Internet Appendix to
"Fiscal Stimulus, Deposit Competition, and the Rise of Shadow Banking: Evidence from China"

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This internet appendix includes 9 sections of tables/figures as robustness tests and additional results related to the empirical results reported in the paper.

1. Correlation between the share of foreign-currency deposit and the bank's deposit growth: Table IA1

2. Distribution of new branches of joint-equity and urban commercial banks: Table IA2

3. Refinancing stimulus loans and the growth of WMPs: Table IA3 and Figure IA7

4. Measuring WMPs issued by certain types of banks and examining the measurement errors: Figures IA1 and IA5;

5. Bank deposit rates and rate ceilings: Figure IA2

6. Branching intensities of the Big Four banks: Figure IA3

7. Parallel trends between treated and untreated bank groups: Figure IA4

8. Predicted vs. the Actual Values of Loan Balances and Fixed Capital: Figure IA6

9. Rollover risks of WMPs: Figures IA8 and IA9.

Table IA1 Export, Foreign-Currency Deposit and Deposit Growth

This table shows the correlation between the share of BOC's foreign-currency deposit and the bank's deposit growth, and how such correlation depends on the total export growth. Robust *t*-statistics are shown in the parentheses. *** p<0.01, ** p<0.05, and * p<0.1.

Year t	2007	2008	2009	2010	2011	2012	2013	2014	2015
Dep Var: $\log(deposit_{t+1}/deposit_t)$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Foreign-currency deposit share at t	-0.0721	-0.381***	-0.215	0.334**	-0.192	0.673	0.738	-0.550	-0.0449
	(-0.382)	(-3.212)	(-1.524)	(2.404)	(-0.787)	(1.117)	(1.386)	(-1.296)	(-0.144)
Constant	0.211***	0.332***	0.266***	0.153***	0.192***	0.170***	0.118***	0.177***	0.168***
	(7.152)	(17.89)	(14.57)	(13.20)	(14.97)	(12.94)	(8.162)	(11.89)	(11.17)
Observations	34	45	51	56	64	71	73	82	90
R-squared	0.002	0.050	0.020	0.111	0.013	0.090	0.071	0.045	0.000
Export Growth t to t+1	7.23%	-18.29%	30.47%	15.15%	4.96%	6.01%	4.92%	-1.89%	-1.95%

Table IA2 Distribution of New Branches of Joint-Equity and Urban Commercial Banks

This table reports the number of new branches established by the joint-equity and urban commercial banks during 2007-2015 based on the cities where the branches are located. The first column corresponds to the branches located in the city where the bank is headquartered, and for the remaining branches, we group them by whether the branch is located in the headquarter province and whether the bank operates branches in the city in the previous years. Branching information is from CBRC's website.

Year	Headquarter City	Different Province		Headquarter Province		Total
		No Pre-branch	Pre-branch	No Pre-branch	Pre-branch	
2007	269	33	247	36	177	762
2008	238	77	392	104	64	875
2009	229	116	415	303	102	1165
2010	232	186	486	155	152	1211
2011	242	135	533	71	221	1202
2012	266	90	760	42	377	1535
2013	348	95	991	120	420	1974
2014	1027	99	3493	97	847	5563
2015	934	94	2894	65	1103	5090
Total	3,785	925	10,211	993	3,463	19377

Table IA3 Refinancing of Stimulus Loans and the Growth of WMPs

This table reports results on the relationship between the estimated stimulus loans extended by a bank and its subsequent WMP balances. We first estimate the linear trend of quarterly loan balances for each of the largest 25 banks from 2006 Q4 to 2008 Q4, then predict the loan balance in 2010 Q4 if such trend continues, and use the difference between the actual loan balances and the predicted loan balances in 2010 Q4 as the estimated stimulus loan. The top (bottom) panel uses principal-floating (principle-guaranteed) WMP balance as the dependent variable. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Year t	2010	2011	2012	2013	2014
WMP Yield type	floating	floating	floating	floating	floating
Dep Var: (WMP Balance in year t)/(Loan Balance in 2008)	(1)	(2)	(3)	(4)	(5)
Estimated stimulus loan/Loan balance in 2008	0.0237	-0.000119	1.227***	1.364***	2.093***
	(0.354)	(-0.00240)	(5.547)	(5.174)	(3.068)
Constant	0.0463	0.0865***	-0.116	-0.0959	-0.0997
	(1.637)	(3.287)	(-1.022)	(-0.744)	(-0.383)
Observations	25	25	25	25	25
R-squared	0.006	0.000	0.448	0.485	0.391

Year t	2010	2011	2012	2013	2014
WMP Yield type	guarantee	guarantee	guarantee	guarantee	guarantee
Dep Var: (WMP Balance in year t)/(Loan Balance in 2008)	(1)	(2)	(3)	(4)	(5)
Estimated stimulus loan/Loan balance in 2008	-0.00646	0.00559	0.252	0.398	0.202
	(-0.708)	(0.149)	(1.233)	(1.166)	(0.558)
Constant	0.0149**	0.0316*	0.0230	0.0227	0.234
	(2.322)	(1.950)	(0.280)	(0.173)	(1.570)
Observations	25	25	25	25	25
R-squared	0.004	0.001	0.161	0.150	0.029

Figure IA1 Sample WMP Balances vs. Actual Aggregate WMP Balances

Figure IA1.1 compares the sample WMP balances with the actual WMP balances reported by CBRC for all urban commercial banks. Figure IA1.2 compares the sample WMP balances of Big Four and joint-equity commercial banks with the total WMP balances in the government reports minus the total WMP balance of urban commercial banks reported by CBRC.[1] The sample WMP balances is first based on our survey data on the Big Four, joint-equity and the eight largest urban commercial banks, then on the banks' financial reports available from WIND, and complemented by adding up either the actual or the targeted issuing amounts of all outstanding individual WMPs in WIND.

