

Corporate foreign bond issuance and interfirm loans in China

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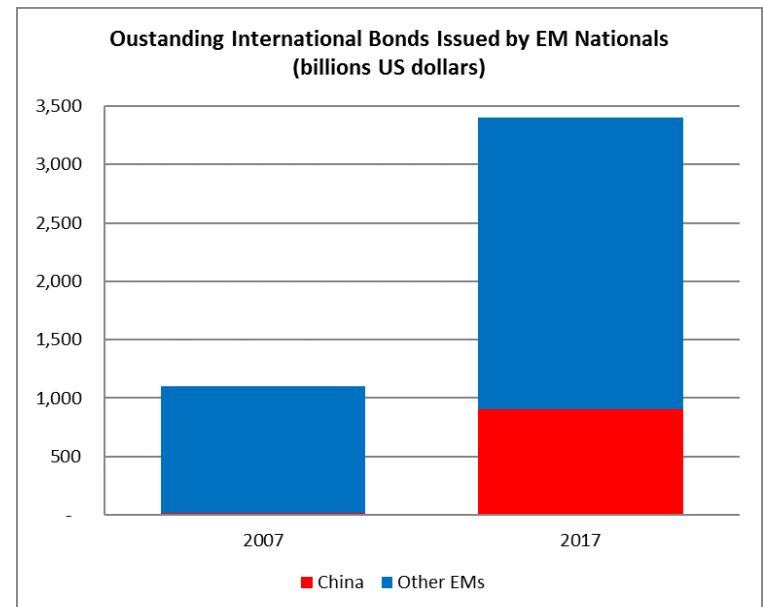
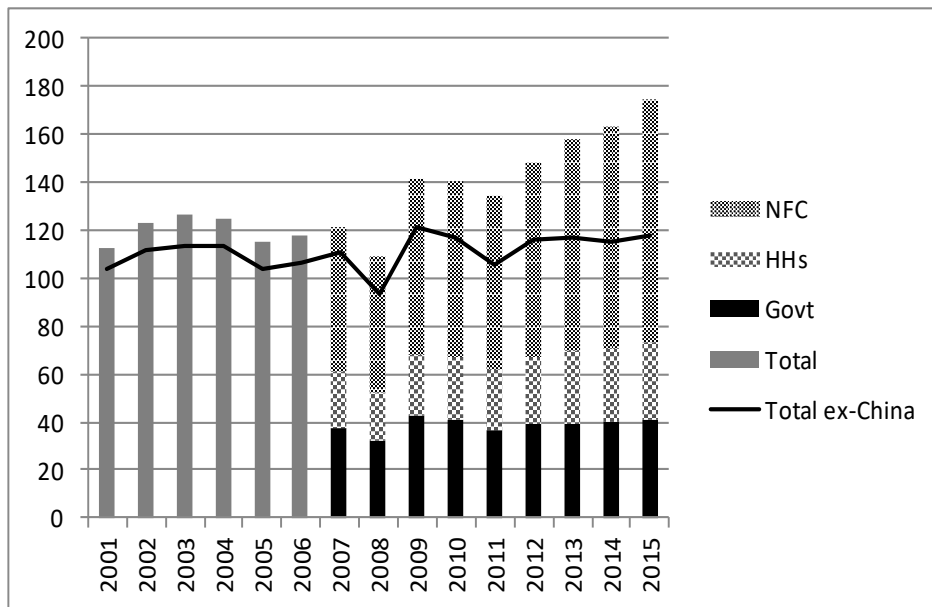
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Outline

- Motivation
- Literature
- Data
- Which firms issue dollar bonds
- Use of proceedings
- The unintended consequences of prudential regulations
- Conclusions

Motivation

- The aftermath of the Global Financial Crisis was associated with a surge in credit to the non-financial sector and in foreign borrowing by emerging market nationals
- China played a key role in these trends



- We analyze the drivers of bond issuance and then describe how bond issuers use the proceeds

Main Findings

- Dollar issuance is **positively** correlated with the differential between domestic and foreign interest rates.
 - This effect is particularly important for firms that operate in riskier sectors
- Issuers of dollar bonds have **lower investment rates, hold more cash,** and are **more likely to lend** to other firms
- Firms in riskier sectors do more **inter-firm lending** than firms that operate in other sectors
 - Inter-firm lending by firms that operate in riskier sectors increased after a regulatory tightening in 2009–10

