

# Deposit Insurance and Deposit Products

Lucy Chernykh and Vladimir Sokolov

Clemson University and  
ICEF, Higher School of Economics

HSE-LFE, Moscow, 2012

- Big Picture

- Big Picture
  - Deposit Insurance (DIS) and regulatory dilemmas: Public confidence vs. bank moral hazard incentives

- Big Picture
  - Deposit Insurance (DIS) and regulatory dilemmas: Public confidence vs. bank moral hazard incentives
- This study

- Big Picture
  - Deposit Insurance (DIS) and regulatory dilemmas: Public confidence vs. bank moral hazard incentives
- This study
  - The dark side of Deposit Insurance in tight deposit market

- Big Picture
  - Deposit Insurance (DIS) and regulatory dilemmas: Public confidence vs. bank moral hazard incentives
- This study
  - The dark side of Deposit Insurance in tight deposit market
  - Unique data on deposit terms for Insured and Uninsured deposit products

- Big Picture
  - Deposit Insurance (DIS) and regulatory dilemmas: Public confidence vs. bank moral hazard incentives
- This study
  - The dark side of Deposit Insurance in tight deposit market
  - Unique data on deposit terms for Insured and Uninsured deposit products
  - Aggressive deposit-taking and regulatory dilemmas

- Demirguc-Kunt and Detragiache (JME, 2002) provide c cross-country evidence on the DIS and the banking crisis



- Demirguc-Kunt and Detragiache (JME, 2002) provide a cross-country evidence on the DIS and the banking crisis
- Chernykh and Cole (JBF, 2011); Karas et al. (JMCB, 2012) study the effects of DIS introduction in Russia in 2004

- Demirguc-Kunt and Detragiache (JME, 2002) provide a cross-country evidence on the DIS and the banking crisis
- Chernykh and Cole (JBF, 2011); Karas et al. (JMCB, 2012) study the effects of DIS introduction in Russia in 2004
- Acharya and Mora (2012) document that financially constrained banks are not just passive backstops for savings but are active deposits seekers

- 1 The "bright side" of the *de novo* DIS in Russia introduced in 2004

- 1 The "bright side" of the *de novo* DIS in Russia introduced in 2004
  - Between 2004-2012 the total volume of household deposit grew from 2 to 13 trillion RUB, while Household deposits/GDP grew from 12 to 22%

# Russian DIS as a case study

- 1 The "bright side" of the *de novo* DIS in Russia introduced in 2004
  - Between 2004-2012 the total volume of household deposit grew from 2 to 13 trillion RUB, while Household deposits/GDP grew from 12 to 22%
- 2 During 2011-2012 due to European debt crisis the Russian banking system is effectively cut-off from the international capital markets

# Russian DIS as a case study

- 1 The "bright side" of the *de novo* DIS in Russia introduced in 2004
  - Between 2004-2012 the total volume of household deposit grew from 2 to 13 trillion RUB, while Household deposits/GDP grew from 12 to 22%
- 2 During 2011-2012 due to European debt crisis the Russian banking system is effectively cut-off from the international capital markets
  - Russian banks finance only about 1.6% of assets through bonds with bond yields averaging 8.6% in 2011

# Russian DIS as a case study

- 1 The "bright side" of the *de novo* DIS in Russia introduced in 2004
  - Between 2004-2012 the total volume of household deposit grew from 2 to 13 trillion RUB, while Household deposits/GDP grew from 12 to 22%
- 2 During 2011-2012 due to European debt crisis the Russian banking system is effectively cut-off from the international capital markets
  - Russian banks finance only about 1.6% of assets through bonds with bond yields averaging 8.6% in 2011
- 3 The "dark side" of DIS. Due to high domestic credit demand in the household sector banks extend risky loans and aggressively compete for domestic deposit funding

# Russian DIS as a case study

- 1 The "bright side" of the *de novo* DIS in Russia introduced in 2004
  - Between 2004-2012 the total volume of household deposit grew from 2 to 13 trillion RUB, while Household deposits/GDP grew from 12 to 22%
- 2 During 2011-2012 due to European debt crisis the Russian banking system is effectively cut-off from the international capital markets
  - Russian banks finance only about 1.6% of assets through bonds with bond yields averaging 8.6% in 2011
- 3 The "dark side" of DIS. Due to high domestic credit demand in the household sector banks extend risky loans and aggressively compete for domestic deposit funding
  - In January 2011-October 2012 period the total volume of loans to households grew by 75.6% from 4.08 to 7.18 trillion rubles



