

# Hidden Non-Performing Loans in China

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# AMCs for bank clean-up

- Asset Management Companies (AMCs): designated entities to purchase and resolve banks' troubled assets
- Started in late 1980s and early 1990s in USA and Sweden
- Used widely in developed and developing economies
  - USA, UK, Germany, Spain, ...
  - China, Korea, Malaysia, Indonesia, Turkey, Nigeria, ...
- Latest adoptions in response to COVID-related distressed debt

# AMCs in China

- 4 national AMCs from the late 1990s.
- Local AMCs could be established as designated institutions to acquire NPLs from banks since 2012.
- Banks' offloading NPLs through AMCs face few restrictions and are widespread.
- Compared to other countries which had more targeted and short-term uses, China's setting permits both time-series and cross-sectional analyses of the AMC model of NPL resolution.

# Introduction

## Research questions:

1. Do NPL transactions reflect orderly resolution of troubled assets?
2. What are the implications for financial stability?

## Findings:

1. NPL transactions appear to be concealment rather than orderly resolution
  - Banks still exposed to the NPLs even though the NPLs are removed from their balance sheets.
2. Recognizing hidden NPLs implies true NPLs are understated by 2-4x.

# Related literature

- **Measurement and resolution of problem loans:** Demirgüç-Kunt (1989); Cole and White (2012); DeYoung and Torna (2013); Jimenez, Ongena, Peydro, and Saurina (2017)

*This paper:* *Hidden NPLs are prevalent & should be recognized.*

- **Policy recommendation of designated resolution entities:** Geithner (2009); Avgouleas and Goodhart (2017)
- This paper:* *Contrary to the policy objectives, the designated resolution specialists cooperate with banks.*

- **Effectiveness of financial regulation:** Acharya, Schnabl, and Suarez (2013); Begley, Purnanandam, and Zheng (2017); Flanagan and Purnanandam (2019); Nadauld and Sherlund (2013); Du, Tepper, and Verdelhan (2018)

*This paper:* *A novel mechanism of regulatory arbitrage—the concealment of NPLs in China.*

# Management of NPLs in China

- 4 National AMCs were created to clean up the Big 4 state-owned commercial banks in the late 1990s and early 2000s.
- In 2012, the Ministry of Finance and the China Banking Regulatory Commission allowed the establishment of local AMCs to acquire NPLs from banks and resolve NPLs.
- Banks transfer NPL packages ( $\geq 10$  NPLs) to local AMCs. The transferred NPLs are removed from banks' balance sheets and deemed "disposals".
- All banks have access to this disposal opportunity → widespread use by both large and small banks
- By the end of 2019, 59 local AMCs were set up.

# Data

- Data on NPL transactions from a large local AMC
- Sample Period: Q3 2014 – Q4 2019
- Total number of banks: 82
  - All 4 of the Big 4 state-owned commercial banks
  - 8 out of the 12 joint stock banks
  - 70 smaller, regional banks
- Geographical distribution of bank headquarters:
  - Tier 1 city: 7
  - Tier 2 city: 12
  - Others: 63

# Plausible scenarios

1. **Orderly market-based resolution**: AMCs acquire NPLs from banks at risk-based fair prices and work to resolve the NPLs.
  - Market mechanism for price discovery; intended objective of the 2012 deregulation of local AMCs
  - Risk transfer from banks to AMCs and potentially other market participants
2. **Government-backed resolution**: AMCs can act as agents of the governments to bail out the troubled banks.
  - Government bail-out
  - Risk transfer from banks to AMCs and potentially other government entities
3. **Concealment**: Banks devise strategies to conceal their NPLs without proper resolution; risks of NPLs do not get resolved.
  - Regulatory arbitrage
  - Banks may retain risk exposure to the NPLs

Aspect of NPL transactions	Prediction of Orderly market-based resolution	Prediction of Government-backed resolution	Prediction of Concealment	Empirical results
1. NPL transaction price	Risk-based pricing: haircut is large, increasing in credit risk, & decreasing in bank health	Can be higher than risk-based fair prices	Can be higher than risk-based fair prices	
2. Who services NPLs?	AMCs	AMCs	Banks	
3. Who supply funds for the AMCs?	Debt holders & equity holders of the AMCs	Government	Banks	
4. Does the AMC sell NPLs to someone else?	Unlikely	Unlikely	Re-sales are prevalent.	
5. Price in the re-sales	At a discount	At a discount	At a premium (to compensate the AMC)	
6. In re-sales, who buy from the AMC?	Can be anyone	Government entities	Banks' affiliates	
7. Market reaction to banks' transferring NPLs	Positive price response	Positive price response	Null or negative price response	