Literature

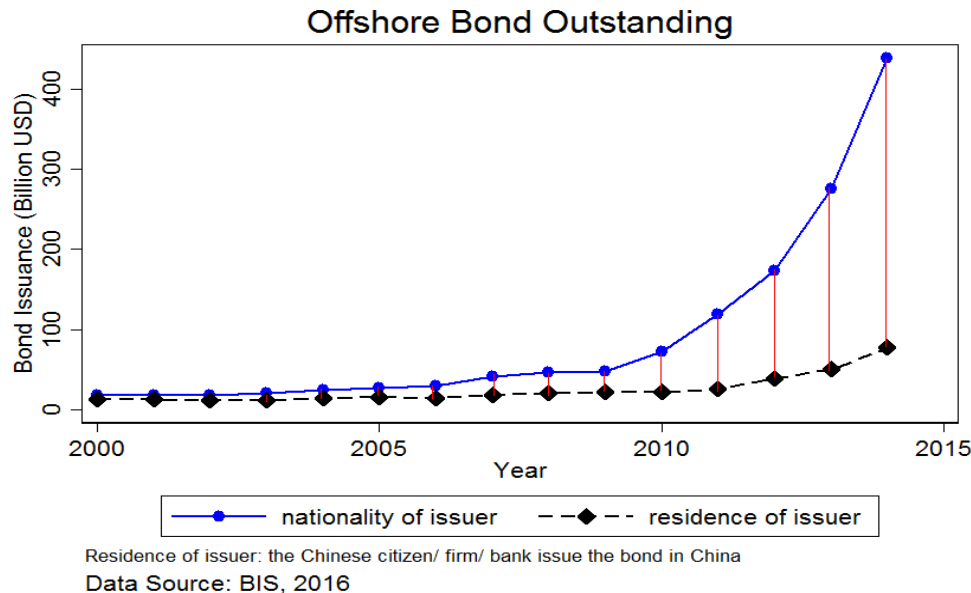
- Foreign currency funding of non-financial firms
 - Shin and Zhao (2013), Bruno and Shin (2017), Caballero et al. (2016), Frank and Shen (2016), ...

- Shadow banking in China
 - Du et al. (2016), Chen et al. (2017), Chen et al. (2017), Allen et al. (2017, 2018), Acharya et al. (2016), Hachem and Song (2017), Wang³ and Zhou (2015), ...

- Access to international financial markets
 - Didier et al. (2015), Gozzi et al. (2010), Gozzi et al. (2015), ...

Data

- We merge bond-level data from Dealogic with firm-level data from China Stock Market and Accounting Research (CSMAR)
- We collect information on all bonds issued by Chinese **nationals** over the period 2005–15. The focus on nationals rather than residents is important because over 2009–15 there was a massive increase in international bond issuance by non-resident Chinese