# Russia DIS as a case study

- The Central Bank introduced two policy measures to mitigate the moral hazard problem of banks

- The Central Bank introduced two policy measures to mitigate the moral hazard problem of banks
  - ① In July 2009 it introduced the implicit interest rate ceiling by recommending banks to avoid setting the deposit rate above the benchmark which is the average rate among the Top-10 banks+1.5%

- The Central Bank introduced two policy measures to mitigate the moral hazard problem of banks
  - 1 In July 2009 it introduced the implicit interest rate ceiling by recommending banks to avoid setting the deposit rate above the benchmark which is the average rate among the Top-10 banks+1.5%
  - 2 In August 2010 it also introduced the monitoring of deposits volume in aggressive deposit-taking banks if: (1) Household deposit/Asset > 25% and (2) Banks increase the volume of total deposits at a rate that exceeds the local market rate by more than 1.3 times

# The data

- Sample period: Apr 2011 - Feb 2012 (monthly)

# The data

- Sample period: Apr 2011 - Feb 2012 (monthly)
- Deposit-level data:

# The data

- Sample period: Apr 2011 - Feb 2012 (monthly)
- Deposit-level data:
  - Source: Yandex.ru (NASDAQ: YNDX)

# The data

- Sample period: Apr 2011 - Feb 2012 (monthly)
- Deposit-level data:
  - Source: Yandex.ru (NASDAQ: YNDX)
  - $N = 78,959$  monthly obs. of deposit products

# The data

- Sample period: Apr 2011 - Feb 2012 (monthly)
- Deposit-level data:
  - Source: Yandex.ru (NASDAQ: YNDX)
  - $N = 78,959$  monthly obs. of deposit products
  - Insurance status: above or below RUB700K



# The data

- Sample period: Apr 2011 - Feb 2012 (monthly)
- Deposit-level data:
  - Source: Yandex.ru (NASDAQ: YNDX)
  - $N = 78,959$  monthly obs. of deposit products
  - Insurance status: above or below RUB700K
  - $N = 371$  unique banks (97% of deposit market)

# The data

- Sample period: Apr 2011 - Feb 2012 (monthly)
- Deposit-level data:
  - Source: Yandex.ru (NASDAQ: YNDX)
  - $N = 78,959$  monthly obs. of deposit products
  - Insurance status: above or below RUB700K
  - $N = 371$  unique banks (97% of deposit market)
- Bank-level data:

# The data

- Sample period: Apr 2011 - Feb 2012 (monthly)
- Deposit-level data:
  - Source: Yandex.ru (NASDAQ: YNDX)
  - $N = 78,959$  monthly obs. of deposit products
  - Insurance status: above or below RUB700K
  - $N = 371$  unique banks (97% of deposit market)
- Bank-level data:
  - Source: Central Bank of Russia disclosures

# The data

- Sample period: Apr 2011 - Feb 2012 (monthly)
- Deposit-level data:
  - Source: Yandex.ru (NASDAQ: YNDX)
  - $N = 78,959$  monthly obs. of deposit products
  - Insurance status: above or below RUB700K
  - $N = 371$  unique banks (97% of deposit market)
- Bank-level data:
  - Source: Central Bank of Russia disclosures
  - Monthly data on banks' balance sheets

# The data

- Besides the exact deposit rate, deposit size and maturity, each deposit product data contains 13 non-price contract terms in each sample month, such as:

- Besides the exact deposit rate, deposit size and maturity, each deposit product data contains 13 non-price contract terms in each sample month, such as:
  - ① Add money option and/or partial withdraw option

- Besides the exact deposit rate, deposit size and maturity, each deposit product data contains 13 non-price contract terms in each sample month, such as:
  - ① Add money option and/or partial withdraw option
  - ② Early termination privileges

- Besides the exact deposit rate, deposit size and maturity, each deposit product data contains 13 non-price contract terms in each sample month, such as:
  - 1 Add money option and/or partial withdraw option
  - 2 Early termination privileges
  - 3 Cross-selling with investment and insurance products



- Besides the exact deposit rate, deposit size and maturity, each deposit product data contains 13 non-price contract terms in each sample month, such as:
  - ① Add money option and/or partial withdraw option
  - ② Early termination privileges
  - ③ Cross-selling with investment and insurance products
  - ④ Multicurrency conversion

