

# THE FINANCING OF LOCAL GOVERNMENT IN CHINA: STIMULUS LOAN WANES AND SHADOW BANKING WAXES

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BUSINESS; AND NBER

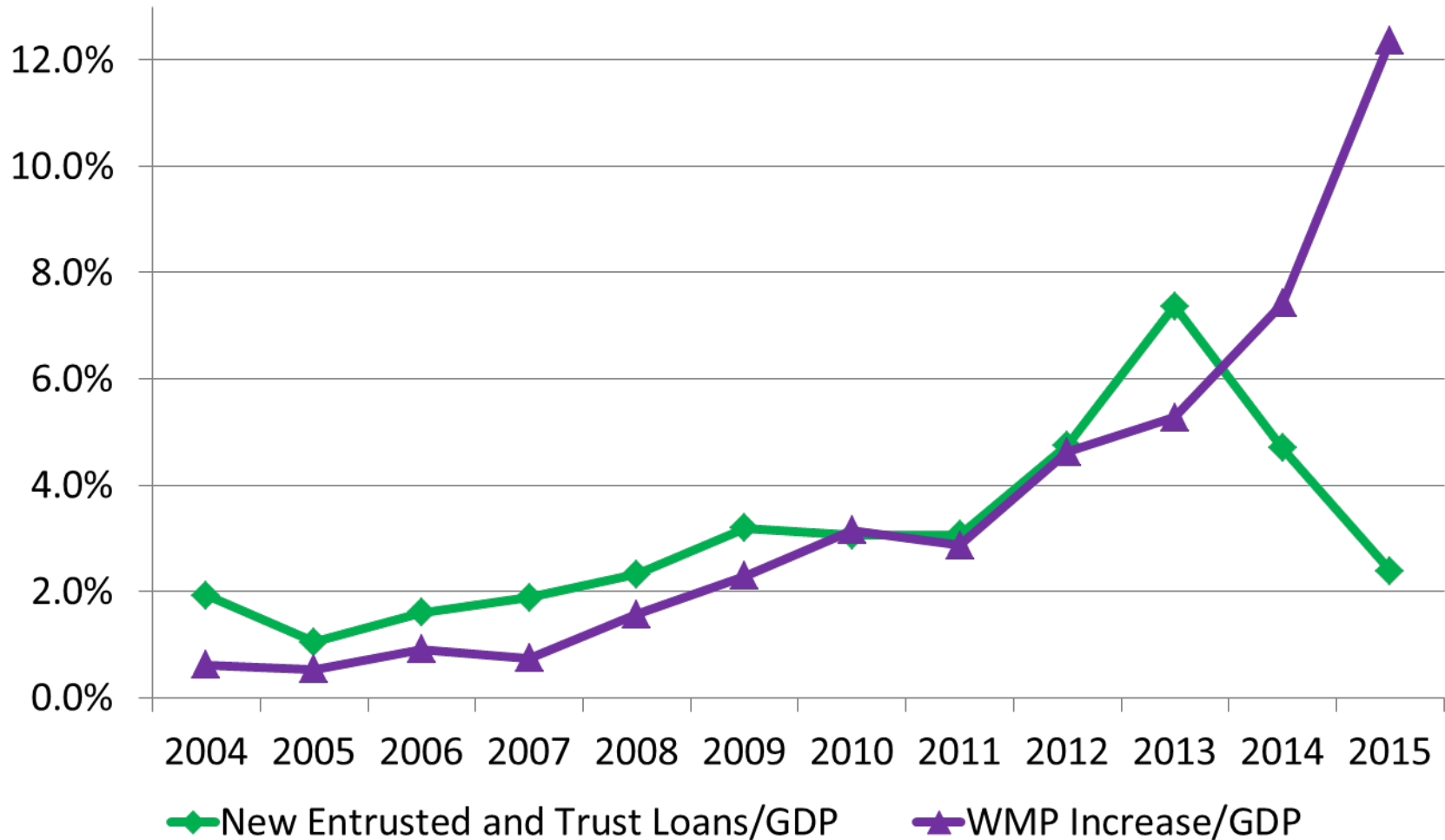
JOINT WITH ZHUO CHEN (TSINGHUA PBCSF) AND CHUN LIU (TSINGHUA SEM)



The University of Chicago Booth School of Business

# MOTIVATION

## New Entrusted/Trust Loans and Increase in WMP



Data source: PBOC and China Banking Wealth Management Registration System

# SUMMARY

## ❖ WHY DO SHADOW BANKING ACTIVITIES IN CHINA START RAMPANT GROWTH AROUND 2012-13?

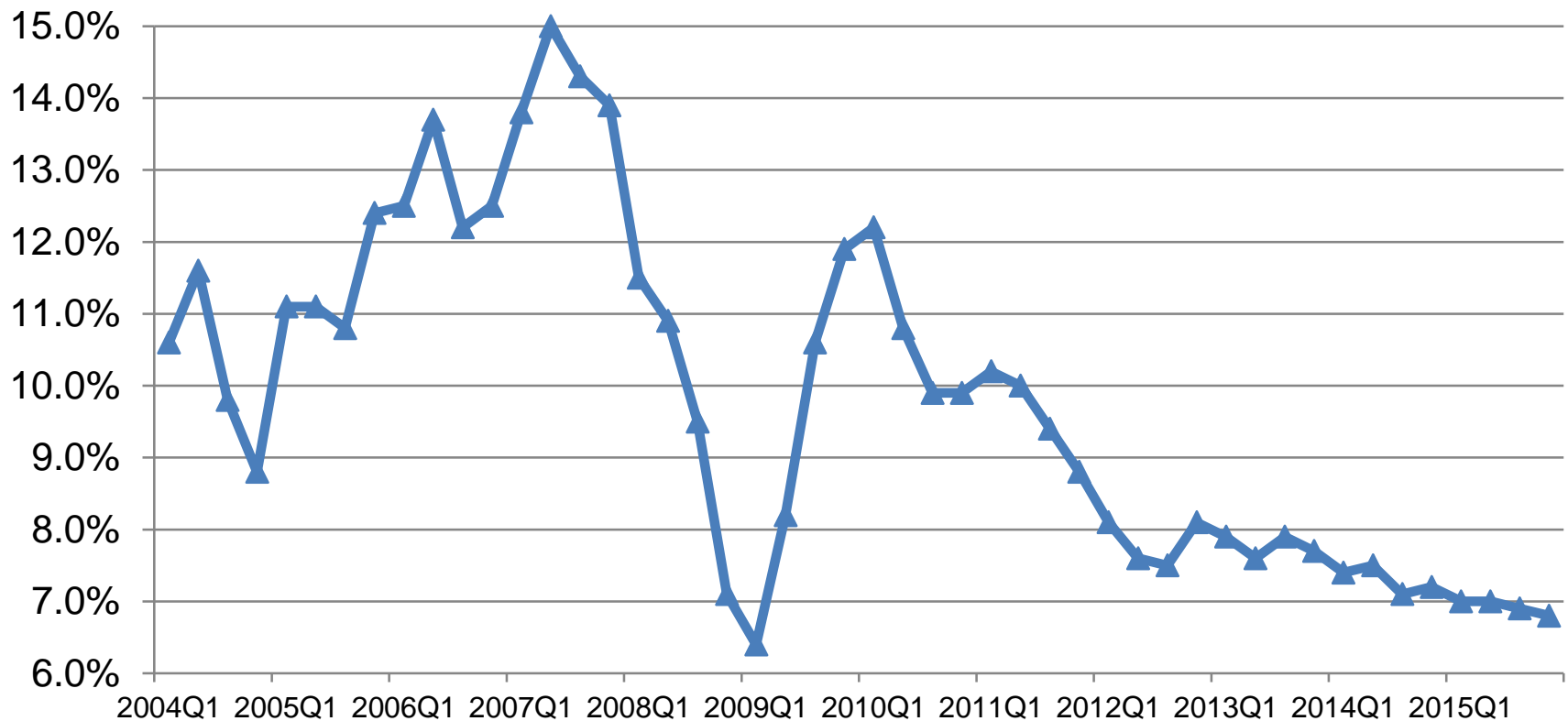
- ❖ Hangover effect of 2009 stimulus
- ❖ An angle that helps understand the marketization process of Chinese financial system