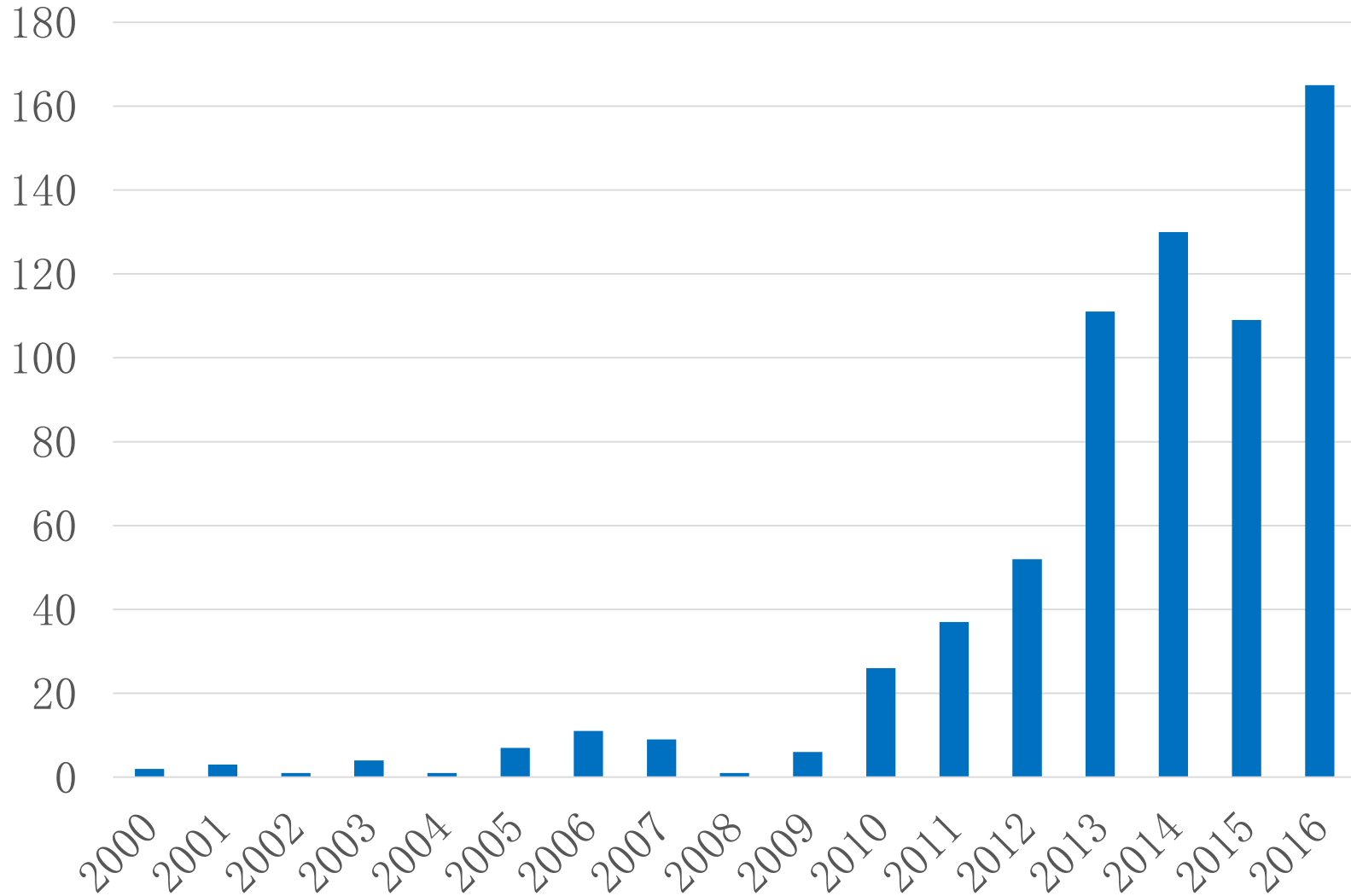
Bond-level Data

- Our bond-level data contain **25,032** observations and include domestic and international issuances in all currencies by all types of issuers
 - The total number of bonds issued by non-financial corporations increased from 100 in 2007 (9 of these bonds were denominated in US dollars) to 4,110 in 2016 (165 of these bonds were denominated in US dollars)
 - We exclude from our dataset all bonds issued by financial institutions and the central government (8,394 bonds) and all bonds issued by non-listed corporations (12,008 bonds). We also drop from the sample a small number of bonds (176 in total) which are issued in currencies different from the US dollar or the RMB
 - We are left with **4,958** bonds from **1,353** issuers. About 87 percent of these bonds are denominated in RMB and the remaining 13 percent (**635** bonds and **238** issuers) are denominated in US dollars.

