# Pledgeability and Asset Prices: Evidence from the Chinese Corporate Bond Markets

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*The views expressed in this presentation are my own and do not necessarily reflect those of the BIS.*

# Pledgeability premium

$$P_{i,t} = \underbrace{\mathbb{E}_t[M_{t+1}Y_{i,t+1}]}_{\text{fundamental}} + \underbrace{\lambda_t(1 - h_{i,t})}_{\text{pledgeability premium}}$$

▶ Importance: collateral channel of monetary policy, TALF, (T)LRTO, etc
▶ Estimation challenge: endogeneity
▶ This paper achieved identification through
  ▶ policy shock - exogenous variation in haircuts
  ▶ dual-listing feature of certain Chinese bonds - further purge endogeneity

# Policy shock

On December 8, 2014 EX market suspended the repo eligibility of all enterprise bonds rated below AAA

| | AAA | AA+&AA | AA- |
|---|---|---|---|
| EX | | | |
| before | ✓ | ✓ | ✗ |
| after | ✓ | ✗ | ✗ |
| IB | | | |
| before | ✓ | ✓ | ✓ |
| after | ✓ | ✓ | ✓ |
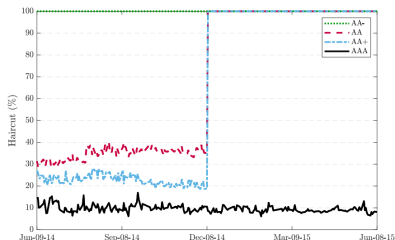


- ▶ a surprise to markets
- ▶ change only applied to a subset of bonds: treatment group and control group

# Dual-listed bonds

A large fraction of enterprise bonds are dual-listed (78% by the end of 2014).

|    | market participants | repo | liquidity |
|----|---------------------|------|-----------|
| EX | mutual funds, security firms, insurance companies, corporate and retail investors | standard contracts; CSDC as CCP | small size; high freq. |
| IB | mutual funds, security firms, insurance companies, commercial banks | bespoke contracts; CCDC as 3rd party agent | large size; low freq |

▶ same marginal investors ⇒ identical pricing for fundamental
▶ different repo practice and liquidity⇒ exchange premium
▶ limit to arbitrage: trading frictions

# Exchange premium

- $\text{EXpremium}_{i,j,t} \equiv P^{\text{EX}}_{i,j,t} - P^{\text{IB}}_{i,j,t} = \lambda(h^{\text{IB}}_{i,j,t} - h^{\text{EX}}_{i,j,t}) + \epsilon^{\text{EX}}_{i,j,t} - \epsilon^{\text{IB}}_{i,j,t}$
- $h^{\text{IB}}$ and $\epsilon^{\text{EX/IB}}$ are not observables
- Assuming $h^{\text{IB}}_{i,j,t} = h^{\text{IB}}_i + h^{\text{IB}}_j + h^{\text{IB}}_t$ and similar structure for $\epsilon^{\text{EX/IB}}_{i,j,t} \Rightarrow$ time-variation not related to $h^{\text{EX}}$ is the same across different bonds (treated vs control).
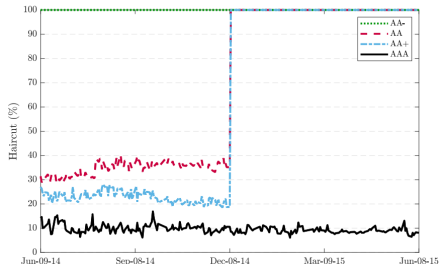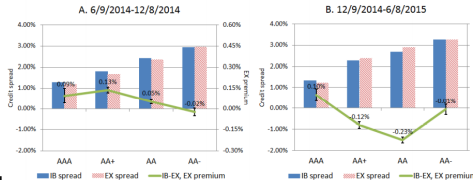
$$\text{EXP}_{\text{treated},t} - \text{EXP}_{\text{control},t} = \lambda(h^{\text{EX}}_{control,t} - h^{\text{EX}}_{treated,t}) + \text{bond/rating fixed effec}$$