Figure IA1.1: Sample WMP vs. Actual WMP Balances for Urban Commercial Banks
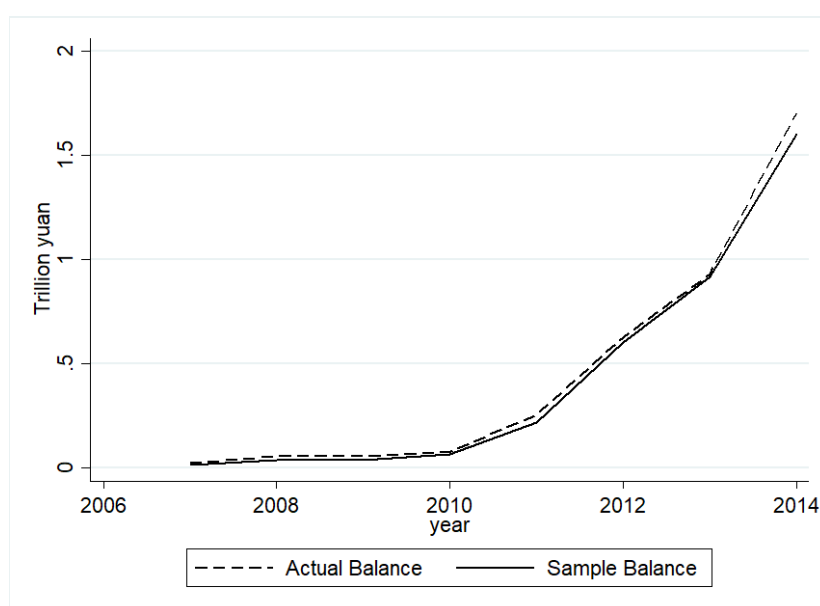
Figure IA1.2: Sample WMP vs Actual WMP Balances for Big Four and Joint-Equity Commercial Banks

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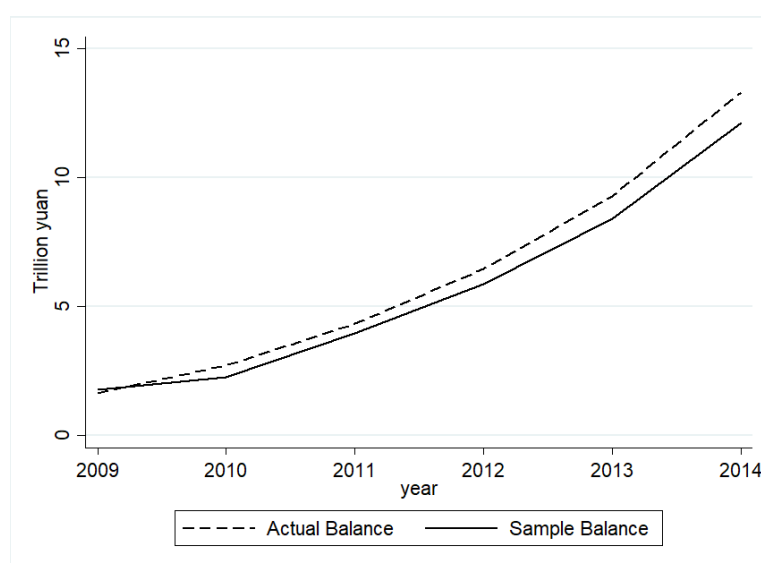
[1] Note that the latter group includes not only WMPs issued by the Big Four and joint-equity commercial banks, but also those issued by other types of (smaller) banks such as rural commercial banks.

Figure IA2 Offered Deposit Rates vs Deposit Rate Ceiling

Figure IA2.1 plots the percentage of banks which offered the ceiling rates for each maturity of deposit products, following each adjustment of the deposit rate ceiling. Figure IA2.2 plots, following each adjustment of the deposit rate ceiling, the average gap between the ceiling rates and the offered rates for each maturity of deposit products.

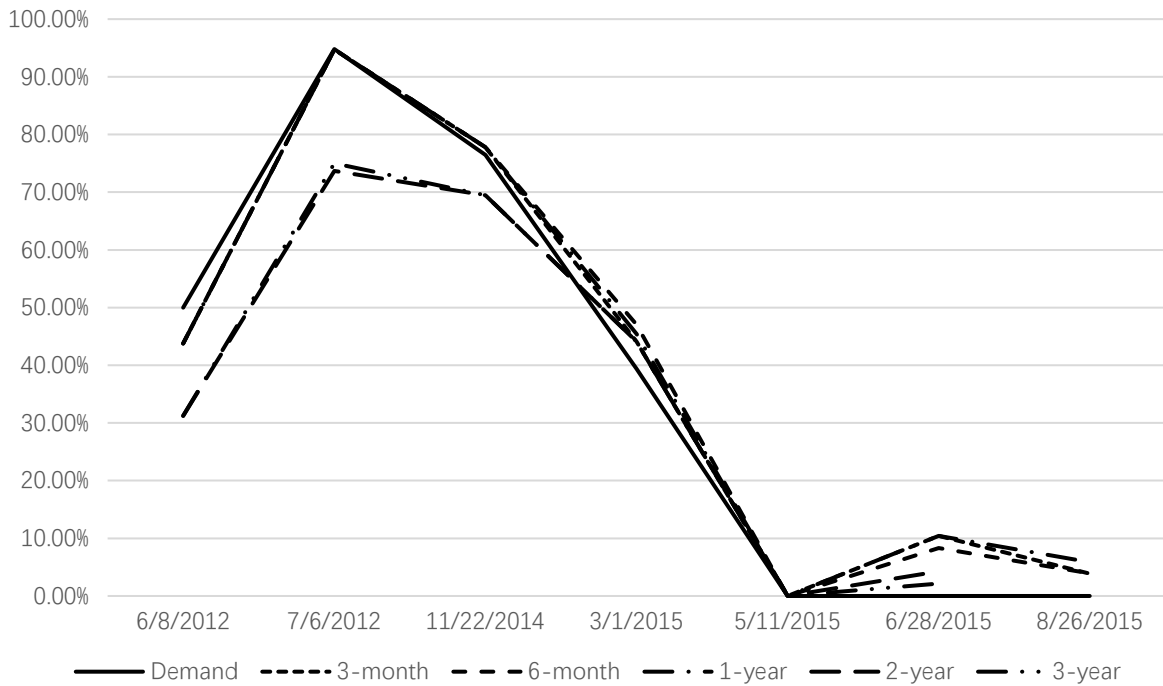**Figure IA2.1:** Percentage of Deposit Products Offered with Ceiling Rates