Merging

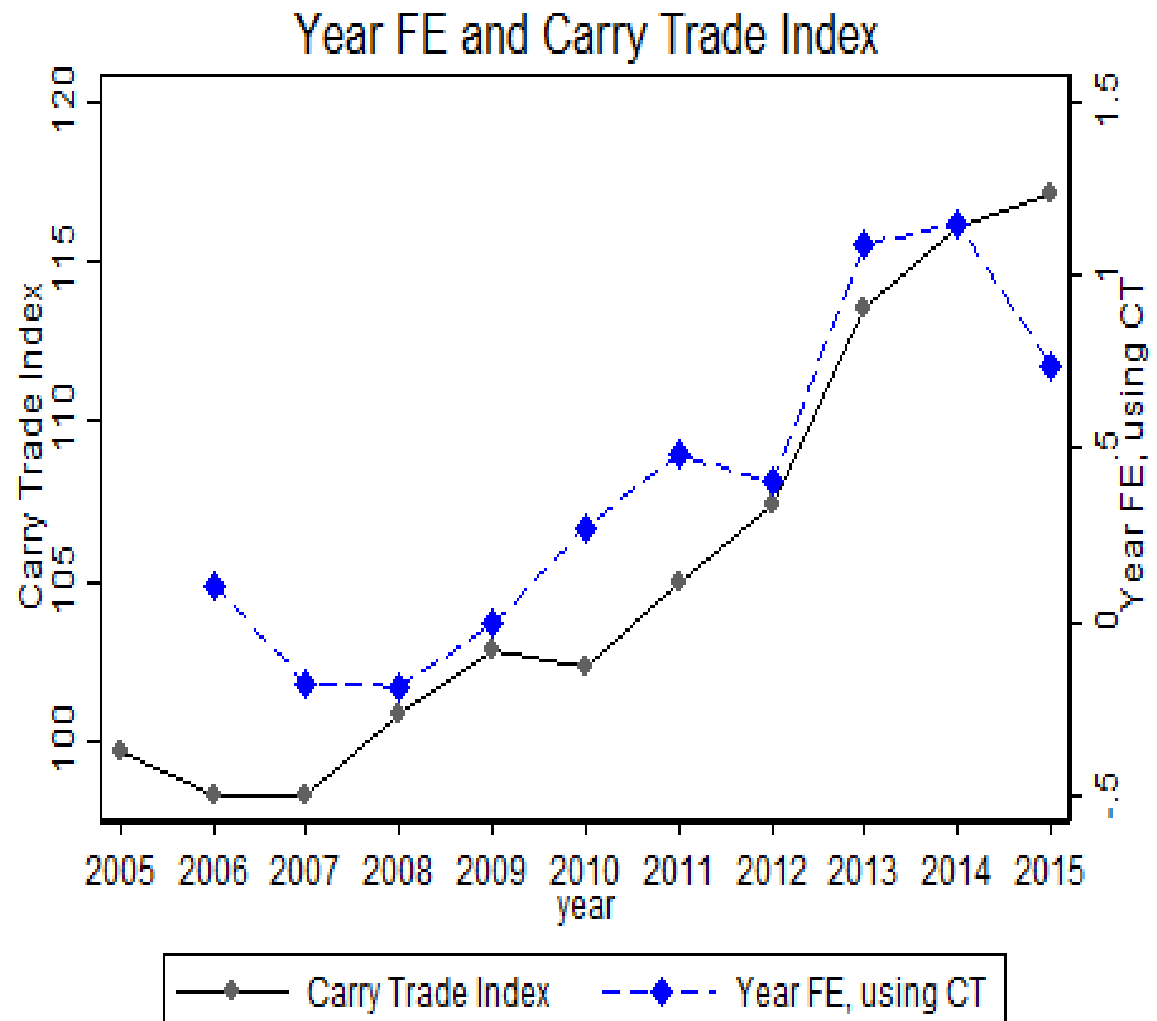
- We start with a total of nearly **60,000** firm-level observations from CSMAR and after restricting our sample to listed non-financial and non-government sectors with complete data on revenues and inter-firm loans, we are left with **24,596** observations covering **3,177** firms over 2005–15
- We match the bond-level and the firm-level data.
 - We are able to recover information for most bond issuers, but there are 486 bonds (of which 78 are dollar-denominated bonds) for which we cannot find issuer data.
- Our final sample consists of **4,472** bonds (**567** of these bonds are denominated in US dollars).
 - About one-third of the firms in our sample have issued at least one bond, and 6 percent of the firms in our sample have issued dollar-denominated bonds.

Number of USD Bonds issuances



The drivers of US dollar bond issuance

	(1)
ROA	
Leverage	
Ln(Asset)	
For. Exp.	
Risky Sector	
INT	
ROA*INT	
Leverage*INT	
Ln(Asset)*INT	
For. Exposure*INT	
Risky*INT	
Firm FE	N
YearFE	Y
Observations	24,596
INT is	



Data Source: Dealogic, CSMAR, RESSET, Bloomberg

Inv. in fixed assets and dollar bond issuances

	(1)	(2)	(3)	(4)	(5)	(6)
Issuer	-0.04 (0.04)	-0.04 (0.04)	0.07 (0.26)	0.08 (0.26)	-0.24 (0.33)	-0.15 (0.35)
Issuer*CT		-0.00 (0.01)		0.04 (0.04)		0.03 (0.04)
Leverage	-0.15*** (0.03)	-0.15*** (0.03)	-0.16*** (0.03)	-0.16*** (0.03)	-0.16*** (0.03)	-0.15*** (0.03)
ROA	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Size	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)
YearFE	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Observation	21,220	21,220	21,220	21,220	21,220	21,220
Issuer is:	Dummy	Dummy	Amount Issuance	Amount Issuance	Amount Outstanding	Amount Outstanding