## ❖ WE TAKE ANGLE OF LOCAL GOVERNMENT FINANCING

- ❖ Time series and cross-section evidence

# THE IMPACT OF 07-08 FINANCIAL CRISIS ON CHINA'S ECONOMY

- ❖ 2007-2009 U.S. GREAT RECESSION, HUGE IMPACT ON CHINA
- ❖ CHINA'S GDP GROWTH PLUMMET AROUND THE END OF 2008



Data source: National Bureau of Statistics

# FOUR-TRILLION STIMULUS PLAN AND ITS FINANCING (1)

## ❖ FOUR-TRILLION STIMULUS PLAN (四万亿刺激计划)

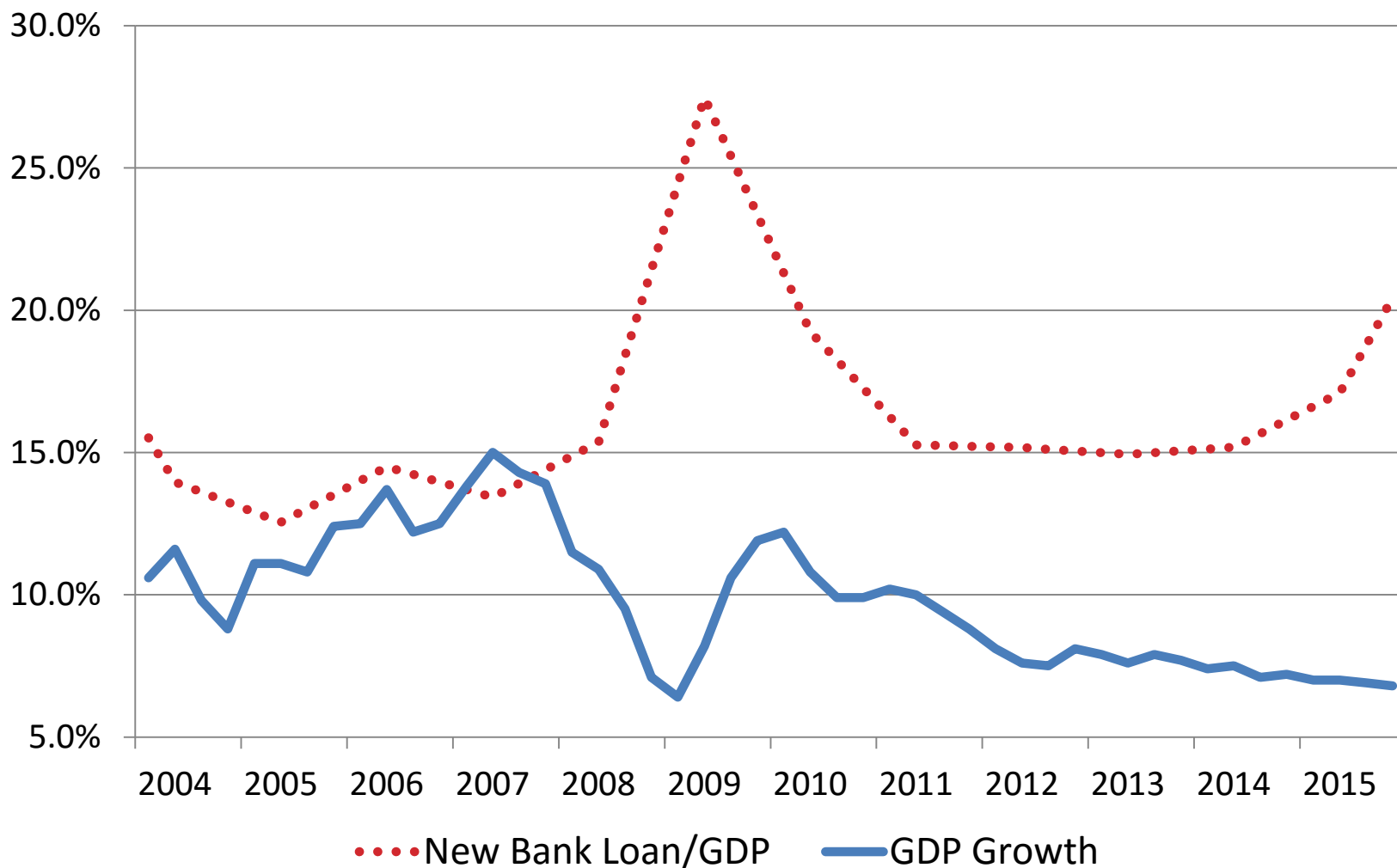
- ❖ Nov 2008, Premier Wen announced the 4T RMB stimulus plan
- ❖ Domestic investment (mainly infrastructure) to boost GDP growth

## ❖ HOW WAS IT IMPLEMENTED AND FINANCED?

- ❖ Mostly through local governments
- ❖ Approximately 1 trillion comes from the central government, and the rest through LGFV (Local Government Financing Vehicles, 政府融资平台)
- ❖ Mostly in the form of bank loans

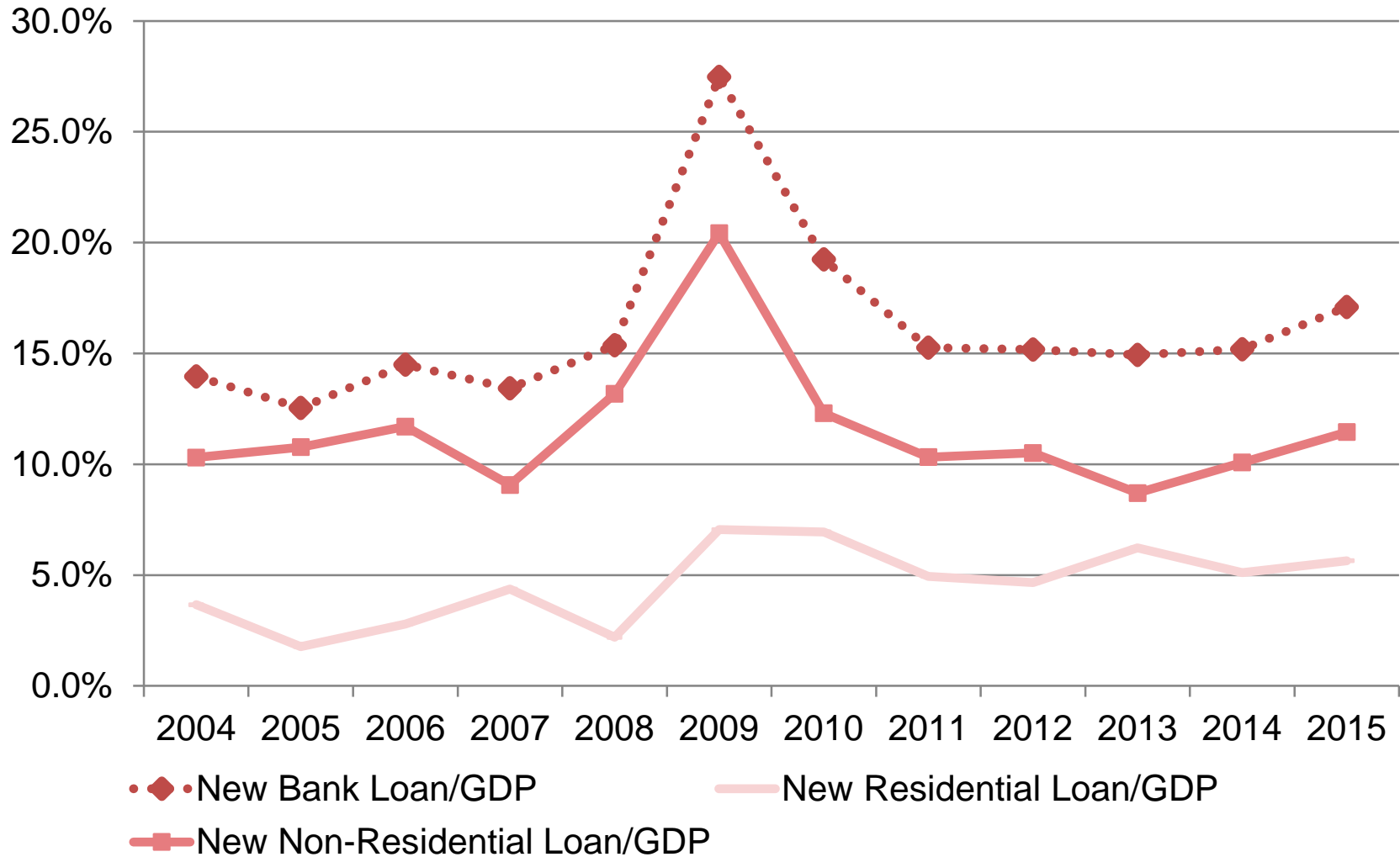
# NEW BANK LOAN AND GDP GROWTH

New Bank Loan over GDP



# MOSTLY NON-RESIDENTIAL LOANS

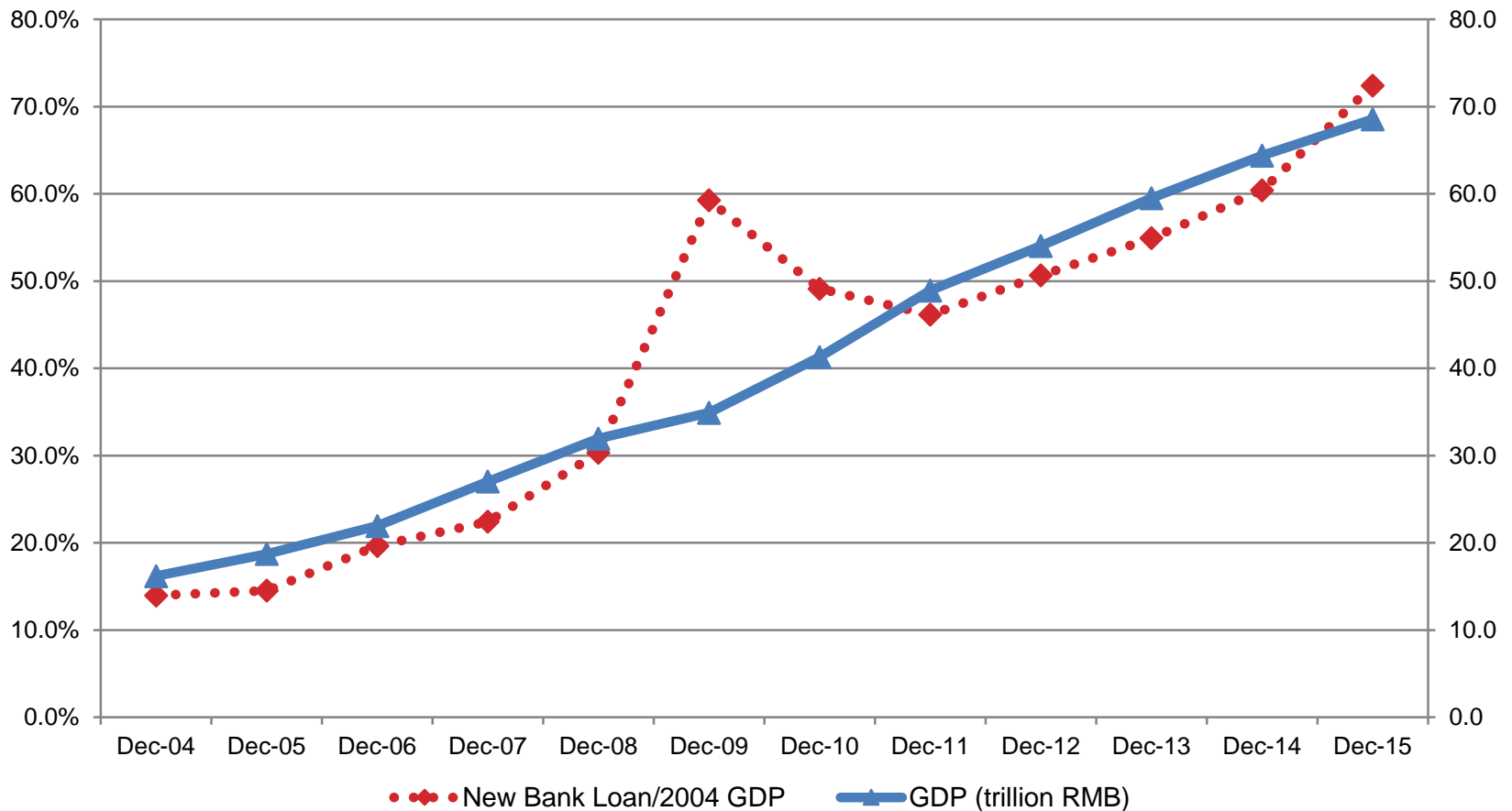
**New Non-Residential v.s. Residential Loans**