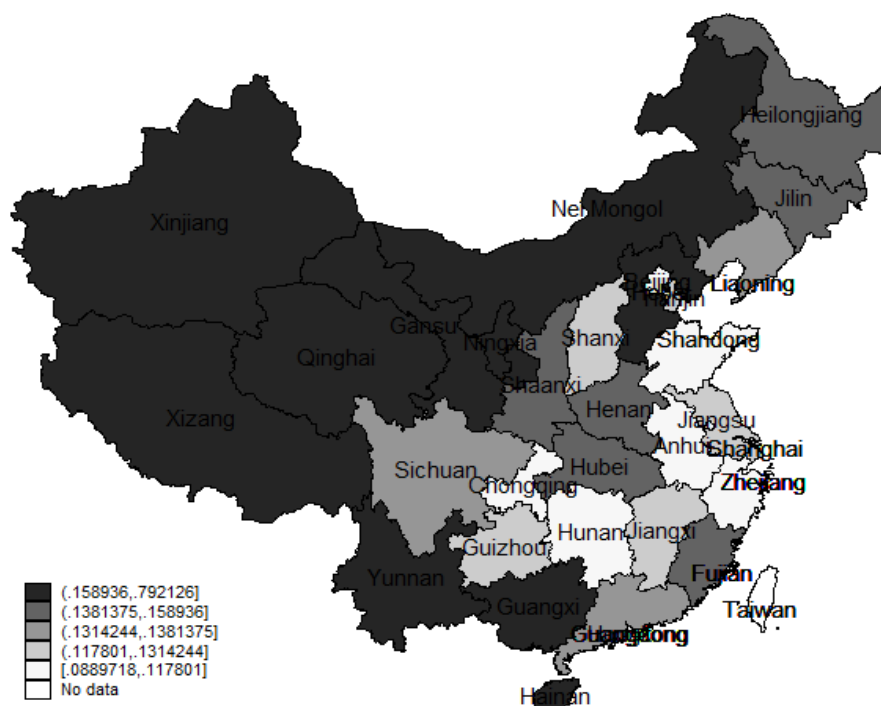**Figure IA2.2:** Average Ceiling Rates minus Offered Rates
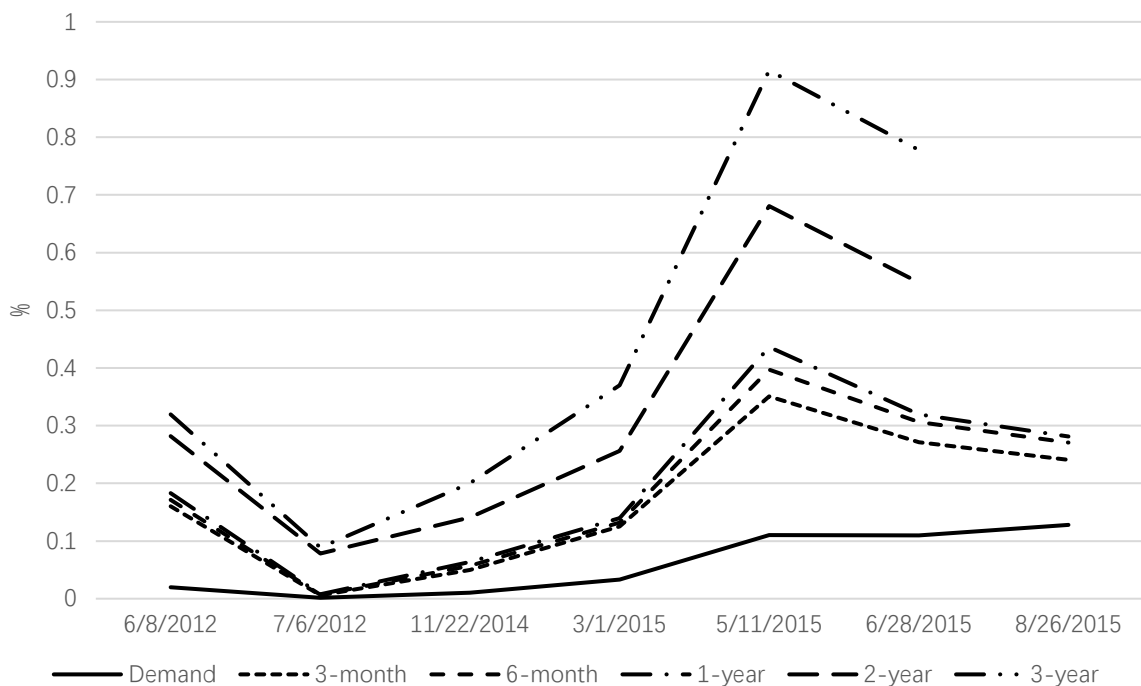
Figure IA3 Province-level Market Share of the Big Four Banks