Cash holdings and dollar bond issuances

	(1)	(2)	(3)	(4)	(5)	(6)
Issuer	5.45 (4.02)	4.44 (4.10)	56.88*** (15.49)	52.39*** (15.90)	57.97** (24.04)	71.36*** (25.37)
Issuer*CT		0.88 (0.72)		3.16 (2.53)		4.93* (2.98)
Leverage	-43.73*** (2.10)	-43.75*** (2.10)	-43.76*** (2.10)	-43.78*** (2.10)	-43.71*** (2.10)	-43.76*** (2.10)
ROA	0.72 (1.29)	0.70 (1.29)	0.62 (1.29)	0.60 (1.29)	0.69 (1.29)	0.66 (1.29)
Size	5.52*** (0.27)	5.52*** (0.27)	5.48*** (0.27)	5.47*** (0.27)	5.51*** (0.27)	5.50*** (0.27)
YearFE	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Observatio	21,528	21,528	21,528	21,528	21,528	21,528
Issuer is:	Dummy	Dummy	Amount Issuance	Amount Issuance	Amount Outstanding	Amount Outstanding

Inter-firm loans and dollar bond issuances

	(1)	(2)	(3)	(4)	(5)	(6)
Issuer	1.33* (0.78)	1.32* (0.78)	14.74*** (3.14)	18.96*** (3.22)	10.84** (4.90)	24.25*** (5.52)
Issuer*CT		0.36*** (0.12)		2.87*** (0.51)		3.46*** (0.66)
Leverage	3.33*** (0.51)	3.30*** (0.51)	3.33*** (0.51)	3.27*** (0.51)	3.35*** (0.51)	3.28*** (0.51)
ROA	-1.23*** (0.32)	-1.24*** (0.32)	-1.25*** (0.31)	-1.28*** (0.31)	-1.23*** (0.32)	-1.25*** (0.31)
Size	1.31*** (0.06)	1.31*** (0.06)	1.30*** (0.06)	1.29*** (0.06)	1.31*** (0.06)	1.30*** (0.06)
Year FE	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Observatio	22,163	22,163	22,163	22,163	22,163	22,163
Issuer is:	Dummy	Dummy	Amount Issuance	Amount Issuance	Amount Outstanding	Amount Outstanding

Inter-firm loans, dollar and RMB bond issuances

	(1)	(2)	(3)	(4)	(5)	(6)
IssuerUSD	1.23 (0.79)	1.23 (0.79)	14.70*** (3.14)	18.79*** (3.22)	10.20** (4.91)	23.46*** (5.58)
IssuerRMB	0.47 (0.30)	0.31 (0.39)	0.20 (0.31)	0.15 (0.31)	0.11 (0.07)	0.10 (0.14)
IssuerUSD*CT		0.38*** (0.12)		2.85*** (0.47)		3.38*** (0.66)
IssuerRMB*CT		0.03 (0.05)		0.14 (0.10)		-0.00 (0.01)
Leverage	3.94*** (0.52)	3.89*** (0.52)	3.34*** (0.51)	3.26*** (0.51)	3.35*** (0.51)	3.28*** (0.51)
ROA	-5.49*** (0.29)	-5.50*** (0.29)	-1.25*** (0.31)	-1.28*** (0.31)	-1.24*** (0.32)	-1.25*** (0.31)
Size	-1.02*** (0.15)	-1.02*** (0.15)	1.30*** (0.06)	1.29*** (0.06)	1.31*** (0.06)	1.30*** (0.06)
YearFE	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Observations	22,163	22,163	22,163	22,163	22,163	22,163
Issuer is:	Dummy	Dummy	Amount Issuance	Amount Issuance	Amount Outstandin	Amount Outstandin