- Besides the exact deposit rate, deposit size and maturity, each deposit product data contains 13 non-price contract terms in each sample month, such as:
  - ① Add money option and/or partial withdraw option
  - ② Early termination privileges
  - ③ Cross-selling with investment and insurance products
  - ④ Multicurrency conversion
  - ⑤ Interest rate compounding option

- Besides the exact deposit rate, deposit size and maturity, each deposit product data contains 13 non-price contract terms in each sample month, such as:
  - ① Add money option and/or partial withdraw option
  - ② Early termination privileges
  - ③ Cross-selling with investment and insurance products
  - ④ Multicurrency conversion
  - ⑤ Interest rate compounding option
  - ⑥ Internet access

- Besides the exact deposit rate, deposit size and maturity, each deposit product data contains 13 non-price contract terms in each sample month, such as:
  - 1 Add money option and/or partial withdraw option
  - 2 Early termination privileges
  - 3 Cross-selling with investment and insurance products
  - 4 Multicurrency conversion
  - 5 Interest rate compounding option
  - 6 Internet access
  - 7 Seasonal offerings

- Besides the exact deposit rate, deposit size and maturity, each deposit product data contains 13 non-price contract terms in each sample month, such as:
  - 1 Add money option and/or partial withdraw option
  - 2 Early termination privileges
  - 3 Cross-selling with investment and insurance products
  - 4 Multicurrency conversion
  - 5 Interest rate compounding option
  - 6 Internet access
  - 7 Seasonal offerings
  - 8 Targeting special socioeconomic groups (pensioners, veterans, etc.)

# The raw data example of the VTB24 bank

Deposit's lower size bracket in Rubles	Duration in days						Add money option	Partial withdraw option	Early termination privil.	Interest compounding	Rate incrs.	Autom. renewal	Internet account
	180 days	394 days	731 days	1101 days	1830 days	2562 days							
<i>Deposit brand name: "Comfortable"</i>													
50K	5.3 %	5.65 %	6.05 %	6.25 %									
100K	5.55 %	5.9 %	6.3 %	6.5 %									
500K	5.9 %	6.45 %	6.85 %	7.05 %			Yes	Yes	Yes	Month.	No	Yes, 4 times	Yes; add 0.3% if open online
1500K	6.3 %	6.85 %	7.25 %	7.05 %									
10000K	6.35 %	6.9 %	7.3 %	7.45 %									
<i>Deposit brand name: "Index" (This floating rate deposit calculated as CBR's Refinancing Rate – fixed rate. In Sept. 2012, the Refinancing rate was 8.25%)</i>													
50K		CB-1.70%	CB-1.65%	CB-1.60%	CB-1.55%								
1000K		CB-1.65%	CR-1.60%	CB-1.55%	CB-1.50%	Yes	No	No	Month.	Yes	Yes, 2 times	No	
3000K		CB-1.60%	CR-1.55%	CB-1.50%	CB-1.45%								

# Distribution of Household Deposits by Deposit Size

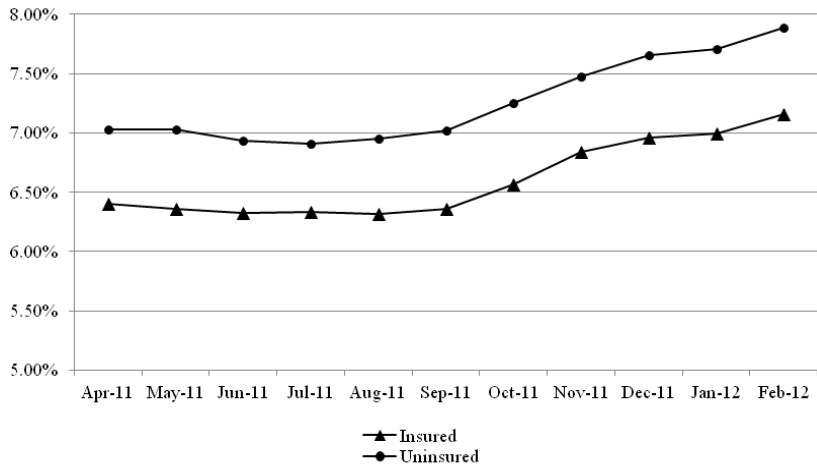
*Insured deposit products* (N bank-month-deposit product obs.= 41,773 products):