The following four figures present the province-level market share (branch intensity) of the Big Four Banks, ABC, BOC, CCB, and ICBC, respectively.
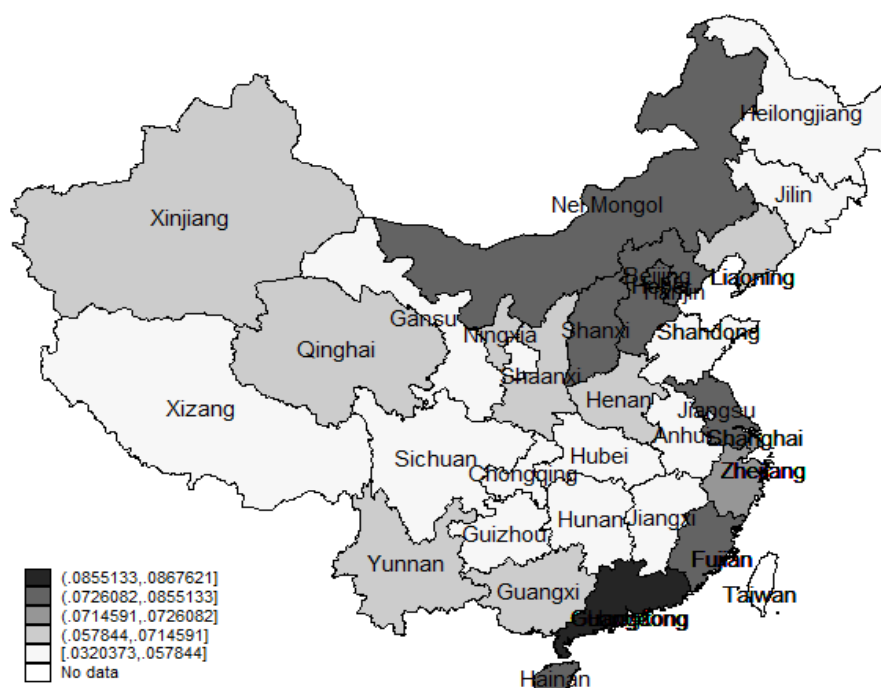
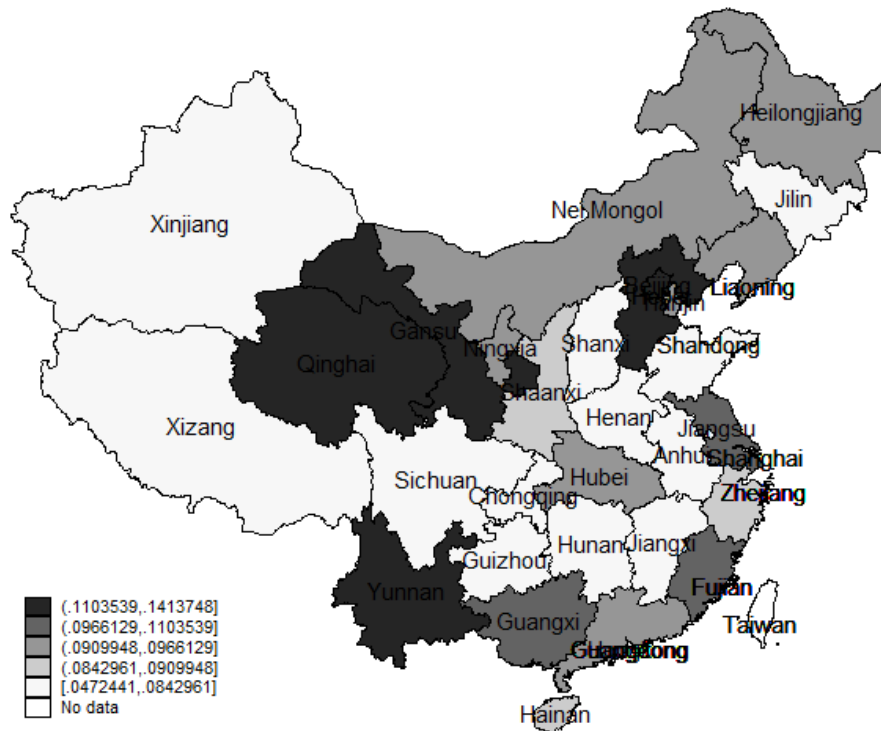## Province-level Market Share of ABC
As on 2012/12/31

Legend:
- (.158936,.792126]
- (.1381375,.158936]
- (.1314244,.1381375]
- (.117801,.1314244]
- [.0889718,.117801]
- No data

Province-level Market Share of BOC
As on 2012/12/31

Legend:
- (.0855133,.0867621]
- (.0726082,.0855133]
- (.0714591,.0726082]
- (.057844,.0714591]
- [.0320373,.057844]
- No data

Province-level Market Share of CCB
As on 2012/12/31

Heilongjiang

Jilin

Xinjiang

Neh Mongol

Gansu

Qinghai

Beijing
Tianjin
Liaoning

Ningxia
Shanxi
Shandong

Shaanxi

Xizang

Henan

Jiangsu

Sichuan

Anhui
Shanghai

Chongqing

Hubei

Zhejiang

Hunan
Jiangxi

Guizhou

Fujian

Yunnan

Taiwan

Guangxi

Guangdong

■	(.1103539,.1413748]
▨	(.0966129,.1103539]
▨	(.0909948,.0966129]
░	(.0842961,.0909948]
□	[.0472441,.0842961]
□	No data