Inter-firm loans & USD bonds: int. vs ext. margin

	(1)	(2)	(3)	(4)
Issuer Dummy	0.23 (0.82)	0.37 (0.82)	0.68 (0.88)	0.12 (0.89)
Issuer Dummy * CT		0.15 (0.14)		0.10 (0.15)
Issuer amount	14.45*** (3.30)	18.60*** (3.37)	8.86 (5.54)	23.41*** (6.25)
Issuer amount * CT		2.64*** (0.52)		3.16*** (0.78)
Leverage	3.33*** (0.51)	3.25*** (0.51)	3.33*** (0.51)	3.27*** (0.51)
ROA	-1.25*** (0.31)	-1.28*** (0.31)	-1.23*** (0.32)	-1.25*** (0.31)
Size	1.31*** (0.06)	1.29*** (0.06)	1.31*** (0.06)	1.30*** (0.06)
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Observations	22,163	22,163	22,163	22,163
Issuer amount is:	Issuances	Issuances	Outstanding	Outstanding

Inter-firm loans, dollar bonds & firm heterogeneity

	(1)	(2)	(3)	(4)
Issuer Dummy	0.72 (0.82)	1.45* (0.84)	0.94 (0.88)	1.29 (0.89)
Issuer amount	7.67** (3.52)	-2.52 (3.91)	5.06 (5.63)	0.25 (5.79)
Issuer Dummy x FC	6.12*** (1.66)	-2.66*** (0.93)	5.97*** (1.77)	-2.72*** (1.01)
Issuer amount x FC	-35.28*** (6.17)	35.57*** (4.38)	-41.74*** (10.89)	35.84*** (7.03)
Leverage	3.32*** (0.51)	3.25*** (0.51)	3.33*** (0.51)	3.28*** (0.51)
ROA	-1.26*** (0.31)	-1.28*** (0.32)	-1.25*** (0.32)	-1.26*** (0.32)
Size	1.30*** (0.06)	1.29*** (0.07)	1.31*** (0.06)	1.30*** (0.07)
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Observations	22,163	21,995	22,163	21,995
Issuer amount is: FC is	Issuance ROA	Issuance Risky	Outstanding ROA	Outstanding Risky

The unintended effects of prudential regulation

■ *Guiding Opinions on Further Strengthening Financial Services With a View to Supporting the Adjustment and Rejuvenation of Some Key Industries and Restraining Excess Capacity in Other Industries*

- Issued on **December 22, 2009**, by the People's Bank of China, the China Banking Regulatory Commission, the China Securities Regulatory Commission, and the China Insurance Regulatory Commission
- It stated that “in order to serve the overall objective of supporting economic growth and restructuring the economy,” the People's Bank of China will “enhance surveillance on credit structure,” and “effectively contain overcapacity.”
- This policy tightened access to domestic credit (bank loans and issuance of securities) for firms that operate in economic sectors that are deemed to be risky

■ *Notice on Financial Services to Further Support Energy Saving and Eliminate the Backward-Production Capacity*

- Issued on **May 28, 2010**, by the People's Bank of China and the China Banking Regulatory Commission
- It further restrained access to credit for firms that operate in risky sectors.