Data source: PBOC and National Bureau of Statistics

# NEW BANK LOAN AND GDP GROWTH

## New Bank Loan as a Percentage of 2004 GDP

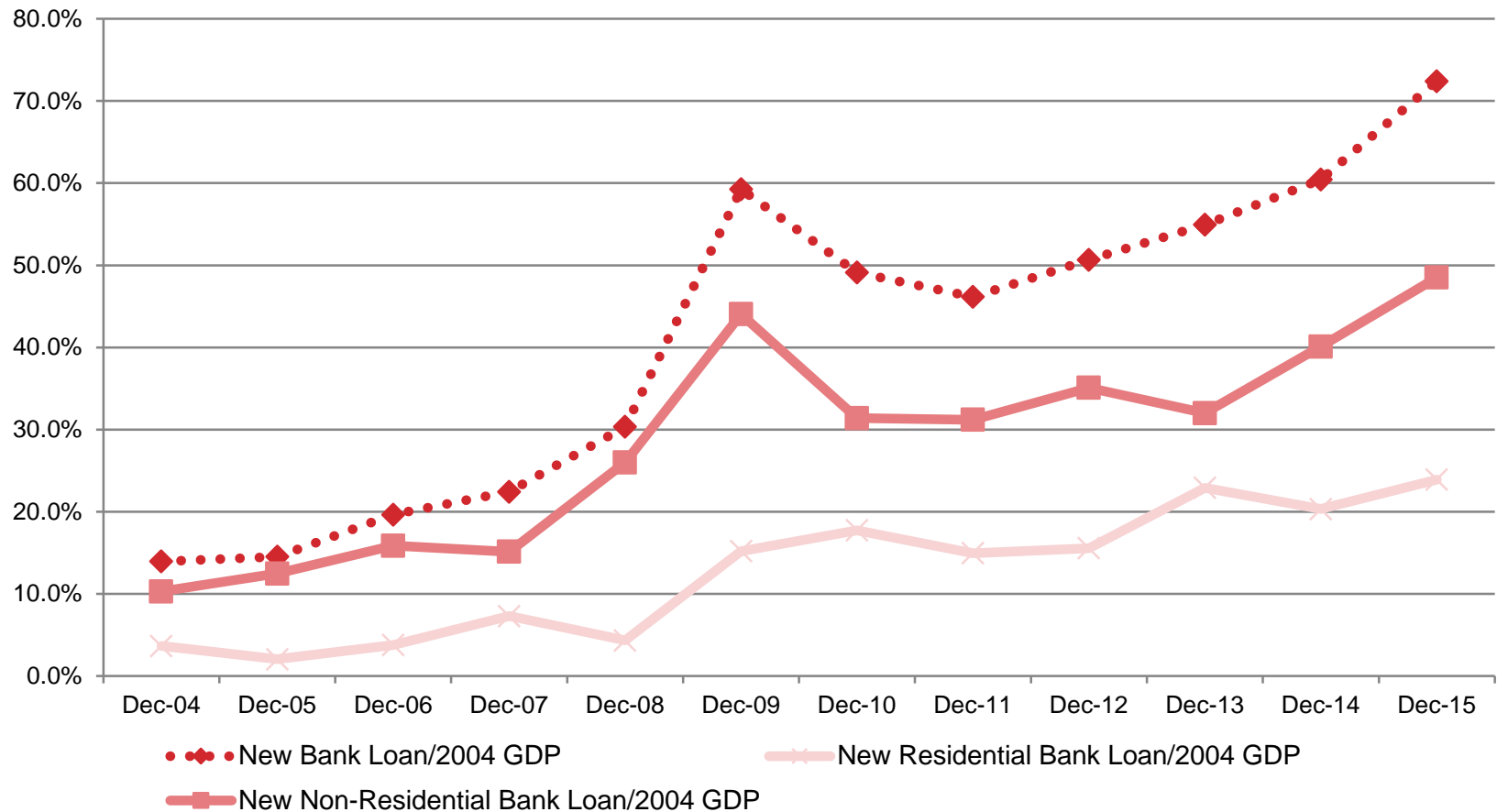


Data source: PBOC and National Bureau of Statistics



# MOSTLY NON-RESIDENTIAL LOANS

## New Non-Residential v.s. New Residential Bank Loans



# FOUR-TRILLION STIMULUS PLAN AND ITS FINANCING (2)

## ❖ BAI, HSIEH, AND SONG (2016, BROOKINGS):

- ❖ How does the unprecedented fiscal stimulus affect China's future economic growth
- ❖ likely causes long-run inefficiency

## ❖ LOCAL GOVERNMENTS FINANCE STIMULUS INVESTMENT BY BANK LOANS VIA OFF-BALANCE SHEET LFVS

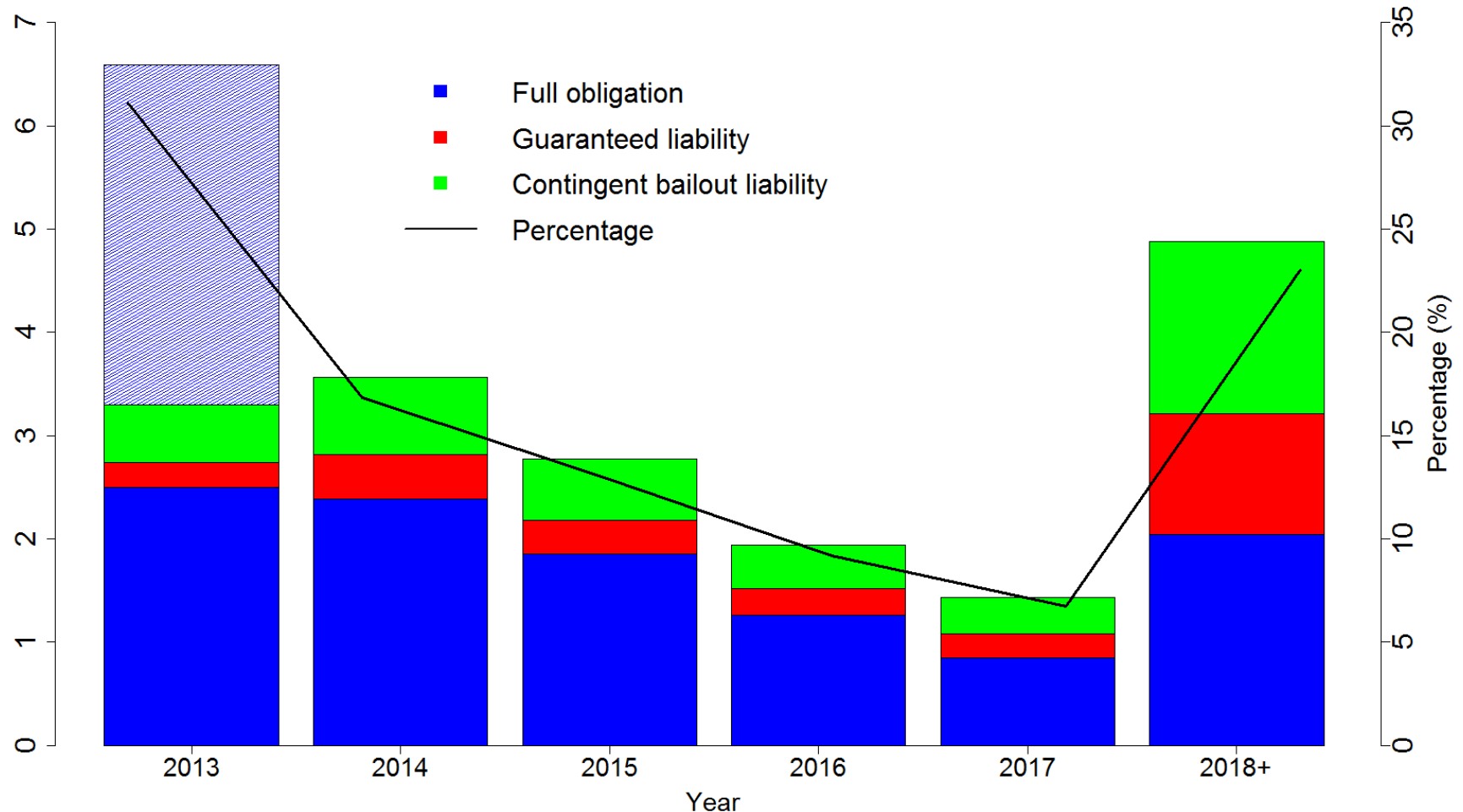
- ❖ According to the president of CBRC (银监会主席尚福林), banks loaned 3.05 trillion RMB to LGFVs in 2009
- ❖ State-owned banks more or less extended credit through direct "orders"