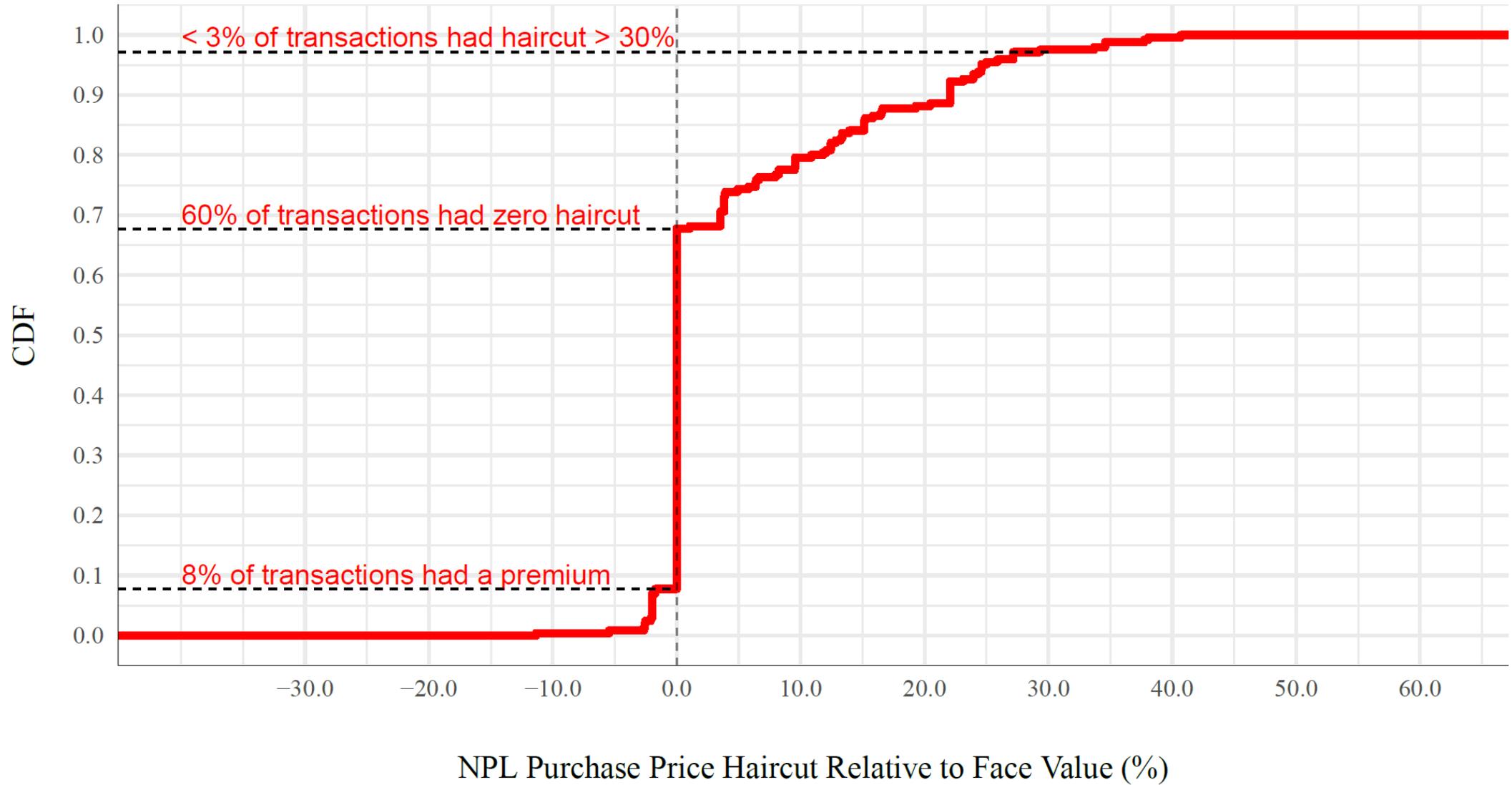
# Characteristics of NPL transactions

Variables:	Mean	S.D.	Min	P25	Median	P75	Max
Size (bn)	0.642	0.988	0.002	0.090	0.264	0.686	5.392
Number of loans in the NPL package (N)	115	45.8	42	78	108	148	232
Number of borrowers in the NPL package (N)	86.5	37.7	30	52	82	114	180
Average delinquency (months)	53.1	14.0	11	42	55	64	98
NPL Sale Haircut (%)	5.10	10.1	-11.3	0.000	0.000	6.40	6.50
Annual commission fees (%)	0.542	0.297	0.300	0.300	0.500	1.00	1.00
AMC Transaction Funding from Bank (dec)	1	0	1	1	1	1	1
NPL Collection Delegation to Bank (dec)	1	0	1	1	1	1	1

Compared with:

1. Taobao NPL auctions in China in the same period have **20%-60%** haircut
2. Banks typically sell ~90 days past due credit assets in the US at **40-90%** haircut
3. Cooperative Credit Purchasing Company (CCPC) in Japan purchased NPLs backed by real estate at **62%** haircut from 1992-98.