Hainan

Province-level Market Share of ICBC
As on 2012/12/31

Heilongjiang

Jilin

Xinjiang

Neh Mongol

Beijing
Tianjin
Liaoning

Gansu

Ningxia
Shanxi
Shandong

Qinghai

Shaanxi

Henan

Jiangsu

Xizang

Anhui
Shanghai

Sichuan

Hubei

Zhejiang

Chongqing

Hunan
Jiangxi

Guizhou

Fujian

Yunnan

Taiwan

Guangxi

Guangdong

■	(.122149,.1507725]
▨	(.1156298,.122149]
▨	(.1028338,.1156298]
░	(.0979718,.1028338]
□	[.0031496,.0979718]
□	No data

Hainan

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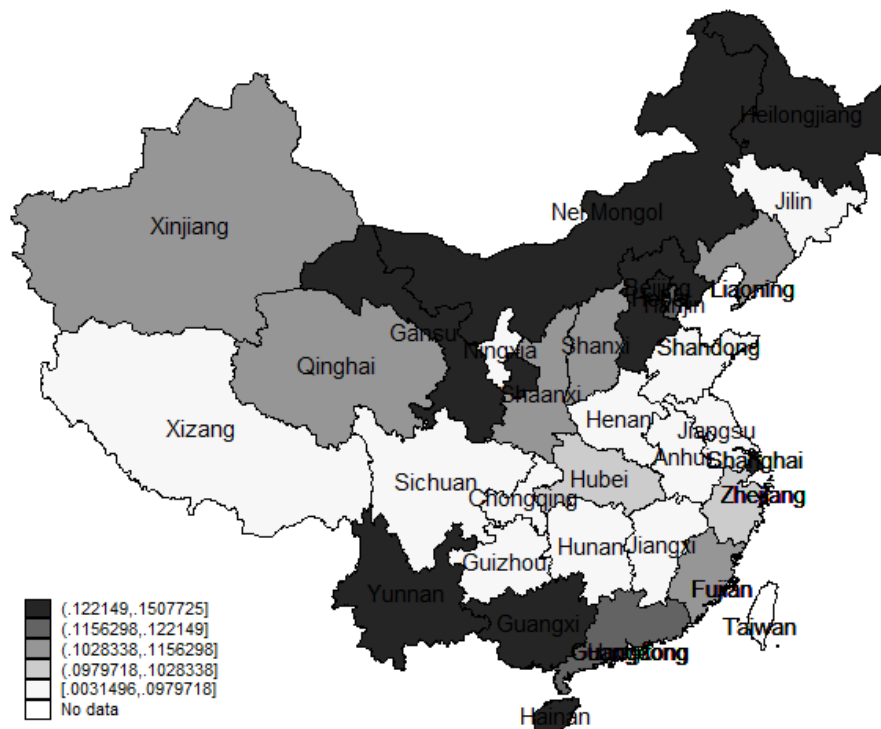
Figure IA4 Parallel Trends between the Treated vs. Untreated Groups of Banks

The graphs below plot the 95% confidence intervals for the coefficient estimates of BOC treatment effect on the corresponding bank variables in each year (using 2010 as the base year). The sample includes all joint-equity and urban commercial banks with data available in 2010. Standard errors are clustered by bank.
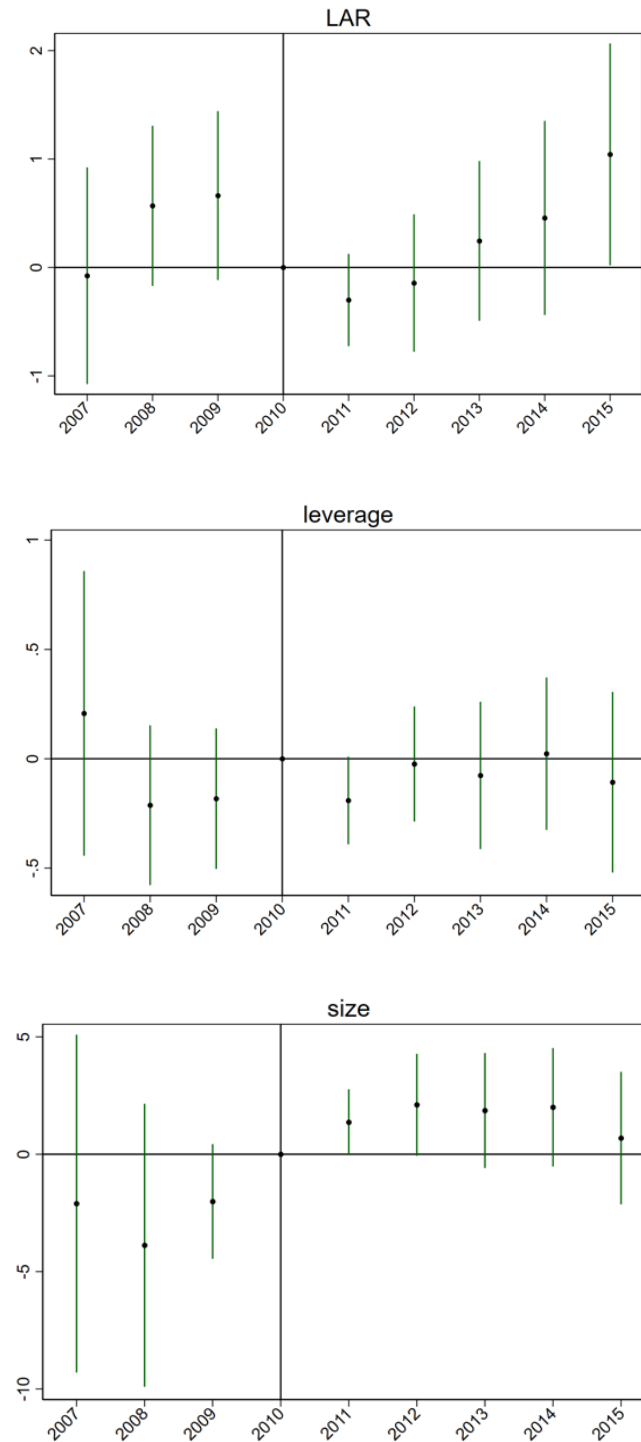
Figure IA5 Measurement Errors of SMBs' WMP Balances