## ❖ WHAT DOES THE DEBT BURDEN LOOK LIKE LATER?

- ❖ National Audit Office official report on 12/2010 and 06/2013

# DEBT DUE SCHEDULE OF LOCAL GOVERNMENT, JUNE 2013

Debt due schedule of local government standing at June 2013



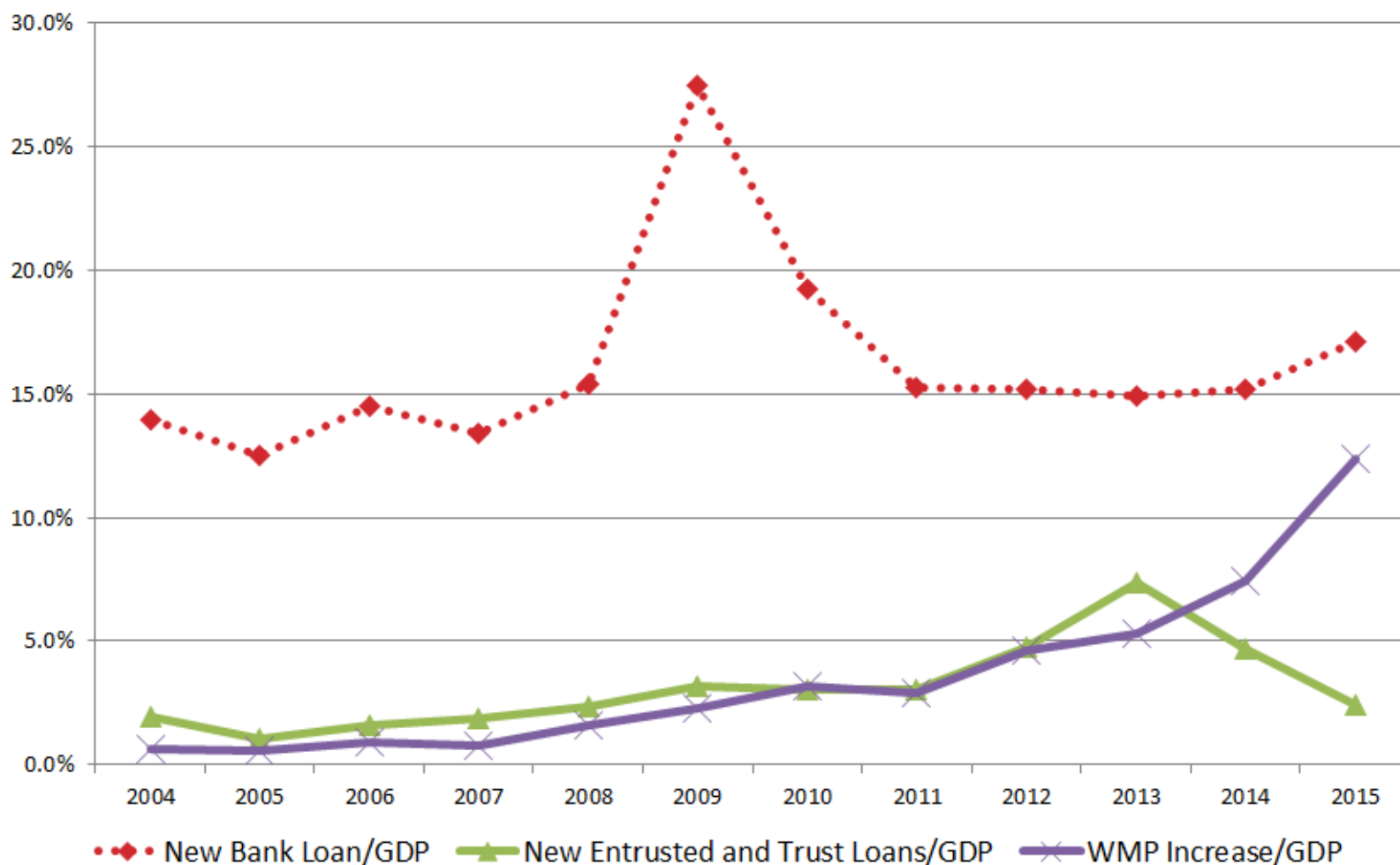
Data source: National Audit Office

# SHIFTING OF LOCAL GOVERNMENT FINANCING

- ❖ BAI, HSIEH, AND SONG (2016) MENTION THAT AFTER 2010 FINANCING WAS SHIFTED FROM BANK LOANS TO NON-BANK SOURCES
- ❖ BECAUSE IN 2010 CHINA TIGHTENS ITS CREDIT POLICY
  - ❖ But those long-term infrastructure projects need continuing investment
  - ❖ Or, need to rollover/refinance their three- to five-year bank loans (which are maturing around 2012 to 2014)
- ❖ WHAT ARE THESE NON-BANK SOURCES? HOW ARE THEY RELATED TO SHADOW BANKING (TRUST, WEALTH MANAGEMENT PRODUCT, ETC.)?

# PRELIMINARY EVIDENCE: EVOLUTION OF SOCIAL FINANCING

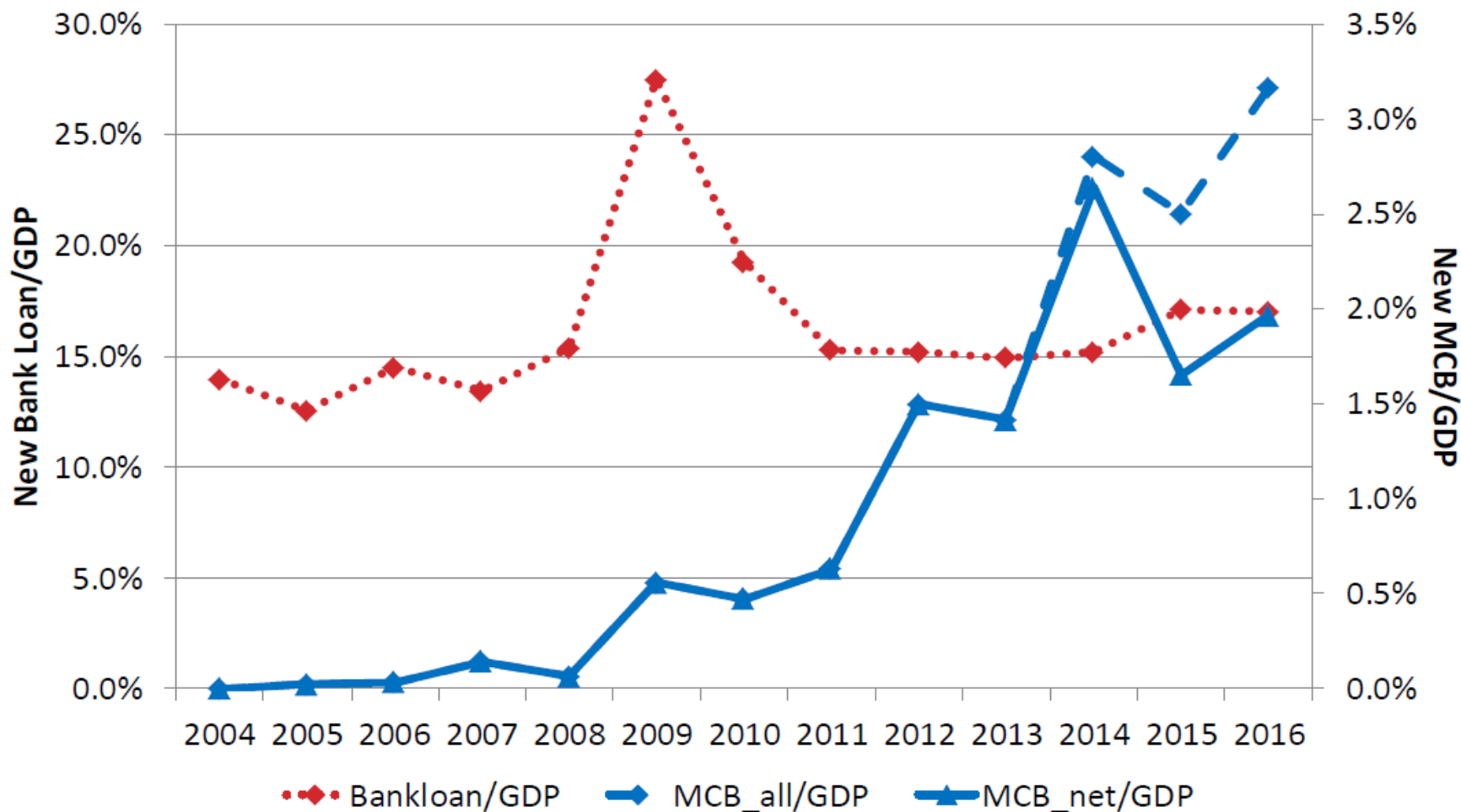
**New Entrusted/Trust Loans and Increase in WMP**



Data source: PBOC and China Banking Wealth Management Registration System

# BANK LOAN AND MUNICIPAL CORPORATE BOND ( MCB, 城投债 )

Panel A: Newly Issued Municipal Corporate Bonds (MCB)