Deposit size lower limit	Deposit size upper limit			Total number
	100K	350K	700K	
1K	3,459	506	734	4,699
10K	7,098	4,652	1,828	13,578
100K	3,933	6,879	6,404	17,216
300K		1,036	4,525	5,561
700K			719	719
<b>Total number</b>	<b>14,490</b>	<b>13,073</b>	<b>14,210</b>	<b>41,773</b>

*Uninsured deposits* (N bank-month-deposit product obs.= 38,261 products):

Deposit size lower limit	Deposit size upper limit				Total number
	3M	5M	10M	>10M	
700K	787	96	255	3,117	4,255
1M	2,311	2,220	562	7,155	12,268
3M	1,379	1,212	1,775	5,965	10,331
5M		154	888	3,344	4,386
10M			156	3,888	4,044
>10M				2,977	2,977
<b>Total number</b>	<b>4,497</b>	<b>3,682</b>	<b>3,636</b>	<b>26,446</b>	<b>38,261</b>

# Mean Interest Rates on Insured vs. Uninsured Deposits: Study sample of 78,959 deposit products in 371 Russian banks (Apr 2011 – Feb 2012).





# Bank-level data summary statistics

	Log (Assets)	Regulat. capital ratio	NPL Loans/ Total loans	Private Loans/ Assets	Househ. deposit/ Total Deposits	Househ. deposit / Liabil.	Insurd. deposit rate	Uninsurd. deposit rate
<b>Panel A: Full sample (371 bank)</b>								
Mean	15.80	21.26	5.52	45.74	75.25	34.88	6.76	7.48
St. dev.	1.80	13.16	6.65	17.58	23.64	21.38	1.82	1.77
Min	12.33	10.43	0	0.00	0.60	0	0.01	0.93
p50	15.51	16.71	3.71	46.17	82.91	33.72	6.95	7.65
Max	22.95	96.51	55.02	100.00	100.00	82.26	11.62	12
<b>Panel B: Banks with large and fast growing deposit base (28 banks)</b>								
Mean	15.21	25.47	5.48	48.13	80.70	42.97	7.85	8.67
St. dev.	1.32	15.45	7.01	13.55	18.73	20.31	1.84	1.65
Min	12.79	11.12	0.06	15.74	37.47	25.08	2.36	3.48
p50	15.08	17.26	2.43	51.40	89.51	43.69	8.23	9.08
Max	18.62	66.92	25.23	64.15	100.00	76.77	11.5	11.65

# Empirical specification

- We focus only on the cross-sectional variation and collapse the time dimension (April 2011 – February 2012) of our panel by “cross-sectionalizing” the data at the bank-deposit contract level

# Empirical specification

- We focus only on the cross-sectional variation and collapse the time dimension (April 2011 – February 2012) of our panel by “cross-sectionalizing” the data at the bank-deposit contract level
- In all model specifications, the dependent variable is the deposit product interest rate

# Empirical specification

- We focus only on the cross-sectional variation and collapse the time dimension (April 2011 – February 2012) of our panel by “cross-sectionalizing” the data at the bank-deposit contract level
- In all model specifications, the dependent variable is the deposit product interest rate
  - ① We run separate regressions for insured and uninsured deposits on the Full sample of banks and on a subsample of banks which are defined as being aggressive on the deposit market according to the CB guidelines

# Empirical specification

- We focus only on the cross-sectional variation and collapse the time dimension (April 2011 – February 2012) of our panel by “cross-sectionalizing” the data at the bank-deposit contract level
- In all model specifications, the dependent variable is the deposit product interest rate
  - 1 We run separate regressions for insured and uninsured deposits on the Full sample of banks and on a subsample of banks which are defined as being aggressive on the deposit market according to the CB guidelines
  - 2 We interact all major bank characteristics with the Uninsured deposit product dummy variable

## Deposit product terms and deposit pricing: product level results

Dep. variable: Deposit rate	Uninsured deposit dummy=0	Uninsured deposit dummy=1
Deposit size medium bracket	0.216*** (5.59)	0.010*** (3.18)
Maturity 6-months	1.681*** (14.12)	1.627*** (12.50)
Maturity 1-year	2.646*** (18.95)	2.632*** (16.72)
Maturity <3-years	3.600*** (23.78)	3.637*** (24.65)
Maturity >3-years	3.903*** (20.99)	3.882*** (21.47)
Add money option dummy	-0.386*** (-3.14)	-0.299*** (-2.61)
Add money and partial withdraw	-1.116*** (-9.57)	-0.701*** (-7.00)
Multicurrency option dummy	-0.725*** (-4.87)	-0.423** (-2.27)
Interest increase dummy	0.290*** (2.64)	0.143 (1.09)

Cont.