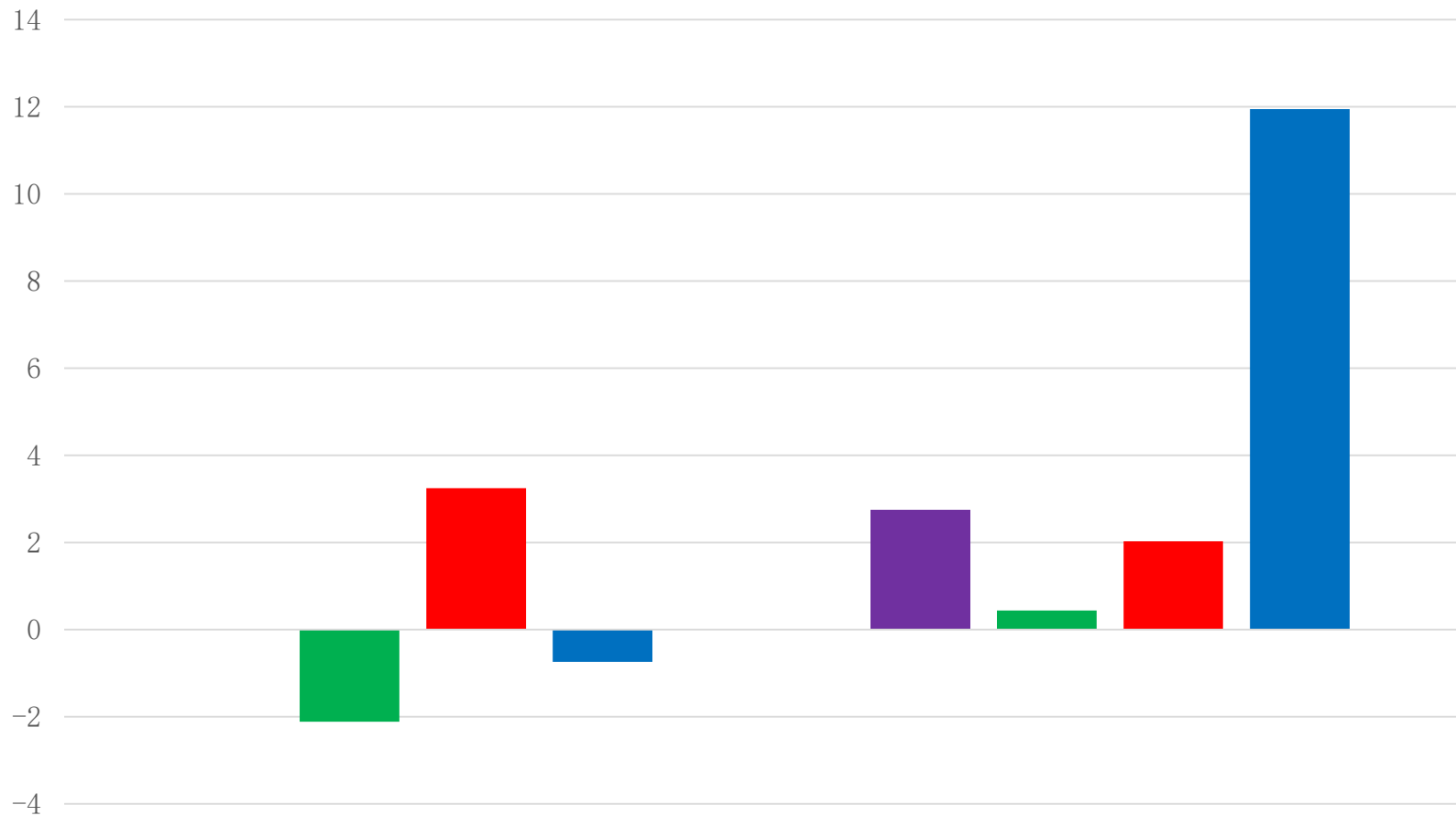
The unintended effects of prudential regulation

- In a classic case of regulatory arbitrage, there is evidence that these policies contributed to the rapid growth of the Chinese shadow banking system.
 - Chen, Ren, and Zha (2017) show that the share of entrusted loans (a typical shadow banking instrument in China) in total bank lending tripled
 - During the tightening period, and more than 60 percent of these entrusted loans were channeled to firms that operate in risky sectors.
- We study a different type of regulatory arbitrage
 - We use the policy shock of 2009–10 to test whether the regulatory reforms increased the likelihood that risky firms issue dollar bonds and then use the proceeds to onlend to domestic firms in similar sectors.

Inter-firm loans as regulatory arbitrage

	(1)	(2)	(3)	(4)
Treatment	-1.99** (0.80)	2.73*** (0.26)	-3.97 (4.53)	-0.71 (3.54)
Policy	-2.25*** (0.16)	-2.10*** (0.18)	-2.11*** (0.18)	-2.29*** (0.41)
Treatment* Policy	2.71*** (0.87)	0.14 (0.36)		
USD Issuer			3.26 (3.58)	
USD Issuer * Policy			-1.88 (3.93)	
Risky Sector			2.74*** (0.26)	
Risky*Policy			-0.19 (0.37)	
USD Issuer * Risky * Policy			9.92** (4.93)	8.04** (3.80)
Observations	24,596	24,596	24,596	6,208
Treatment is	USD Issuer	Risky Sector	Risky USD Issuer	USD Issuer in Risky Subsample

Inter-firm loans as regulatory arbitrage



Non-Risky Sectors

Risky Sectors

■ Non Issuer ■ Non Issuer Policy ■ Issuer ■ Issuer Policy

Conclusions and Policy Implications

- Our findings are **not in line** with the hypothesis that firms choose their liability structure to jointly minimize funding costs and currency risk
- They are instead consistent with the hypothesis that firms that operate in riskier sectors try to boost profitability by engaging in activities that mimic the behavior of financial institutions
- We also look at regulatory arbitrage and find that regulation aimed at limiting domestic leverage in risky sectors may have created incentives for moving to even riskier sectors

谢谢