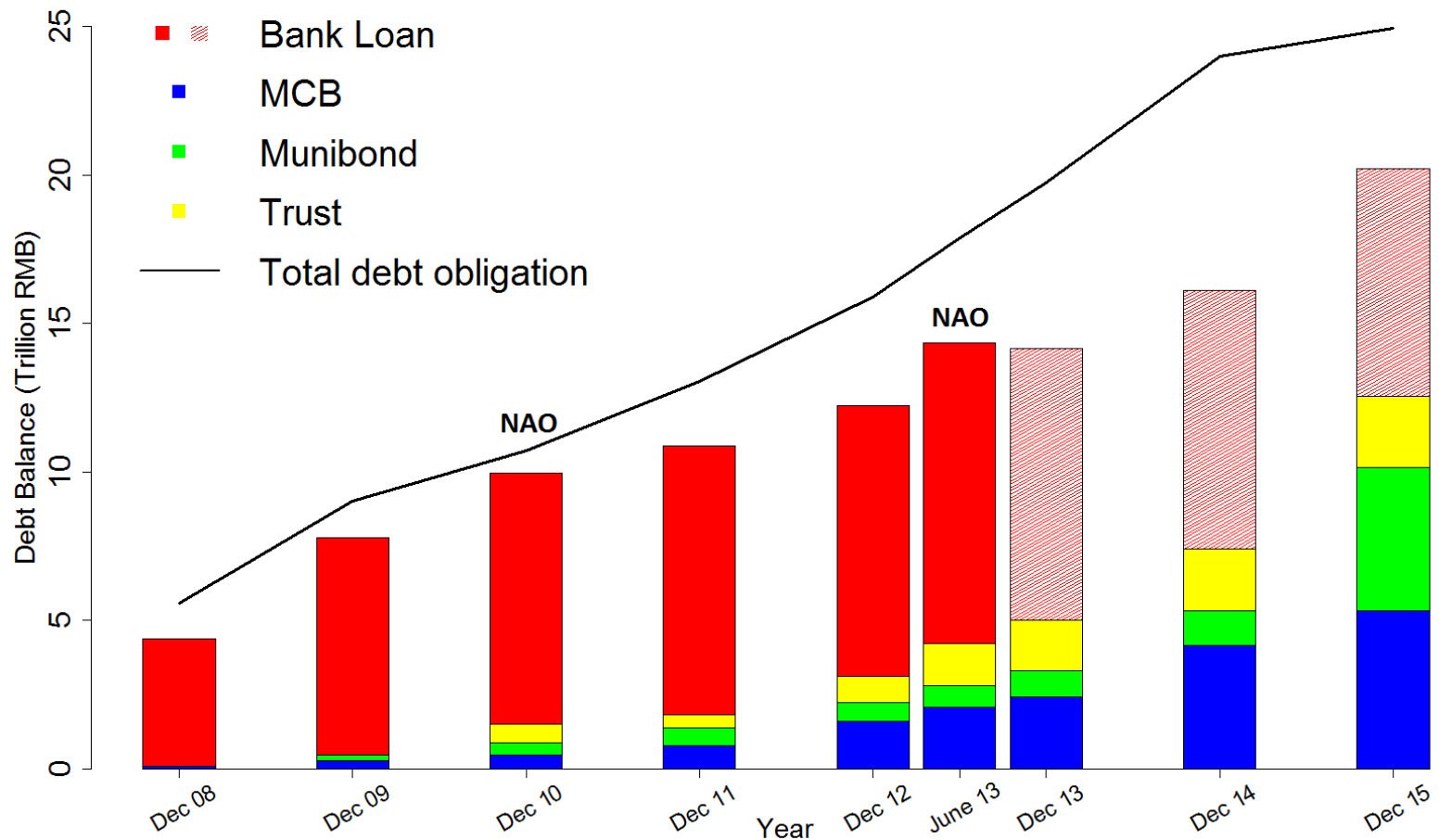
Data source: PBOC and Wind

# FINANCING OF LOCAL GOVERNMENT

- ❖ FOCUS ON TOTAL DEBT LIABILITY AND ITS FOUR MAJOR SOURCES
  - ❖ Bank Loans
  - ❖ Municipal Bonds (地方政府债: pre-2015, issued directly by MoF for qualified local government; post-2015, can be issued by local government at the province level)
  - ❖ **Municipal Corporate Bonds (城投债)**
  - ❖ Trust and Entrusted Loans (信托贷款和委托贷款)
- ❖ WHY? THE OTHER THREE ARE ALSO DEBT AND OFTEN WITH IMPLICIT BAIL-OUT EXPECTATION
- ❖ NATIONAL AUDIT OFFICE RELEASES REPORT ON LOCAL GOVERNMENT DEBT ON **DEC 2010** AND **JUNE 2013**
  - ❖ We worked hard to fill out the time series of the above four sources
  - ❖ **Municipal Bonds** and **Municipal Corporate Bonds** are public information
  - ❖ Trust-Municipality Cooperation (信政合作) as a proxy for **Trust**
  - ❖ On **Bank loans**
    - ❖ Reasonably accurate prior to 06/2013 (WIND, news release by CRBC)
    - ❖ Post 06/2013, based on annual report by *Construction Bank of China*

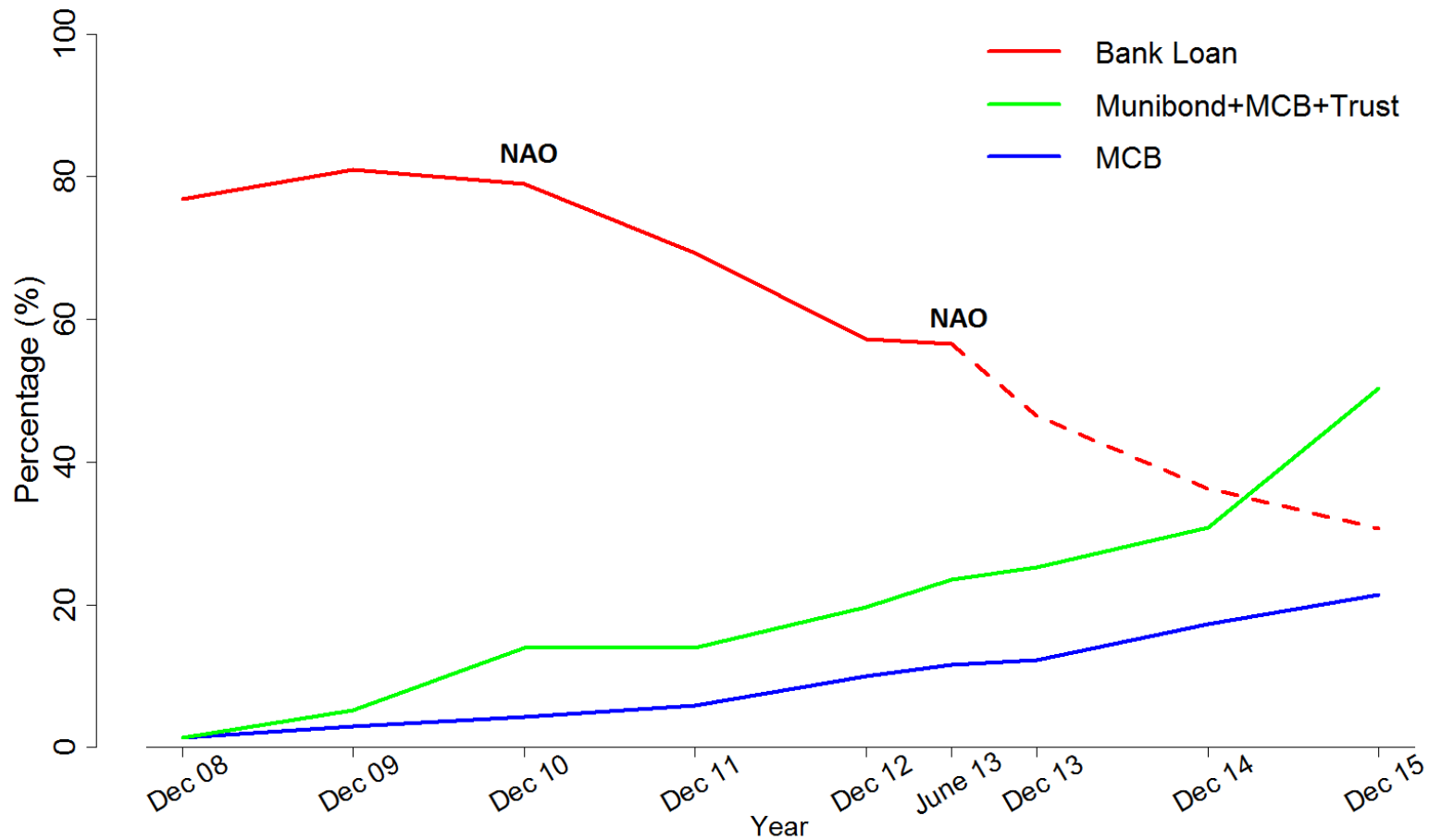
# GROWTH OF LOCAL GOVERNMENT DEBT BALANCE AND ITS FOUR SOURCES

❖ Missing: **built-to-transfer**; **accounts receivables**; **equity**; etc.

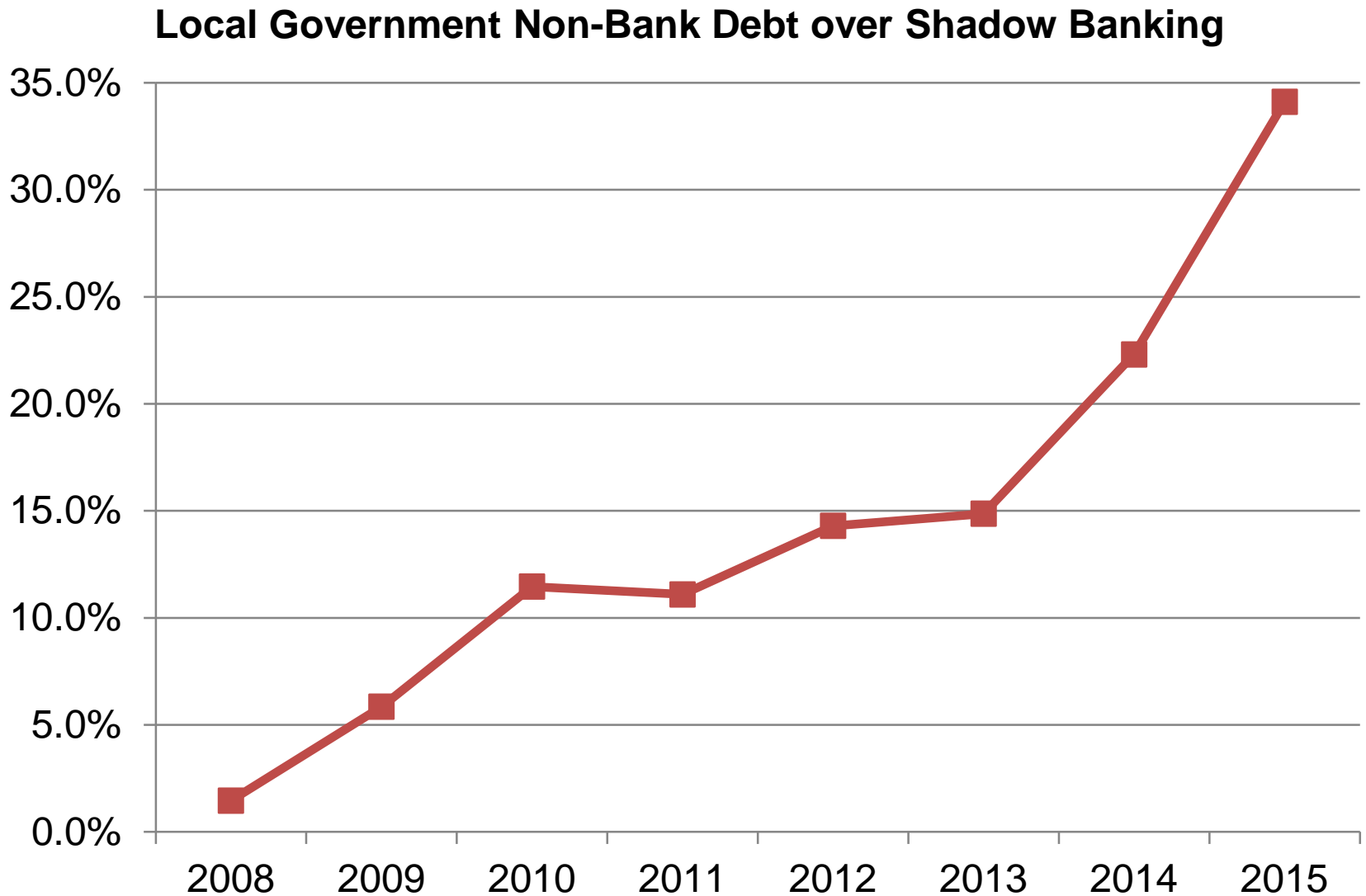




# COMPOSITION CHANGE OF BANK AND NON-BANK DEBT FINANCING



# LOCAL GOVERNMENT NON-BANK DEBT AS A FRACTION OF SHADOW BANKING



# CROSS-SECTIONAL ANALYSES: EVIDENCE FROM MCB (1)

- ❖ WE TURN TO CROSS-SECTIONAL ANALYSIS FOR MORE CONVINCING EVIDENCE
- ❖ CORE IDEA: AREAS/PROVINCES WITH MORE BANK-LOAN-FUELED STIMULUS IN 2009 SHOULD HAVE MORE SHADOW BANKING IN 2012-2015
  - ❖ Matters little whether firm (demand) or bank (supply) driven in 2009
- ❖ WE FOCUS ON MUNICIPAL CORPORATE BONDS
  - ❖ Issuance date, amount, and many of them even the purpose (repaying bank loan, investment, or others)
  - ❖ It is more than data availability issue
- ❖ FOR MCB, WE KNOW WHERE THE FUNDS GO TO
  - ❖ For instance, WIND has data for individual trust products---but it only tells us where the source of fund comes from (not its use)