## Deposit product terms and deposit pricing: product level results

	Cont.	
Early termination privilege	0.244 <sup>**</sup> (2.06)	0.386 <sup>***</sup> (3.47)
Deposit via Internet dummy	0.224 (1.27)	0.288 (1.11)
Compounding interest dummy	-0.218 <sup>***</sup> (-2.79)	-0.204 <sup>**</sup> (-2.54)
Automatic renewal dummy	0.088 (0.72)	0.067 (0.59)
Deposit tied to mutual fund	0.390 (1.91)	0.0251 (0.17)
Pension deposit dummy	0.905 <sup>***</sup> (6.49)	0.607 <sup>***</sup> (4.33)
Seasonal deposit dummy	1.296 <sup>***</sup> (8.11)	0.882 <sup>***</sup> (4.35)
Other special deposit dummy	0.203 (1.61)	0.020 (0.100)
	Cont.	

# Deposit product terms and deposit pricing: bank level results

(Cont.)

	Full sample		Banks with large/growing deposit base	
	Uninsured dummy=0	Uninsured dummy=1	Uninsured dummy=0	Uninsured dummy=1
<i>Bank level variables:</i>				
Regional bank dummy	-0.716*** (-5.54)	-0.785*** (-6.10)	-0.836*** (-3.27)	-0.276 (-0.94)
Foreign bank dummy	-1.087*** (-5.74)	-0.969*** (-4.09)		
State bank	-0.847*** (-5.01)	-0.868*** (-3.44)		
Capital ratio	0.001 (0.24)	-0.019*** (-2.77)	-0.031*** (-6.20)	-0.037*** (-5.07)
Non-Perform. Loans/Tot. Loans	0.007 (0.65)	0.003 (1.42)	0.052** (2.56)	0.106*** (2.90)
Private Loans/Assets	0.009** (2.36)	0.019*** (4.86)	0.020*** (3.16)	0.016 (0.84)
Log(Assets)	-0.300*** (-7.12)	-0.356*** (-7.84)	-0.188 (-1.29)	-0.274 (-1.52)
Household deposit/Total Deposits	0.001 (0.20)	-0.002 (-0.87)	0.029*** (6.23)	0.021*** (4.06)
Constant	6.802*** (7.18)	10.85*** (11.38)	1.589 (0.61)	8.298** (3.25)
<i>N: bank-deposit contract obs.</i>	3913	3500	232	190
<i>R</i> <sup>2</sup>	0.650	0.668	0.852	0.834



# Deposit product terms and deposit pricing: bank level results

(Cont.)

	Full sample		Banks with large/growing deposit base	
	Uninsured dummy=0	Uninsured dummy=1	Uninsured dummy=0	Uninsured dummy=1
<i>Bank level variables:</i>				
Regional bank dummy	-0.716*** (-5.54)	-0.785*** (-6.10)	-0.836*** (-3.27)	-0.276 (-0.94)
Foreign bank dummy	-1.087*** (-5.74)	-0.969*** (-4.09)		
State bank	-0.847*** (-5.01)	-0.868*** (-3.44)		
<b>Capital ratio</b>	<b>0.001 (0.24)</b>	<b>-0.019*** (-2.77)</b>	<b>-0.031*** (-6.20)</b>	<b>-0.037*** (-5.07)</b>
Non-Perform. Loans/Tot. Loans	0.007 (0.65)	0.003 (1.42)	<b>0.052** (2.56)</b>	<b>0.106*** (2.90)</b>
<b>Private Loans/Assets</b>	<b>0.009** (2.36)</b>	<b>0.019*** (4.86)</b>	<b>0.020*** (3.16)</b>	<b>0.016 (0.84)</b>
Log(Assets)	-0.300*** (-7.12)	-0.356*** (-7.84)	-0.188 (-1.29)	-0.274 (-1.52)
Household deposit/Total Deposits	0.001 (0.20)	-0.002 (-0.87)	<b>0.029*** (6.23)</b>	<b>0.021*** (4.06)</b>
Constant	6.802*** (7.18)	10.85*** (11.38)	1.589 (0.61)	8.298** (3.25)
<i>N: bank-deposit contract obs.</i>	3913	3500	232	190
<i>R<sup>2</sup></i>	0.650	0.668	0.852	0.834