Empirical CDF of NPL Purchase Haircuts



# Haircut does not reflect credit risks

Dependent Variable:	Haircut of NPL Sale Relative to Loan Face Value			
	(1)	(2)	(3)	(4)
NPL Quality Measure =	Num. Months Delinquent	Share of Loans to SOEs	Share of Secured Loans	Share of Loans with Maturity > 1 year
NPL Quality Measure	-0.002** (-2.50)	-0.003 (-0.03)	0.039 (0.60)	-0.051 (-0.20)
Capital Ratio <sub>t-1</sub>	0.353*** (10.74)	0.352*** (9.54)	0.360*** (9.70)	0.351*** (9.52)
Violation <sub>t-1</sub>	0.0420 (1.30)	0.0251 (0.80)	0.025 (0.77)	0.0240 (0.78)
N	159	159	159	159
R <sup>2</sup>	0.599	0.565	0.566	0.565

Aspect of NPL transactions	Prediction of Orderly market-based resolution	Prediction of Government-backed resolution	Prediction of <b>Concealment</b>	Empirical results
<b>1. NPL transaction price</b>	<b>Risk-based pricing: haircut is large, increasing in credit risk, &amp; decreasing in bank health</b>	<b>Can be higher than risk-based fair prices</b>	<b>Can be higher than risk-based fair prices</b>	<b>Most transactions have 0 haircut, some even at a premium. Haircut decreases with delinquency and increases with bank health.</b>
2. Who services NPLs?	AMCs	AMCs	<b>Banks</b>	
3. Who supply funds for the AMCs?	Debt holders & equity holders of the AMCs	Government	<b>Banks</b>	
4. Does the AMC sell NPLs to someone else?	Unlikely	Unlikely	Re-sales are <b>prevalent.</b>	
5. Price in the re-sales	At a discount	At a discount	<b>At a premium (to compensate the AMC)</b>	
6. In re-sales, who buy from the AMC?	Can be anyone	Government entities	<b>Banks' affiliates</b>	
7. Market reaction to banks' transferring NPLs	Positive price response	Positive price response	<b>Null or negative price response</b>	

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AMC Transaction Funding from Bank (dec)	1	0	1	1	1	1	1
NPL Collection Delegation to Bank (dec)	1	0	1	1	1	1	1

# Financing of NPL transactions

- The AMC keeps a detailed record for every single NPL transaction for how the NPL transaction was financed.
- Financing is traced exactly back to the originating banks. The form changes after a July 2019 regulator's ruling banning direct loans from banks to AMCs to finance NPL transactions

Panel A: Before July 2019 Reform (N = 208)

Variables:	Mean	S.D.	Min	P25	Median	P75	Max
Loan (dec)	0.685	0.465	0	0	1	1	1
Via Trust Company (dec)	0.147	0.354	0	0	0	0	1
Via Security Company (dec)	0.125	0.331	0	0	0	0	1
Others (dec)	0.043	0.204	0	0	0	0	1

Panel B: After July 2019 Reform (N = 49)

Variables:	Mean	S.D.	Min	P25	Median	P75	Max
Loan (dec)	0	0	0	0	0	0	0
Via Trust Company (dec)	0.510	0.505	0	0	1	1	1
Via Security Company (dec)	0.367	0.487	0	0	0	1	1
Others (dec)	0.122	0.331	0	0	0	0	1

# Unhealthy banks tend to use direct loans

Panel C: Direct Loans and Bank Characteristics in the Pre-July 2019 Sample

Dependent Variable:		1 {Source of Funds from Bank is a Direct Loan}			
	(1)	(2)	(3)	(4)	
NPL Quality =	Num. Months Delinquent	Share of Loans to SOEs	Share of Secured Loans	Share of Loans with Maturity > 1 year	
NPL Quality	0.004 (1.11)	0.371 (0.61)	0.133 (0.25)	0.853 (0.75)	
Capital Ratio <sub>t-1</sub>	-0.456** (-2.30)	-0.533*** (-2.83)	-0.511** (-2.26)	-0.523*** (-2.68)	
Violation <sub>t-1</sub>	0.595** (2.56)	0.560** (2.58)	0.553** (2.59)	0.575** (2.60)	
N	159	165	165	165	
R <sup>2</sup>	0.606	0.569	0.567	0.569	

Aspect of NPL transactions	Prediction of Orderly market-based resolution	Prediction of Government-backed resolution	Prediction of <b>Concealment</b>	Empirical results
1. NPL transaction price	Risk-based pricing: haircut is large, increasing in credit risk, & decreasing in bank health	Can be higher than risk-based fair prices	Can be higher than risk-based fair prices	Most transactions have <b>0 haircut</b> , some even at a premium. <b>Haircut decreases with delinquency and increases with bank health.</b>
<b>2. Who services NPLs?</b>	<b>AMCs</b>	<b>AMCs</b>	<b>Banks</b>	<b>All transactions have collection delegation terms that delegate the banks to continue collecting the NPLs.</b>
<b>3. Who supply funds for the AMCs?</b>	<b>Debt holders &amp; equity holders of the AMCs</b>	<b>Government</b>	<b>Banks</b>	<b>Banks.</b> The dominant form changes from direct lending to indirect lending following the July 2019 regulation that banned direct lending.
4. Does the AMC sell NPLs to someone else?	Unlikely	Unlikely	Re-sales are prevalent.	
5. Price in the re-sales	At a discount	At a discount	At a premium (to compensate the AMC)	
6. In re-sales, who buy from the AMC?	Can be anyone	Government entities	Banks' affiliates	
7. Market reaction to banks' transferring NPLs	Positive price response	Positive price response	Null or negative price response	

# Ultimate owners and re-sale of NPLs

## Panel A: Ultimate Owners

Variables:	Mean	S.D.	Min	P25	Median	P75	Max
Time of NPL with the AMC (months)	21.0	7.60	6	18	18	24	48