- Approximately

$$\lambda \approx \frac{\Delta(\text{EXP}_{\text{treated}} - \text{EXP}_{\text{control}})}{\Delta(h^{\text{EX}}_{\text{control}} - h^{\text{EX}}_{\text{treated}})}$$

$$\approx 38.5 \text{ bps}$$

- 2SLS: **39 bps** - lower bound
- possible cross-market arbitrage

# Matched EX AAA bond

$$P^{\text{EX}}_{\text{treated},t} - P^{\text{EX}}_{\text{matched},t} = \lambda(h^{\text{EX}}_{\text{matched},t} - h^{\text{EX}}_{\text{treated},t}) + \text{bond/rating fixed effect}$$

- ▶ Approximately

$$
\begin{aligned}
\lambda &\approx \frac{\Delta(y^{\text{EX}}_{\text{treated}} - y^{\text{EX}}_{\text{matched}})}{\Delta(h^{\text{EX}}_{\text{treated}} - h^{\text{EX}}_{\text{matched}})} \\
&\approx 90 \text{ bps}
\end{aligned}
$$

- ▶ 2SLS: **85 bps** - upper bound
- ▶ treated bonds:negative information revealed by the shock $\rightarrow y^{EX}_{\text{treted}}|_{\text{after}} \uparrow$
- ▶ matched bonds: low "beta" and flight-to-liquidity $\rightarrow y^{EX}_{\text{matched}}|_{\text{after}} \downarrow$



Panel A: Differences in haircuts



Panel B: Differences in credit spreads
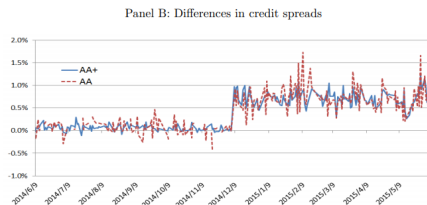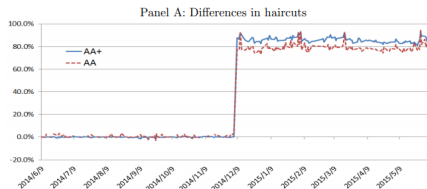
# Comment

- $\hat{\lambda}$ between 39 and 85 bps per 100% change in haircuts

- A great paper with very well designed identification strategy by
    - utilizing a policy shock, and
    - exploiting dual-listing feature of certain bonds in Chinese bond markets

- My comments are mainly about other possible changes introduced by the shock and their implications for the estimating $\lambda$
    - raising "price" of pledgeability $\lambda$
    - re-pricing of implicit government guarantee
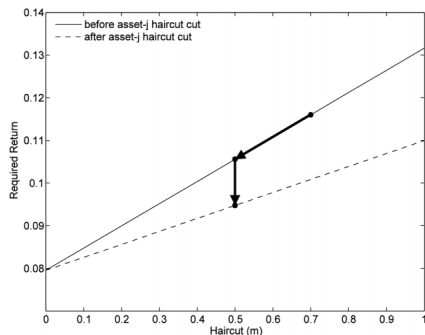
# The shock and $\lambda$



**Fig. 5.** Haircut cut for one asset

(Ashcraft et al, 2010)

The shock is likely to raise $\lambda$

- ▶ increase/decrease haircuts for certain assets $\Rightarrow$ tighten/relax funding constraints $\Rightarrow$ increase/decrease $\lambda$ (Ashcraft et al, 2010)
- ▶ non-negligible impact given 75% of enterprise bonds deposited in the two exchanges lost their pledgeability

Change in yield captures both $\Delta h$ and $\Delta \lambda$

- ▶ $\Delta y = h^{\mathrm{b}} \Delta \lambda + \lambda^{\mathrm{a}} \Delta h$

## Implications of higher $\lambda$

▶ Exchange premium analysis:

$$\Delta\text{EXP} \approx \lambda^a \Delta(h^{IB} - h^{EX}) + (h^{b,IB} - h^{b,EX})\Delta\lambda$$

  ▶ introduce rating-dependent time-variation in exchange premium
  ▶ AAA might be a better control in that sense

