	Yes

Standard errors in parentheses
$^{+}\ p < 0.10$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Final remarks

Preliminary findings:

- Based on DID estimations, it is likely that the regulation is effective at reducing non-SOEs' corporate debt level.
- The macroprudential policy in 2018 has potentially provoked non-SOEs to issue bonds in tax havens.
- The spillover effects are especially significant for firms in the real estate sector.

Questions:

- What are the implications for firms' productivity and the overall financial stability?

Thank You!

Appendix

Investor base of corporate bond

Investor Base of Corporate Debt Securities by Type in 2016					
	Corporate Bonds	Enterprise Bonds	Medium-Term Notes	Negotiable Certificates of Deposit	Commercial Bank Bonds
Banks	18	29	31	55	19
Security companies	12	3	2	1	17
Collective investment schemes	**64**	**62**	**62**	**33**	**59**
Insurance companies	7	5	5	0	5
Clearing houses	0	1	0	0	0
Other nonbank financial institutions	0	1	0	11	0

Source: Miao, 2019, data is originally from Shanghai Stock Exchange; China Central Depository and Clearing Co., Ltd; and Shanghai Clearing House Co.

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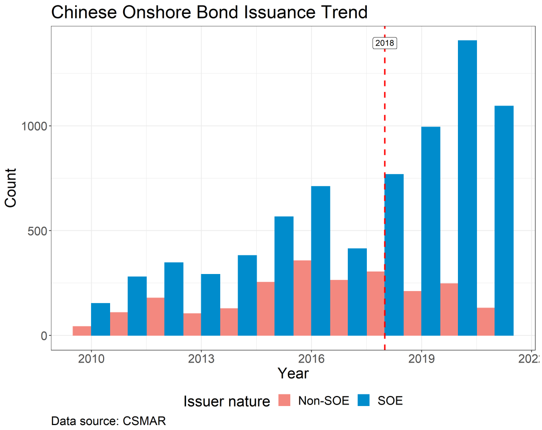
Chinese onshore bond issuance trend (histogram)



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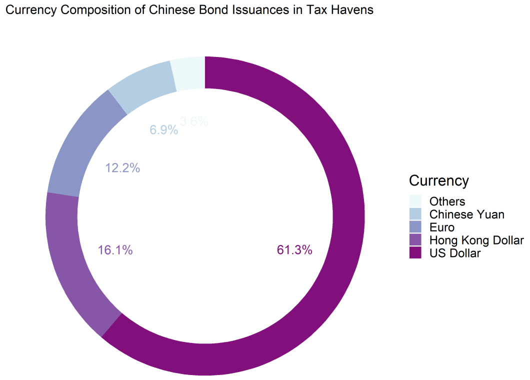
Chinese offshore bond issuance: Currency composition



Data source: Capital IQ and Eikon

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Data: supplementary details

How to get the sample of bonds issued by Chinese firms in tax havens?

1. Obtain bonds issued by firms incorporated in tax haven countries from CIQ and Eikon
2. Merge the two sub-samples based on firm identifiers (6 rounds of merging)
3. Identify Chinese firms (ultimate parent country, company name, company name in native language, website)

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