### NPL Package Resolution:

Go to a third party (dec)	0.741	0.439	0	0	1	1	1
Stay with the AMC (dec)	0.159	0.367	0	0	0	0	1
Change to another AMC (dec)	0.099	0.299	0	0	0	0	1
Re-syndication of the NPL (dec)	0	0	0	0	0	0	0
Pre-arranged Third Party Identity (dec)	0.051	0.220	0.000	0.000	0.000	0.000	1.000

## Panel B: Re-Sale Transactions and Third-Party Identities

Variables:	Mean	S.D.	Min	P25	Median	P75	Max
NPL Package Resale Premium (%)	1.00	0.70	0.15	0.50	0.90	1.50	3.00
Third Party in Same City as Bank (dec)	1.00	0.00	1.00	1.00	1.00	1.00	1.00

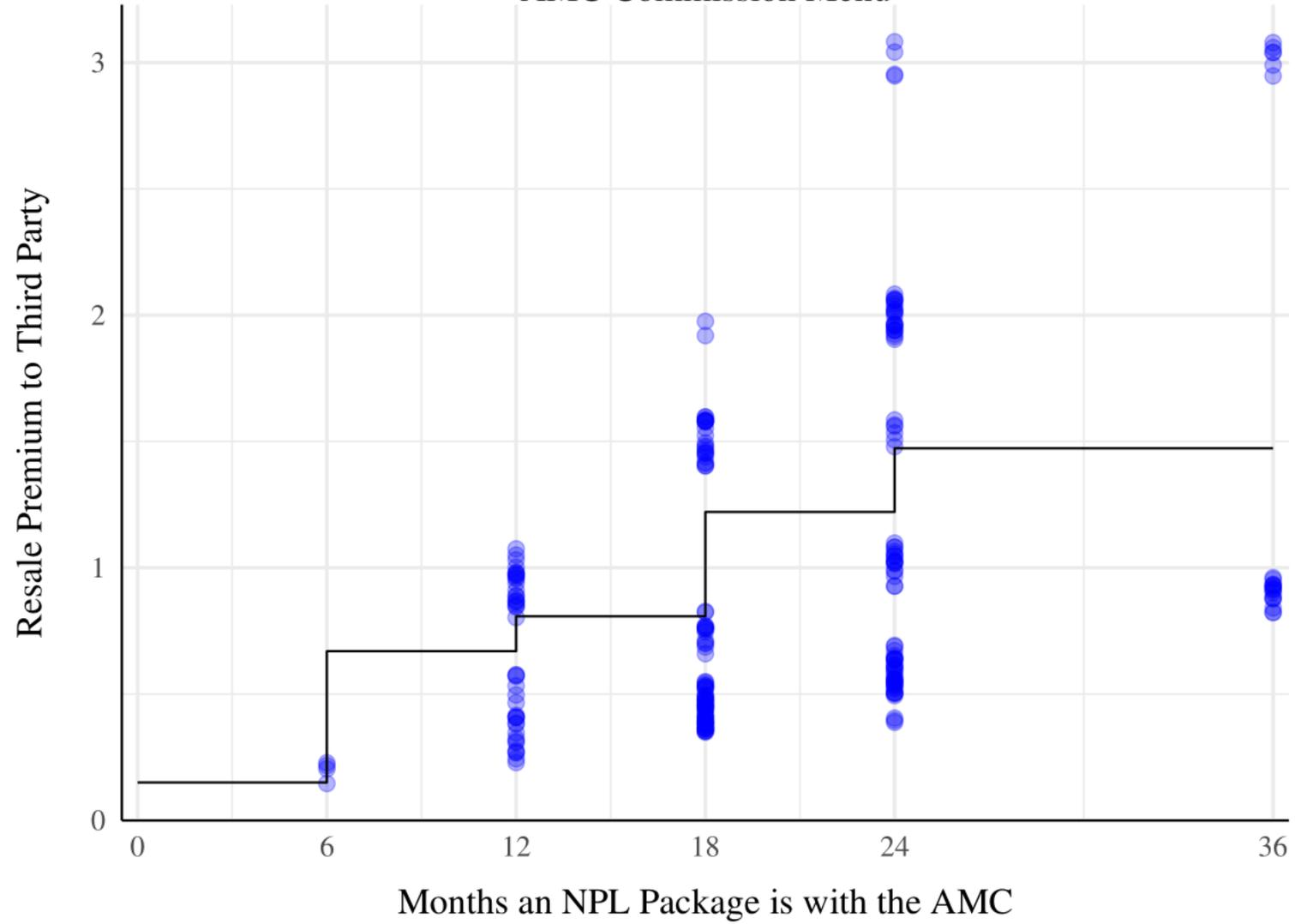
### Third Party Type:

Borrower (dec)	0.953	0.213	0.000	1.000	1.000	1.000	1.000
Discounted Bill User (dec)	0.034	0.181	0.000	0.000	0.000	0.000	1.000
Others (dec)	0.014	0.116	0.000	0.000	0.000	0.000	1.000