# CROSS-SECTIONAL ANALYSIS: EVIDENCE FROM MCB (2)

## ❖ WHAT DO WE DO?

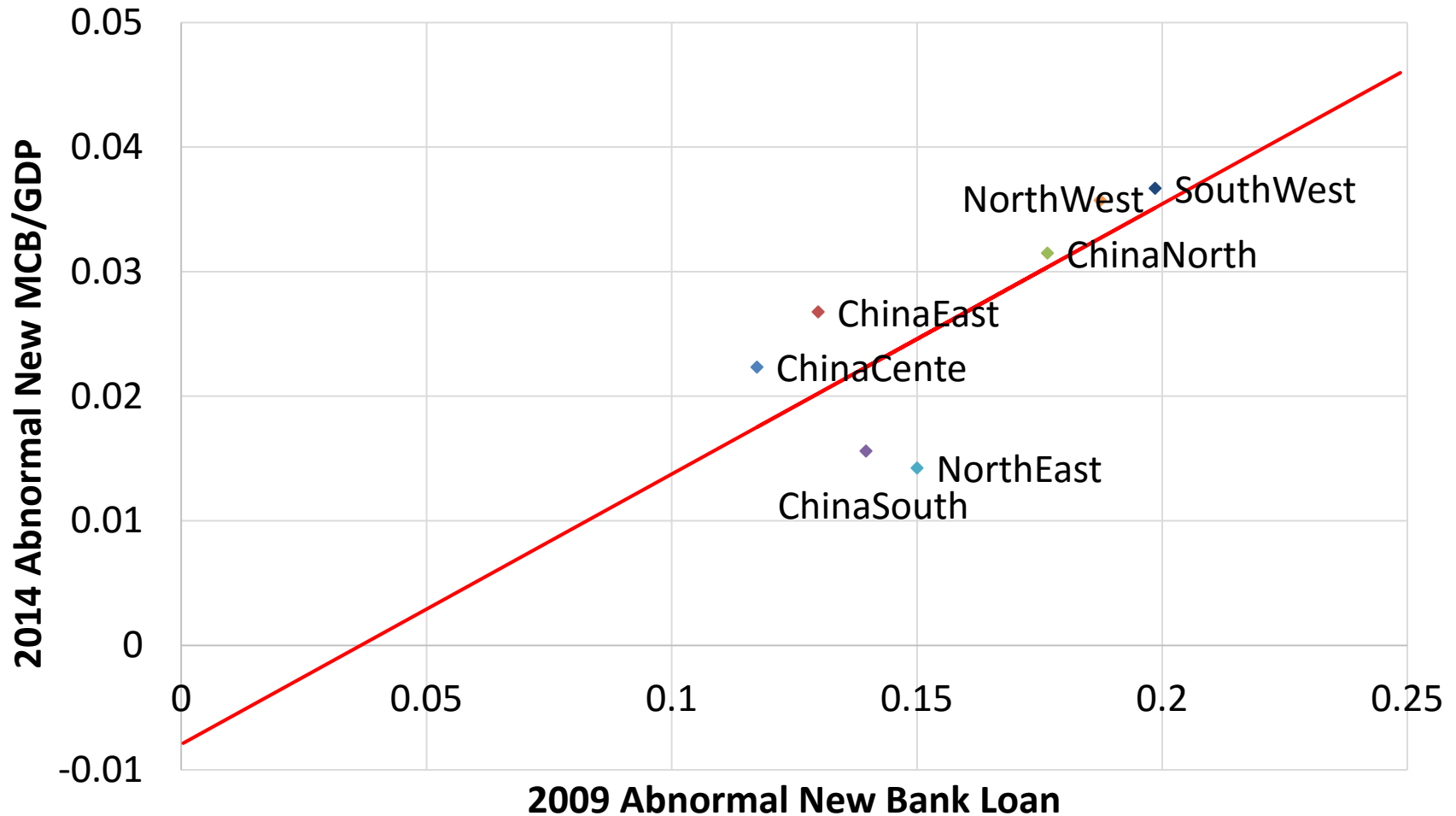
- ❖ Construct abnormal 2009 Bank loan over GDP at the province level
  - ❖ For each province,  $(BL/GDP \text{ at } 2009) - (\text{Average } BL/GDP \text{ } 2004\sim 08)$
- ❖ For years 2012-2015, construct abnormal 201X MCB over GDP at the province level
  - ❖ For each province,  $(MCB/GDP \text{ at } 201X) - (\text{Average } MCB/GDP \text{ } 2004\sim 08)$
- ❖ **Prediction:** the province with larger abnormal 201X MCB/GDP is the one with higher abnormal 2009 BL/GDP

## ❖ REGRESSION WITH VARIOUS RELEVANT CONTROLS AT PROVINCIAL LEVEL AT 201X

- ❖ GDP growth; (abnormal) fiscal deficit over GDP; (abnormal) fixed asset investment over GDP at 201X; (abnormal) land sale over fiscal revenue at 201X; Corruption index at provincial level (Ang, Bai, and Zhou (2016))