We calculate the "measurement error" variable using the sum of either the actual or the targeted issuing amount of WMPs issued by the SMBs minus the true WMP balance, i.e., the value reported in our surveys or disclosed in the bank's financial statements, and divided by the bank's assets. We group the SMBs equally into two groups: high BOC exposure and low BOC exposure, and then for each group, we plot the mean and median of the error term over time.
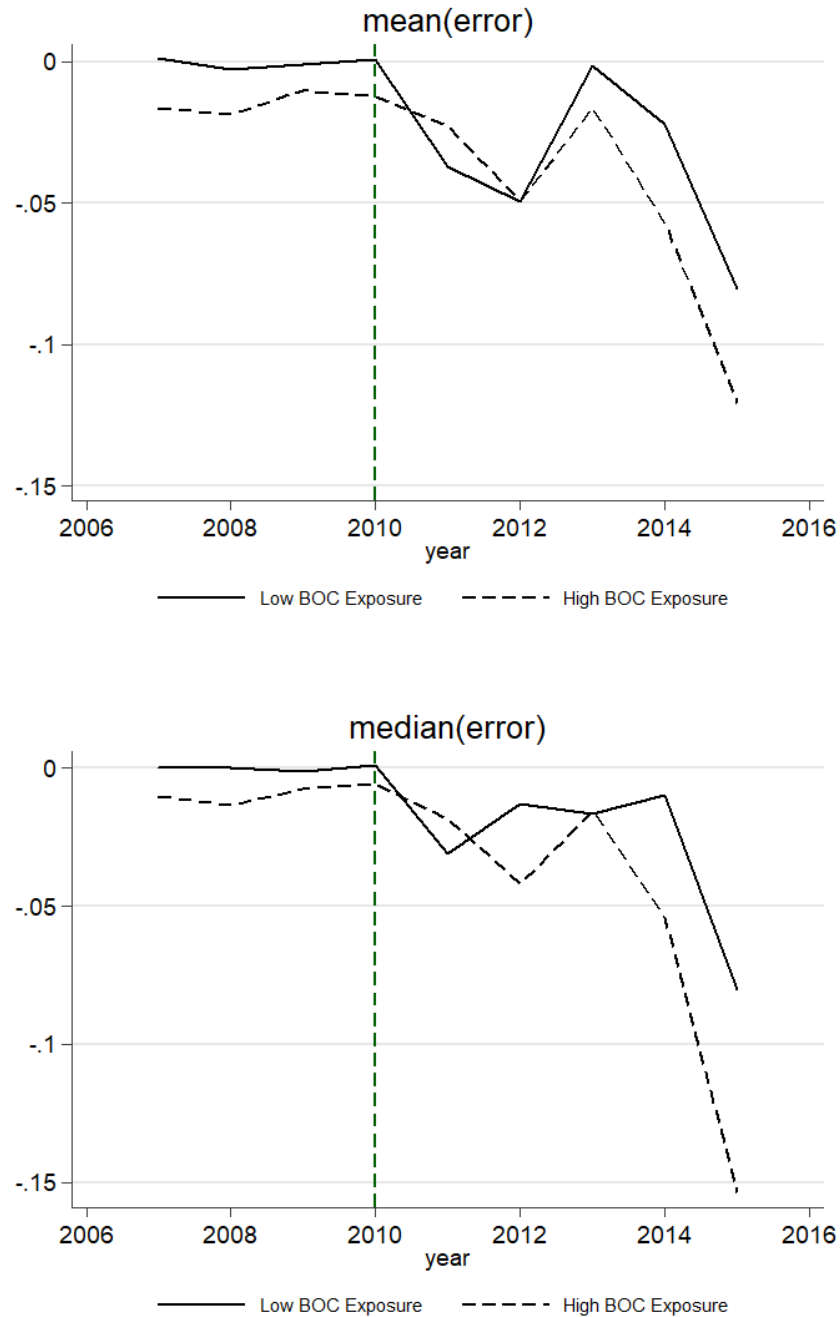
Figure IA6: The Predicted vs. the Actual Values of Loan Balances and Fixed Capital

For each city, we use the time series of bank loan balances (fixed capital) during 2003-2008 to estimate a linear (loglinear) trend, and then apply the trend to estimate the bank loan balances (fixed capital) at the end of 2010 if such pre-trends continued. We can calculate the difference between the actual and the predicted values. In case of a linear trend, we scale the difference by the value in 2008. We use the difference as a measure for the city-level intensity of the stimulus. Panel A shows the average trend and actual values for bank loan balances, and Panel B shows the average trend and actual values for fixed capital.