# Higher re-sale premium for longer stays

Dependent Variable:	Re-Sale Premium (%)			
	(1)	(2)	(3)	(4)
NPL Quality =	Num. Months Delinquent	Share of Loans to SOEs	Share of Secured Loans	Share of Loans with Maturity > 1 year
Num. of Month NPL Stays with AMC	0.002*** (5.33)	0.002*** (6.26)	0.002*** (5.80)	0.002*** (6.13)
NPL Quality	-0.0002 (-0.09)	0.230 (0.54)	0.236 (-0.94)	1.068 (1.18)
Haircut in Initial NPL Transaction	0.003 (0.53)	0.003 (0.48)	0.003 (0.50)	0.002 (0.39)
Capital Ratio <sub>t-1</sub>	0.033 (0.16)	0.026 (0.11)	-0.010 (-0.05)	0.047 (0.21)
Violation <sub>t-1</sub>	0.074 (0.66)	0.083 (0.69)	0.069 (0.64)	0.098 (0.80)
N	135	135	135	135
R <sup>2</sup>	0.594	0.591	0.596	0.596

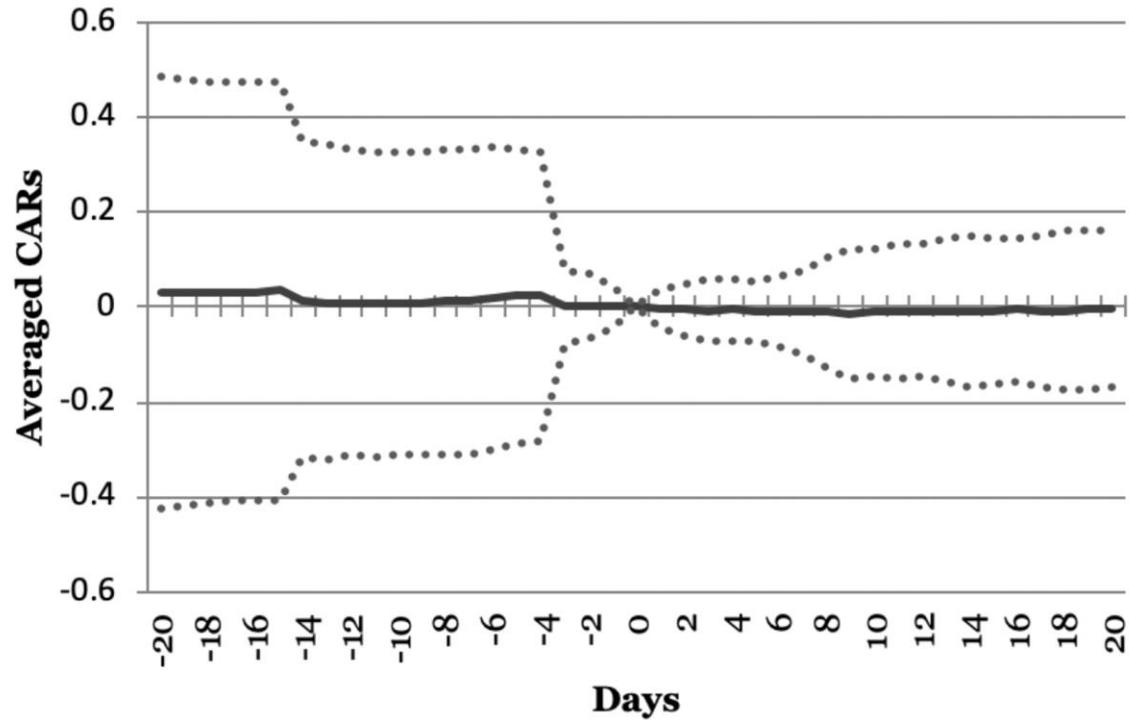
### AMC Commission Menu



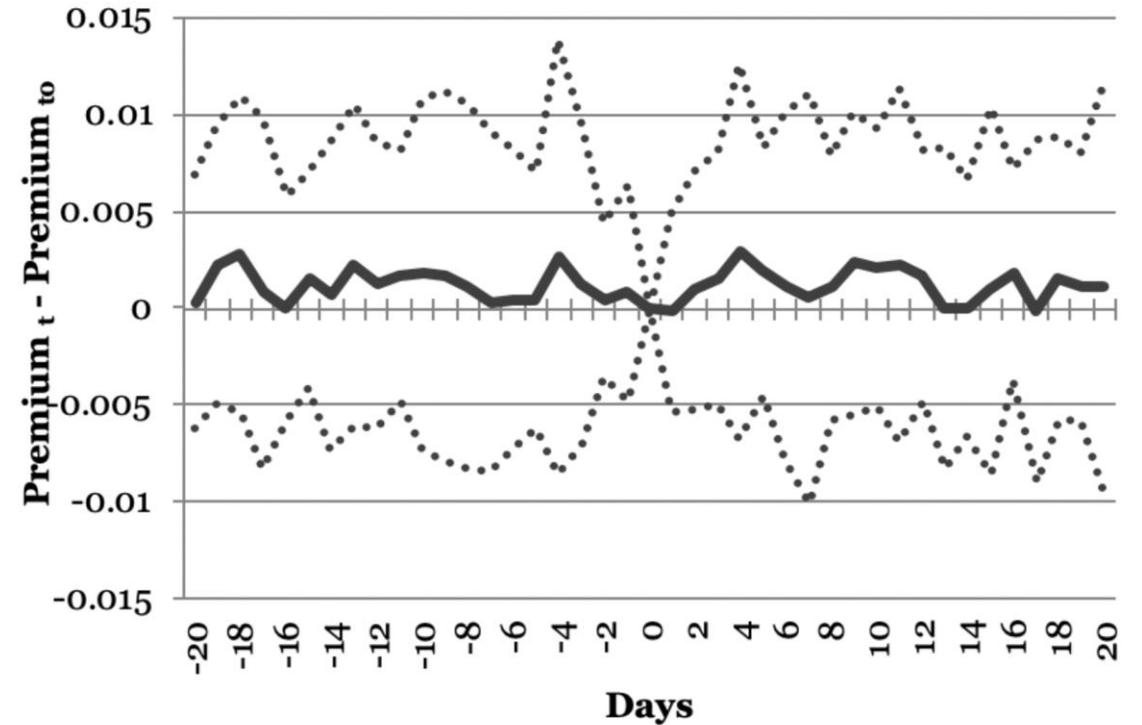
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3. Who supply funds for the AMCs?	Debt holders & equity holders of the AMCs	Government	Banks	Banks. The dominant form changes from direct lending to indirect lending following the July 2019 regulation that banned direct lending.
4. Does the AMC sell NPLs to someone else?	Unlikely	Unlikely	Re-sales are prevalent.	More than 80% of NPL packages are re-sold.
5. Price in the re-sales	At a discount	At a discount	At a premium (to compensate the AMC)	All re-sales have a positive premium; re-sale premium appears to be a step function of the length of the AMC's holding period.
6. In re-sales, who buy from the AMC?	Can be anyone	Government entities	Banks' affiliates	More than 90% third-party buyers are borrowers/clients of the banks.
7. Market reaction to banks' transferring NPLs	Positive price response	Positive price response	Null or negative price response	