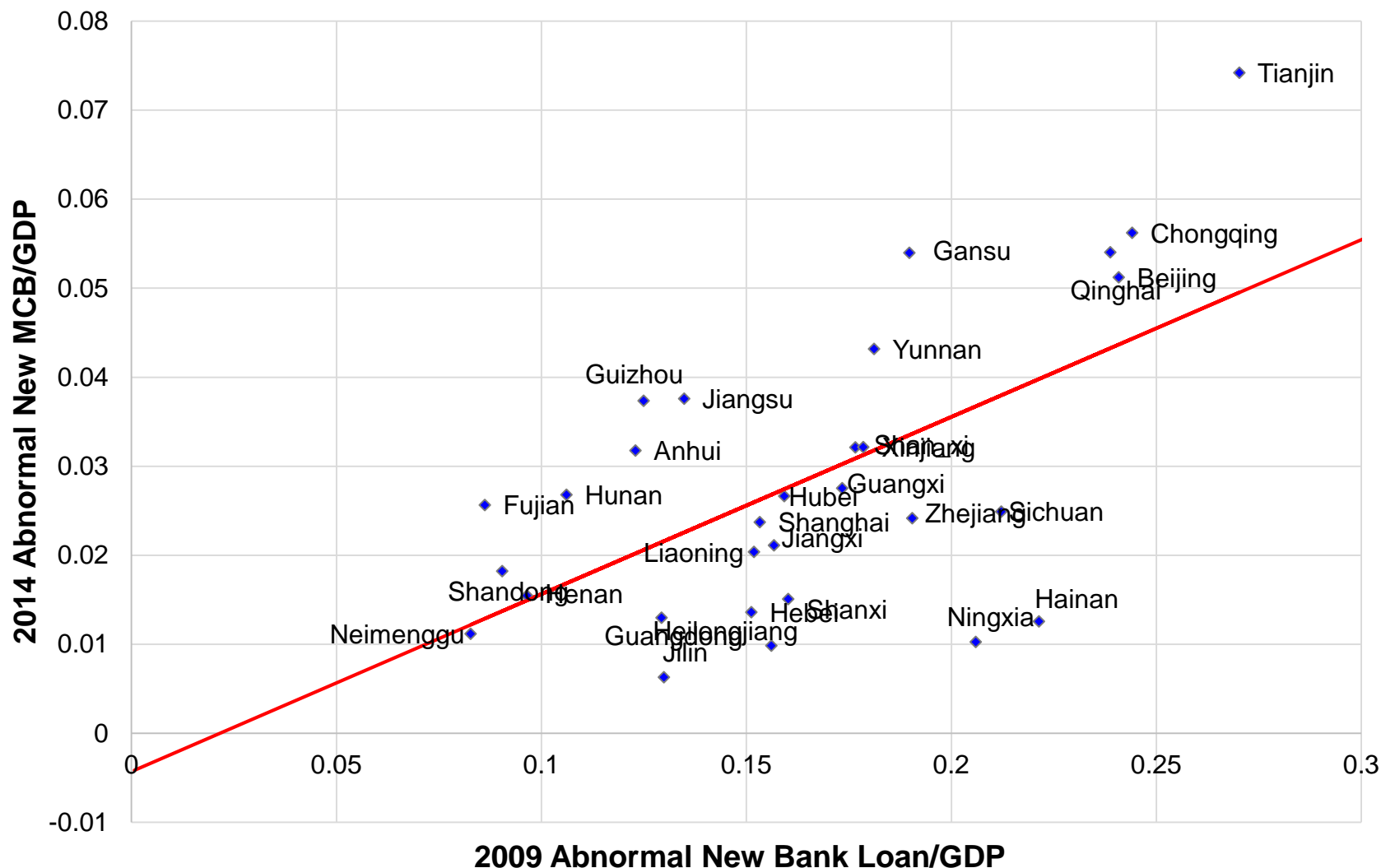
# REGIONAL EVIDENCE

2009 Bank Loan v.s. 2014 MCB: Regional Level

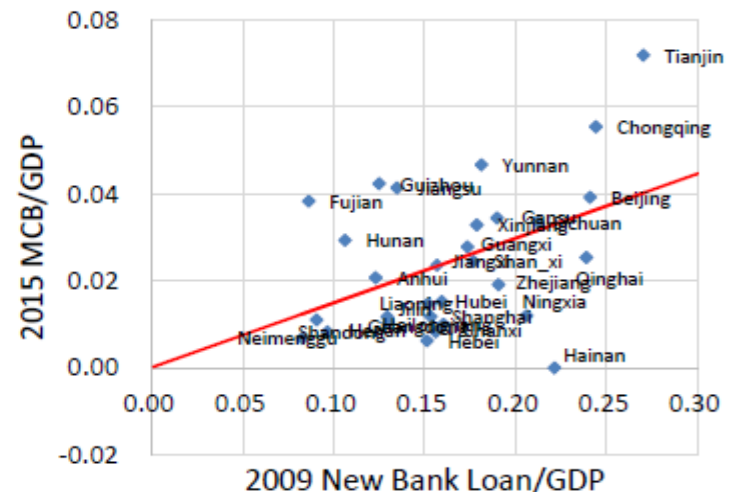
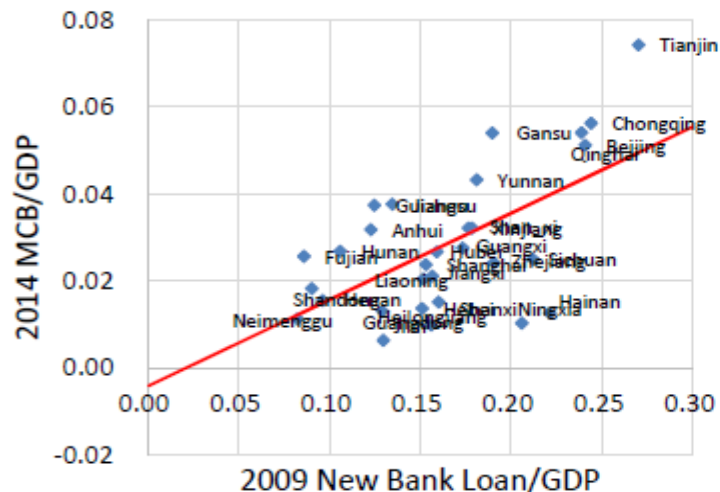
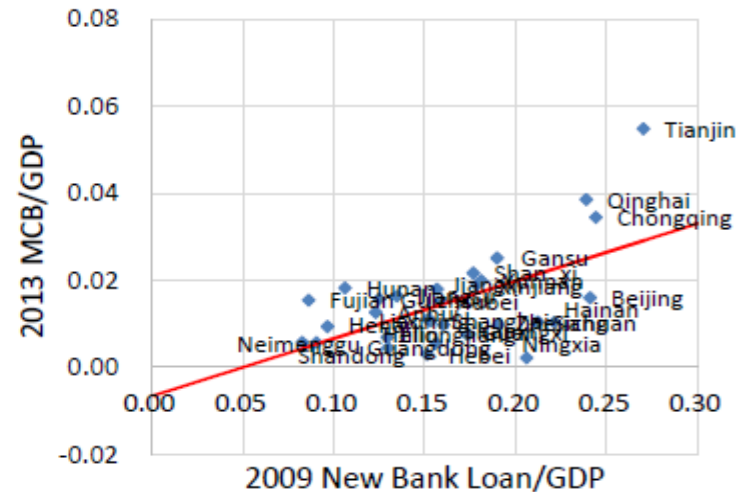
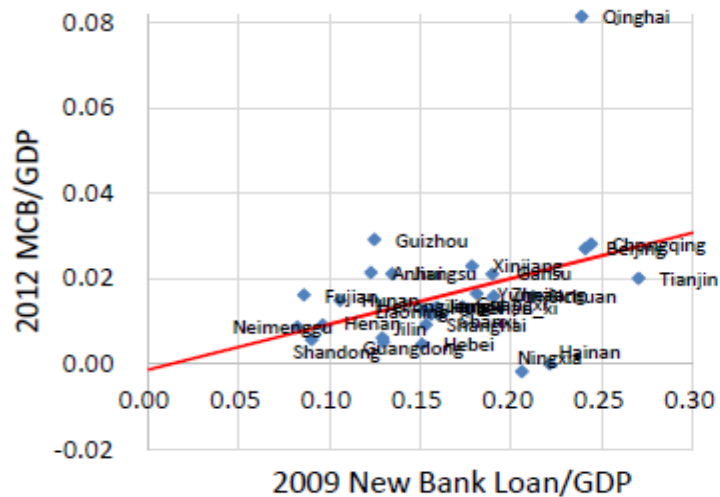


# PROVINCIAL EVIDENCE

2009 Bank Loan v.s. 2014 MCB: Provincial Level



# PROVINCIAL EVIDENCE FOR EACH YEAR, 2012-2015



# REGRESSION RESULTS BY YEAR, REGIONAL AND PROVINCIAL

2012-2015 abnormal **MCB/GDP** on 2009 abnormal **BL/GDP**, year-by-year regression

Regional	2012	2013	2014	2015
2009 BL/GDP	<b>0.11***</b>	<b>0.13**</b>	<b>0.22***</b>	<b>0.24**</b>
	<b>(2.66)</b>	<b>(2.24)</b>	<b>(3.29)</b>	<b>(2.52)</b>
Adj. R2	0.42	0.35	0.44	0.46
Obs.	7	7	7	7
Provincial	2012	2013	2014	2015
2009 BL/GDP	<b>0.11</b>	<b>0.13***</b>	<b>0.20***</b>	<b>0.15**</b>
	<b>(1.55)</b>	<b>(2.61)</b>	<b>(3.45)</b>	<b>(2.05)</b>
Adj. R <sup>2</sup>	0.10	0.31	0.34	0.17
Obs.	30	30	30	30



# PLACEBO TESTS, USING 2008Q1-Q3 BANKLOAN GROWTH

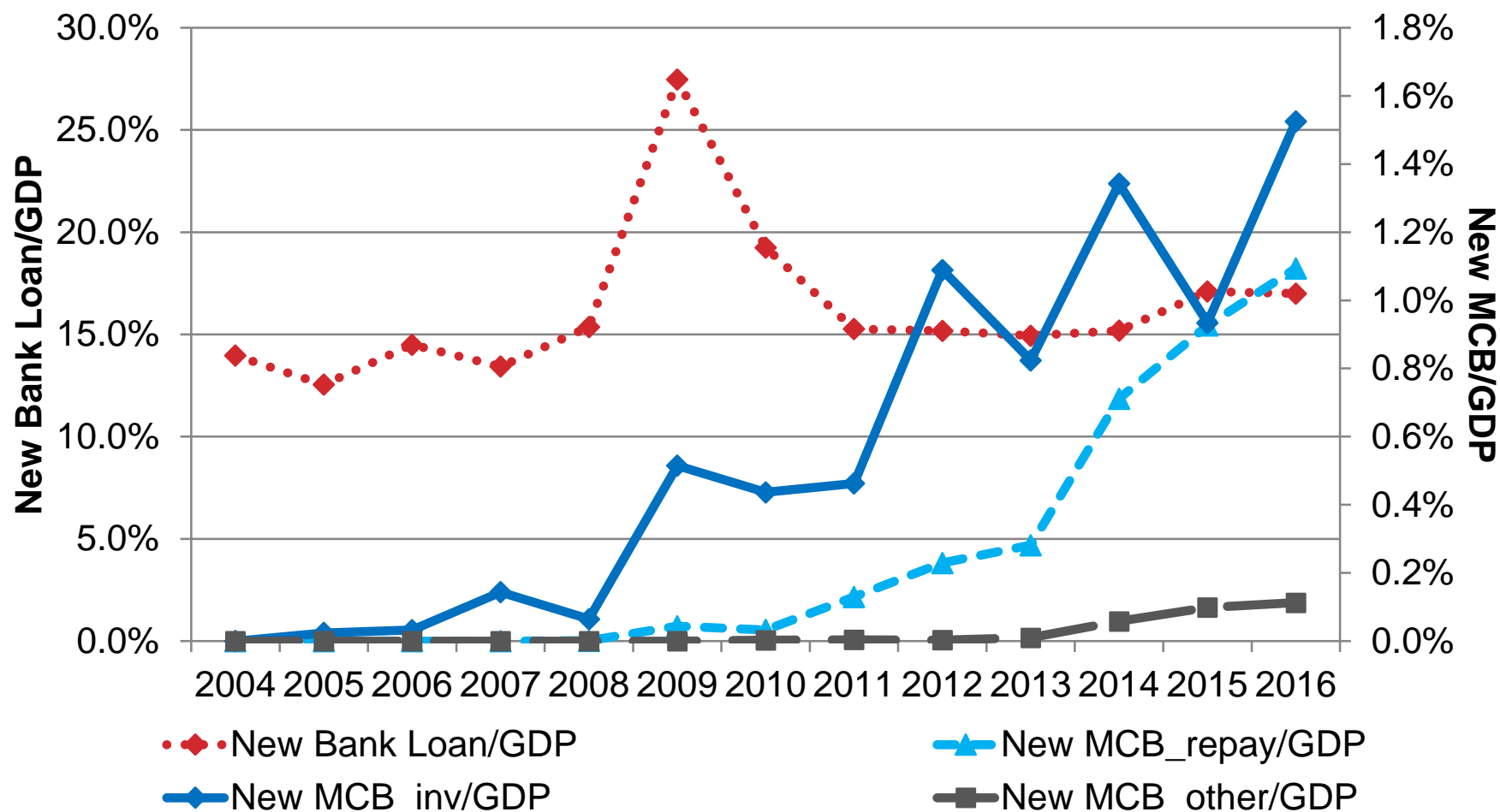
Year-by-year provincial regression

	2012	2013	2014	2015
2008 Q1-Q3 BL/GDP	0.07	-0.00	-0.01	-0.06
	(0.74)	(-0.01)	(-0.09)	(-0.36)
Adj. R <sup>2</sup>	-0.02	-0.04	-0.04	-0.03
Obs	30	30	30	30
	2012	2013	2014	2015
2009 BL/GDP	0.11*	0.15***	0.23***	0.18**
	(1.68)	(2.73)	(4.72)	(2.74)
2008 Q1-Q3 BL/GDP	0.01	-0.09	-0.15	-0.16
	(0.12)	(-0.98)	(-1.61)	(-1.50)
$F\text{-test } \beta^{09} = \beta^{08Q1-Q3}$	2.94*	3.20*	11.69***	6.08**
$p\text{-value}$	(0.10)	(0.08)	(0.00)	(0.02)
Adj. R <sup>2</sup>	0.10	0.31	0.34	0.17
Obs	30	30	30	30