Panel A: Bank Loan Balances
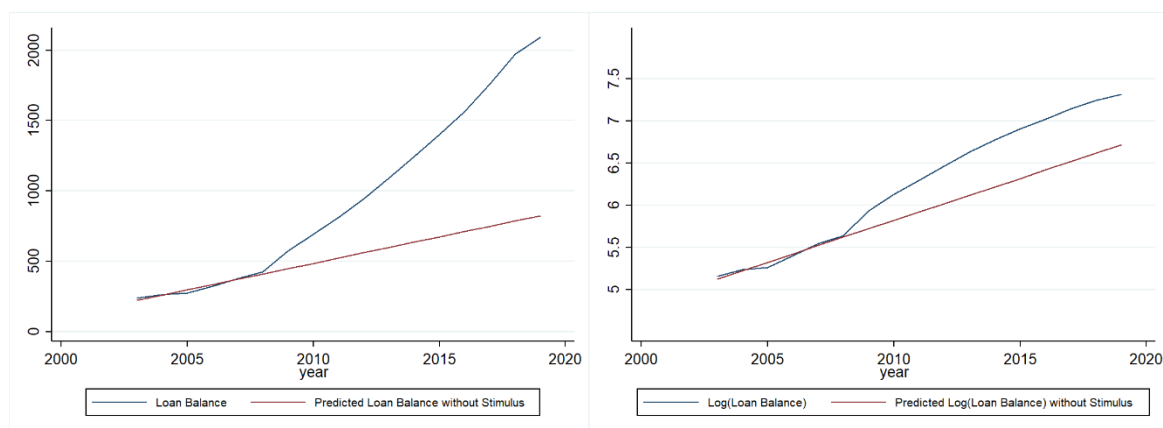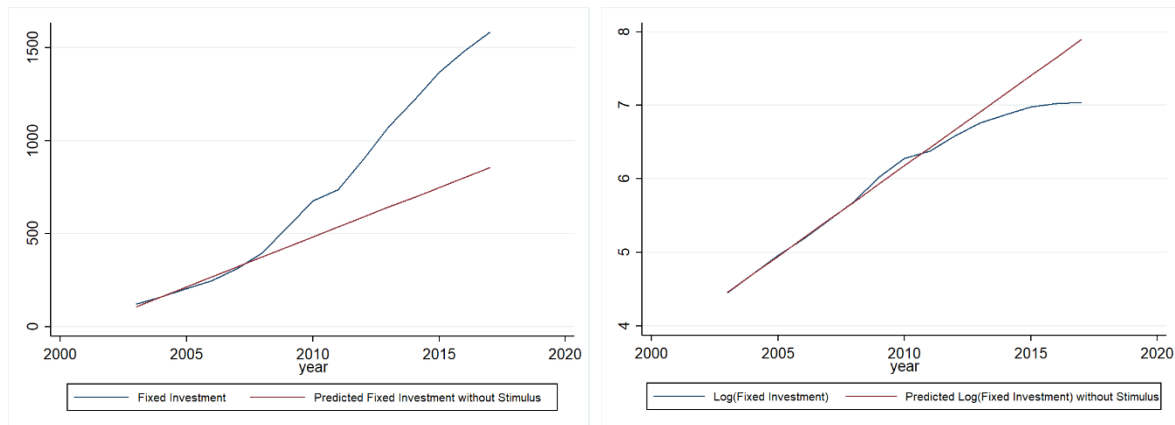

Panel B: Fixed Capital

Figure IA7 Bank Loans and WMP Balances Before and After the Stimulus

Figure IA7.1 plots the percentages of medium- and long-term bank loans from 2009 to 2014 for all banks and for the Big Four banks only. Figure IA7.2 shows for the largest 25 banks, the relationship between a bank's WMP balance at the end of 2013 and its estimated stimulus loan, both scaled by the loan balance at the end of 2008.

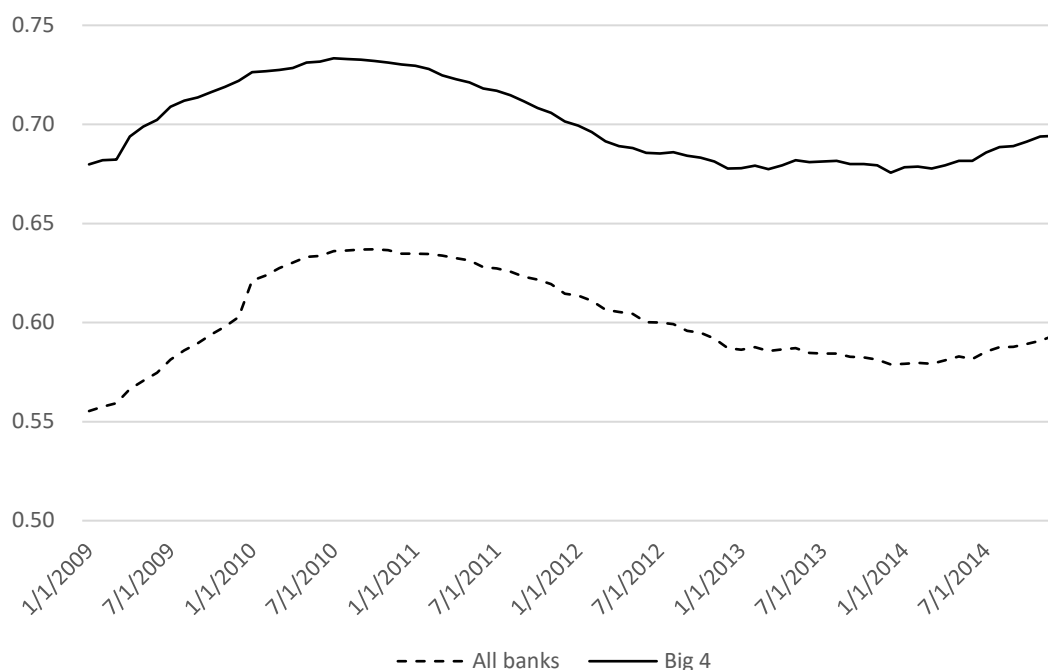**Figure IA7.1:** Percentages of Medium and Long-term Bank Loans Over Time