# Markets don't react to NPL transactions

(a) Stock Returns Around NPL Transaction Dates



(b) Publicly-Traded Debt Premiums Around NPL Transaction Dates

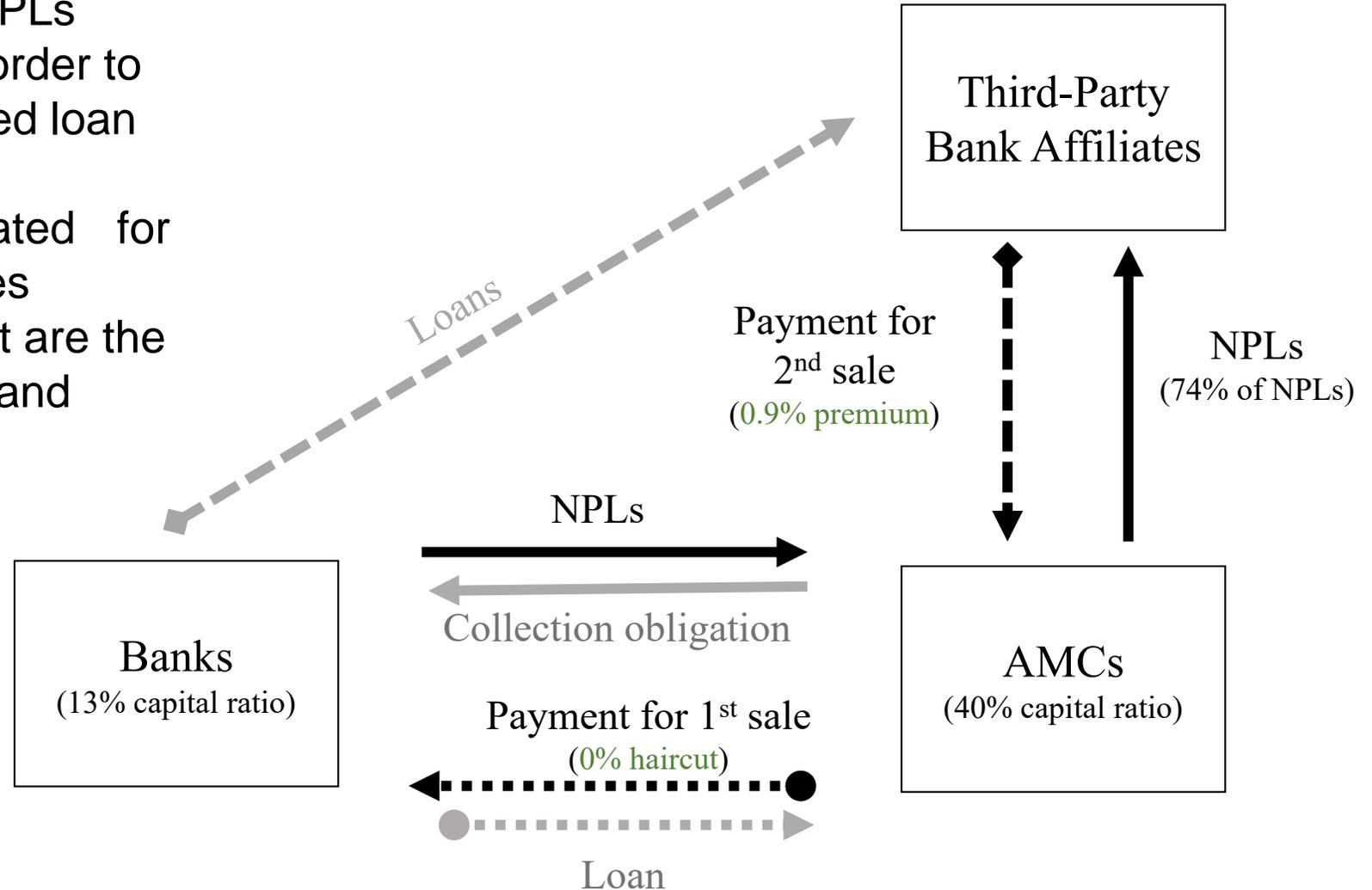


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# Movement of NPLs in the financial system

1. Banks that want to remove NPLs from their balance sheets in order to comply with the quantity-based loan quality regulation
2. AMCs that are compensated for acting as pass-through entities