# DIRECT EVIDENCE ON MCB ISSUANCE PURPOSES

❖ 81% of MCB prospectus reveal its purpose.... Perfect for us

**Panel B: Newly Issued Municipal Corporate Bonds (MCB) by Purpose**



# PANEL REGRESSION OF MCB ISSUANCE

2012-2015 abnormal **MCB/2009 GDP** on 2009 abnormal BL/GDP

	MCB	MCB	$MCB_{repay}$	$MCB_{inv}$	$MCB_{other}$	$MCB_{repay}^{10}$
2009 BL/GDP	<b>0.15***</b>	<b>0.10**</b>	<b>0.03*</b>	<b>0.02</b>	<b>0.00</b>	<b>0.13***</b>
	<b>(3.45)</b>	<b>(2.10)</b>	<b>(1.82)</b>	<b>(1.20)</b>	<b>(1.49)</b>	<b>(4.37)</b>
FD/GDP		0.07	0.07**	0.02	-0.01	-0.13***
		(0.89)	(1.97)	(1.30)	(-1.32)	(-4.35)
FAI/GDP		-0.01	-0.01**	-0.00	0.00	-0.00
		(-0.65)	(-2.46)	(-0.05)	(1.07)	(-0.19)
LS/FR revenue		-0.02	-0.00	-0.01	0.00	0.04
		(-0.68)	(-0.41)	(-0.54)	(0.50)	(0.98)
GDP growth		0.16***	0.04	0.09***	0.00	0.17**
		(3.57)	(1.49)	(5.28)	(0.93)	(2.23)
Corruption Index		0.01***	0.01***	0.00	0.00	0.01***
		(3.17)	(3.49)	(0.79)	(1.61)	(8.17)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R <sup>2</sup>	0.31	0.49	0.52	0.33	0.23	0.76
Obs.	120	120	120	120	120	40

# HOW ABOUT MCB PRICES?

- ❖ Does relative quantity matter?
- ❖ Integrated interbank market, homogeneous investors, only bond risk matters

MCB Issuing Spread over China Development Bank Bond Yield

Controls omitted

	Spread	Spread	<i>Spread</i> <sub>2012</sub>	<i>Spread</i> <sub>2013</sub>	<i>Spread</i> <sub>2014</sub>	<i>Spread</i> <sub>2015</sub>
2009 BL/GDP		-0.02	-0.03	-0.50	-0.33	0.80
		(-0.04)	(-0.05)	(-1.44)	(-0.82)	(1.32)
Rating	0.47***	0.47***	0.46***	0.41***	0.46***	0.47***
	(38.60)	(35.44)	(9.73)	(14.15)	(14.08)	(17.28)
Maturity	-0.01	-0.01	0.02	0.02	0.00	-0.04**
	(-0.73)	(-0.72)	(0.87)	(1.17)	(0.10)	(-2.31)
Year FE	Yes	Yes	No	No	No	No
Bond type FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R <sup>2</sup>	0.59	0.59	0.54	0.57	0.64	0.57
Obs.	4788	4788	660	687	1677	1764

# LINK TO SHADOW BANKING: ENTRUSTED LOAN GROWTH

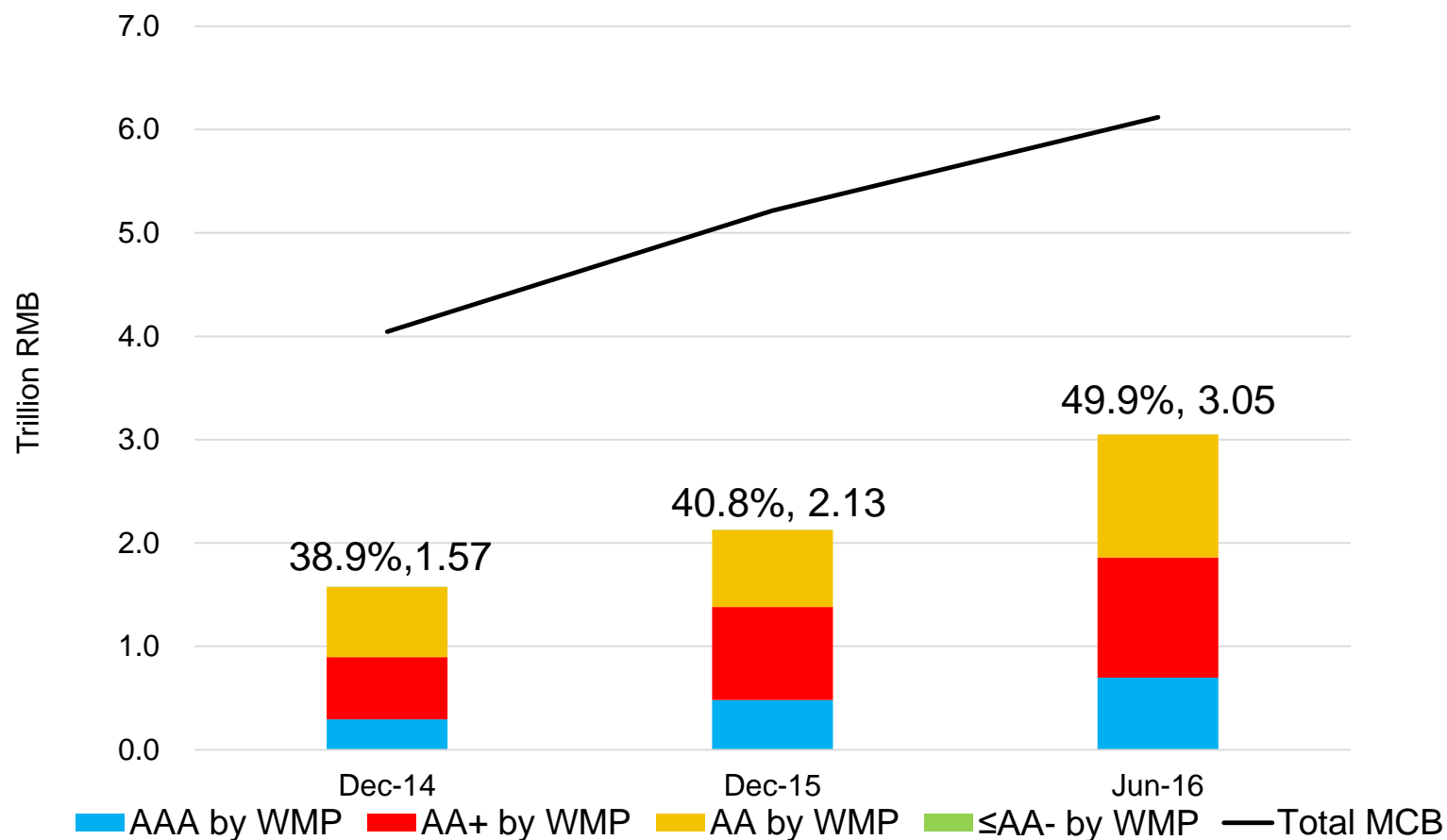
2013-2015 abnormal **entrusted loan/GDP** on 2009 abnormal BL/GDP, year-by-year and panel regressions

	2013	2014	2015	Panel	Panel
2009 BL/GDP	<b>0.20**</b>	<b>0.23**</b>	<b>0.14</b>	<b>0.19**</b>	<b>0.20***</b>
	<b>(2.00)</b>	<b>(2.08)</b>	<b>(1.37)</b>	<b>(2.35)</b>	<b>(2.54)</b>
FD/GDP					-0.04
					(-0.48)
FAI/GDP					-0.05*
					(-1.79)
LS/FR revenue					0.01
					(0.26)
GDP growth					0.10
					(0.68)
Year fixed effects					Yes
Adj. R <sup>2</sup>	0.13	0.14	0.04	0.14	0.27
Obs.	30	30	30	90	90

BL: bank loan; FD: fiscal deficit; FAI: fixed asset investment; LS/FR: land sale/fiscal revenue

# LINK TO SHADOW BANKING: WEALTH MANAGEMENT PRODUCT (理财产品)

## WMP Investment in MCB



- ❖ Based on annual official reports on WMP; likely underestimate as unclear whether including certain financial innovation funded through WMP

# CONCLUDING REMARKS (1)

- ❖ A MECHANISM THAT PUTS TOGETHER RECENT VARIOUS ASPECTS OF CHINA'S FINANCIAL MARKET
  - ❖ Local government debt; shadow banking; interest rate liberalization
- ❖ SHADOW BANKING AS ONE OF UNINTENDED CONSEQUENCES OF FOUR-TRILLION STIMULUS PLAN
  - ❖ Good? bad?
  - ❖ Popular view: hidden risk and leverage, so bad
- ❖ BUT IT FOSTERS THE MODERNIZATION OF CHINA'S FINANCIAL MARKETS
  - ❖ “Let market be decisive;” interest rate liberalization and deposit insurance
  - ❖ Rocket-speed of the growth of interbank market in China; less reliance on commercial banks; richer set of investment products
  - ❖ Households get the return they ought to get (not just house price appreciation)

# CONCLUDING REMARKS (2)

- ❖ MARKET FORCES BEHIND REGULATION CHANGES AROUND 2014
- ❖ JUNE 2010, STATE COUNCIL, NO. 19 DOCUMENT ON LGFVS, TIGHTENING
  - ❖ The market responded by lower issuance of MCB in 2010 and 2011
- ❖ SEPT 2014, STATE COUNCIL, NO. 43 DOCUMENT ON LGFVS, TIGHTENING
  - ❖ Banned Local governments providing guarantee to LGFVs' bond offerings
  - ❖ Prohibited local governments from raising debt via LGFVs
  - ❖ Restructure and substitute existing debt with more Munibonds
- ❖ BUT IN 2015 BEIJING ISSUED OTHER “CONFLICTING” REGULATION CHANGES THAT AIMED TO FACILITATE LGFVS TO BORROW VIA MCB. WHY?
  - ❖ Budget of 2015 Munibonds were preapproved at the end of 2014, which was tight
  - ❖ In early 2015 it became apparent that the preapproved amount was not enough to absorb all the refinancing needs by LGFVs
  - ❖ It is costly to change the budget....well, open the back door again