▶ Matched bond analysis: measures $\lambda^a$ without much bias (conditional on good matching)

$$
\begin{aligned}
\Delta(y_{\text{treated}}^{\text{EX}} - y_{\text{matched}}^{\text{EX}}) \quad &\approx \quad \lambda^a \Delta(h_{\text{treated}}^{\text{EX}} - h_{\text{matched}}^{\text{EX}}) \\
&+ \quad \underbrace{(h_{\text{treated}}^{\text{b,EX}} - h_{\text{matched}}^{\text{b,EX}})}_{\approx 0} \Delta\lambda
\end{aligned}
$$

# Interpretation of $\hat{\lambda}$

- ▶ Key for policy makers - how much can we generalise the 39 - 85 basis points impact?
- ▶ How about impacts of other similar shocks?
  - ▶ On April 7 2017, CSDC announced that for newly-issued bonds, only those rated at AAA or above (prior AA or above) were eligible collateral in the exchange market. (Wang and Xu, 2019)
  - ▶ On June 1 2018, PBOC announced the inclusion of corporate bonds and some financial bonds rated AA+ and AA eligible as collateral for financial institutions to borrow from Medium-Term Lending Facilities in the interbank market. (Fang et al, 2020)
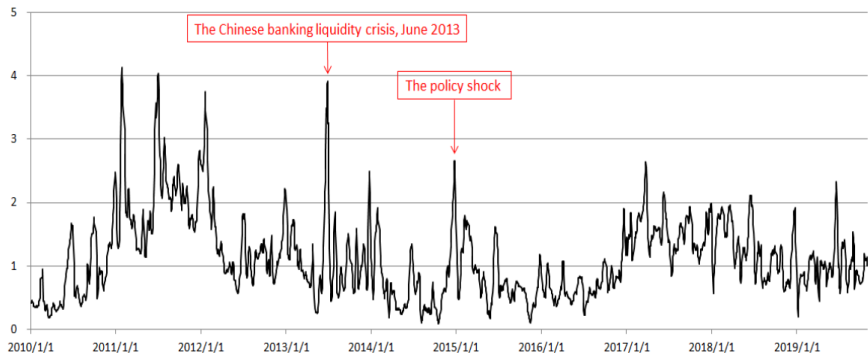
# the shock and implicit government guarantee

► Background: 2009 4trn RMB stimulus package $\Rightarrow$ 2013/14 rapid expansion of MCB in $\Rightarrow$ a series of policies to control local government debt problem

   ► MCB: issued by LGFVs which are state-owned enterprises to support the infrastructure investment

   ► a lion share in enterprise bonds: 67% by the end of 2014; 87% in the sample

- Announcement: while removal of AA+/AA bonds from eligible collateral pool applied to all enterprise bonds, concerns of MCBs were mentioned specifically

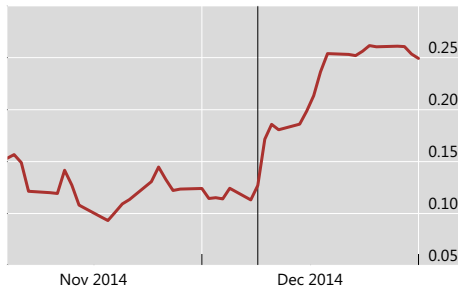- ⇒ could be a shock triggering re-pricing of implicit government guarantee



Figure: MCB - non MCB, AAA

# Implications of re-pricing of implicit government guarantee

- ▶ exchange premium analysis
  - ▶ retail investors: less demand ⇒ change in exchange premium unrelated to haircut changes (Liu et al, 2019)
  - ▶ reassessment of counter-party risk in the interbank market?
- ▶ matched bond analysis
  - ▶ lower rating bonds were likely to be more affected ⇒ exacerbate upward bias
- ▶ split sample to MCBs vs non MCBs?

## Other comments

▶ Partial derivative ($\lambda$) vs total derivative: the channel of
  ▶ higher haircut⇒ lower funding liquidity ⇒ lower market liquidity ⇒ higher yields
  ▶ higher haircut⇒higher yield/borrowing cost⇒ higher default risk ⇒ higher yields

  may be worth exploring...

▶ Flight to liquidity or selling liquidity? The AAA spread (w.r.t government bond yields) narrowed 15(EX)/24(IB) bps after the event...