3. Third-party bank affiliates that are the ultimate owners of the NPLs and borrowers of the banks.

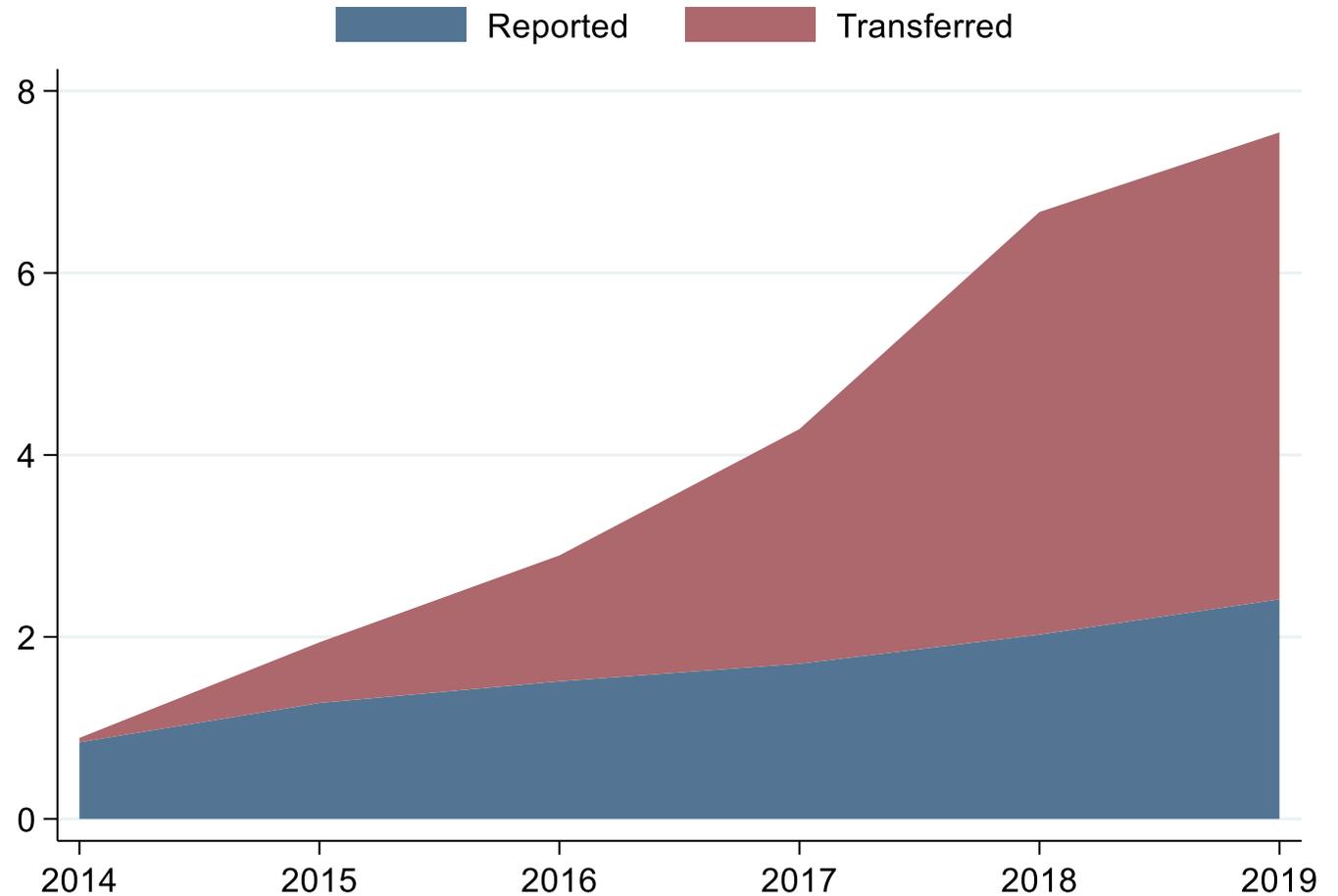


# Back-of-the-envelope calculation of total NPLs in the financial system

As of 2019, 5.13 trillion hidden vs. 2.41 trillion reported

"In 2019, the banking industry disposed of 2.3 trillion yuan of non-performing assets."  
(compared with the end-of-year reported NPLs of 2.41 trillion)