Figure IA7.2: Relation between WMP Balances in 2013 and Estimated Loan Increases
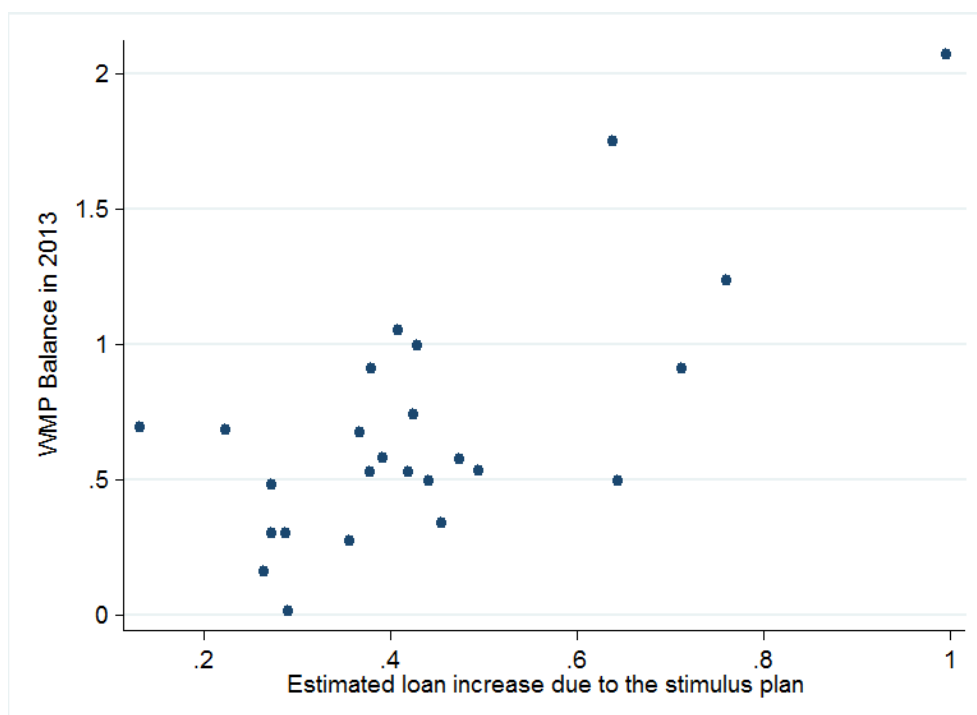
Figure IA8 Distribution of WMP Maturity Dates within a Quarter

This figure shows the total number of WMPs issued by the Big Four banks on each day of a quarter; we label the last day of each quarter as the 90th day and label the other days backwards. Data of individual WMPs is collected from WIND.
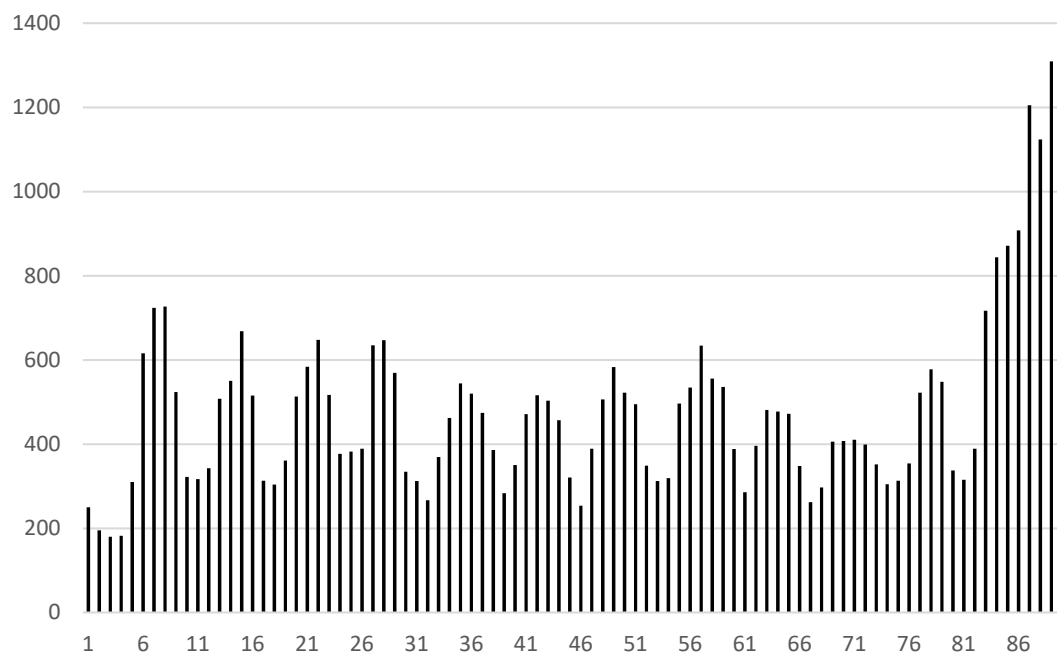
Figure IA9 Rollover Risks and Stock Market Response

This figure shows the stock returns versus WMP amount due/Equity on days when both the overnight and one-week SHIBOR increase by more than 1% compared to the previous day during 2009-2014. Stock returns are calculated as (today's closing price/yesterday's closing price) minus 1. The explanatory variable is the total WMP due in that month over bank equity at the end of the last month.