# Specification with an interaction terms

- The next set of regressions are run on the whole set of deposit products (insured and uninsured) with inclusion of the interaction term for the insurance status dummy

# Specification with an interaction terms

- The next set of regressions are run on the whole set of deposit products (insured and uninsured) with inclusion of the interaction term for the insurance status dummy
- The estimates for the deposit product variables are skipped

# Specification with an interaction terms

- The next set of regressions are run on the whole set of deposit products (insured and uninsured) with inclusion of the interaction term for the insurance status dummy
- The estimates for the deposit product variables are skipped
- For robustness we run regressions on different subsamples of banks

# Regression with bank level interactions (product level regressors are not presented)

	Full sample	Regional banks sample	Banks large/ growing deposit	Banks low deposit base
Uninsured deposit dummy	1.402* (1.90)	1.886 (1.55)	8.691*** (3.02)	0.312 (0.16)
Regional bank	-0.774*** (-6.05)		-0.862** (-2.56)	-0.038 (-0.20)
Regional bank *Uninsured deposit	-0.028 (-0.25)		0.159 (0.49)	0.038 (0.17)
Foreign bank	-1.000*** (-5.45)			-0.979*** (-5.07)
Foreign bank *Uninsured deposit	-0.012 (-0.07)			-0.084 (-0.29)
State bank	-0.888*** (-5.14)	-0.500** (-2.92)		-0.436 (-1.60)
State bank*Uninsured deposit	-0.061 (-0.33)	0.179 (0.49)		-0.445 (-1.34)
Capital ratio	-0.001 (-0.03)	0.016 (1.00)	-0.032*** (-4.25)	0.005 (0.32)
Capital ratio *Uninsured deposit	-0.018** (-2.44)	-0.033*** (-2.89)	-0.013 (-1.51)	-0.020 (-1.20)
NPL/Total Loans	0.006 (0.62)	-0.028*** (-2.81)	0.066* (1.87)	0.001 (0.06)

Cont.

# Regression with bank level interactions (product level regressors are not presented)

NPL/Total Loans*Uninsured	-0.001 (-0.07)	0.005 (0.38)	0.061 (1.57)	-0.003 (-0.21)
Private Loans/Assets	0.008*** (2.26)	0.009 (1.87)	0.033*** (3.08)	0.004 (0.61)
Priv. Loans/Assets *Uninsured	0.011*** (2.61)	0.017*** (3.17)	0.012 (1.38)	0.014 (1.64)
Log(Assets)	-0.302*** (-7.32)	-0.196** (-2.92)	-0.041 (-0.21)	-0.284*** (-4.34)
Log(Assets)*Uninsured deposit	-0.046 (-1.28)	-0.008 (-1.30)	-0.437** (-2.46)	0.015 (0.17)
Household deposits /Total	-0.001 (-0.08)	-0.003 (-0.82)	0.042*** (8.52)	0.005** (2.01)
House. Dep. /Tot. Dep.*Uninsured	-0.001 (-0.66)	-0.001 (-0.21)	-0.022*** (-4.04)	0.002 (0.49)
Constant	9.234*** (11.48)	6.734*** (5.39)	1.811 (0.56)	8.667*** (5.99)
<i>N: bank-deposit contract obs.</i>	7409	2897	433	1935
<i>R<sup>2</sup></i>	0.668	0.663	0.798	0.759

# Preliminary conclusions

- Using detailed data from 80,000 household deposit products, we document that banks use a broad variety of price and non-price contract terms to compete in tight deposit markets

# Preliminary conclusions

- Using detailed data from 80,000 household deposit products, we document that banks use a broad variety of price and non-price contract terms to compete in tight deposit markets
- Consistent with the market discipline hypothesis, we find that interest rates on uninsured deposit products are sensitive to bank risk profiles while the interest rates on insured deposits are driven mostly by the product-level characteristics



# Preliminary conclusions

- Using detailed data from 80,000 household deposit products, we document that banks use a broad variety of price and non-price contract terms to compete in tight deposit markets
- Consistent with the market discipline hypothesis, we find that interest rates on uninsured deposit products are sensitive to bank risk profiles while the interest rates on insured deposits are driven mostly by the product-level characteristics
- From a regulatory perspective, our findings suggest that the deposit rates monitoring and the deposit rate ceiling for preventing insured deposit accumulation by risky bank could be ineffective as banks can substitute price for non-price deposit contract terms