- Liu Guoqiang,  
Vice President of the  
People's Bank of China



# NPL loss propagation in stylized stress testing

Banks

Pass-through from affiliates to banks	Total loss for banks (bn)	Total loss/total capital	Revised capital ratio
10%	304	1.37%	14.4%
50%	1,518	6.84%	13.6%
100%	3,037	13.7%	12.1%

Third-party bank affiliates

74% of loss:  
3,037 billion  
CNY

Asset Management Companies

26% of Loss:  
1,067 billion  
CNY

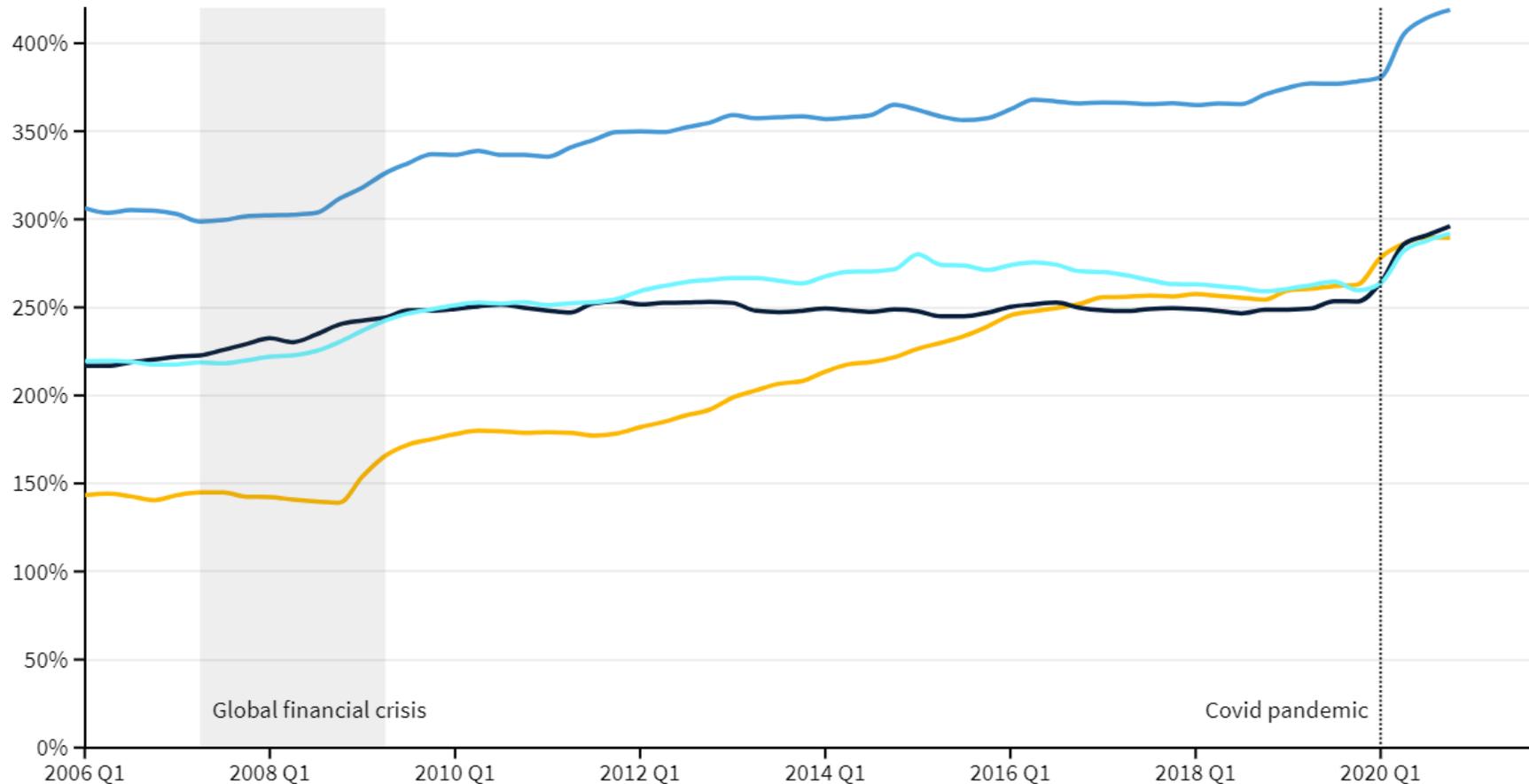
Hidden NPLs

If loss given  
default = 80%

# China's debt not yet a concern but rising

Total debt-to-GDP ratios in major economies

China Japan U.S. Euro area



Source: Bank of International Settlements



# Conclusion

- Despite the intention to cultivate a market for orderly resolution, NPL transactions appear to be concealment rather than orderly resolution.
- As a result, banks are still exposed to the NPLs even though the NPLs are removed from their balance sheets.
- Recognizing hidden NPLs is crucial for effective financial stability policies.
- Good governance practices and timely supervisory monitoring would be crucial for actual resolutions.
- Finally, financial fragility in a large economy such as China can have global implications.

# Thank you!

Reach out to [tianyue.ruan@nus.edu.sg](mailto:tianyue.ruan@nus.edu.sg)!