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Russian banks´ private deposit interest rates and market discipline

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Contents

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Abstract

This paper examines the extent to which the observed diversity of private deposit interest rates in Russia is explained by bank financial indicators. We also test for whether the introduction of the bank deposit insurance scheme in 2005 affected deposit interest rates. Our results suggest market discipline in the Russian banking system involves Russian depositors demanding higher deposit interest rates from banks with risky financial policies. This discipline seems stronger than in developed countries. Our study suggests also that the risks taken by banks increased after introducing the deposit insurance.

Key words: banking, deposit interest rates, moral hazard, deposit insurance, Russia
JEL codes: D43, E53, G21, P34

A.A. Peresetsky, A. M. Karminsky and S. V. Golovan

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Tiivistelmä

Tässä työssä tutkitaan, miten venäläisten/Venäjällä toimivien(?)pankkien taloudellista asemaa kuvaavat indikaattorit vaikuttavat talletuskorkoihin, joita nämä pankit asiakkailleen tarjoavat. Niin ikään testataan, vaikuttiko talletussuojan käyttöönotto vuonna 2005 talletuskorkoihin. Tulosten mukaan tallettajat vaativat korkeampia talletuskorkoja pankeilta, joiden sijoituspolitiikka sisältää enemmän riskejä. Näyttää siltä, että Venäjällä(?)tämä vaikutus on vahvempi kuin kehittyneissä markkinatalousmaissa. Tuloksien mukaan pankit ovat ryhtyneet ottamaan enemmän riskejä toiminnassaan talletussuojan käyttöönoton jälkeen.

Asiasanat: pankkitoiminta, talletuskorot, moraalikato, talletussuoja, Venäjä

1 Introduction

Russian retail banking has experienced robust growth in recent years. Volumes of private deposits, household loans, and bank card accounts increased an averaging of 40-50% annually in 2000-2004. Amidst this growth, there is wide variation in deposit interest rates offered by Russian banks. This paper examines the extent to which the observed diversity of private deposit interest rates is explained by bank financial indicators. We also test for whether the introduction of the bank deposit insurance scheme in 2005 affected deposit interest rates.

Experts give two explanations for the diversity of deposit interest rates in Russia. The first view is that banks, not depositors, determine the interest rate. Thus, banks with access to alternative cheaper sources of funding, e.g. banks that issue eurobonds or banks affiliated with industrial groups, may not find it worth the effort of offering high interest rates to chase after low-margin private deposits. The other view is that depositors demand higher interest rates from banks perceived to carry higher risk. Thus, depositors impose a degree of market discipline on the banking sector. In such case, it should be possible to identify a positive relation between bank interest rates and bank risk factors. Indeed, the two views may complement each other. It could well be that banks with access to lower cost sources of money (say, eurobonds issues) are in that position precisely because they are seen as more reliable than other banks.

Market discipline in banking is important part of Basel II. Market discipline can improve efficiency of the banking system by putting pressure on relatively inefficient banks as well as diminish the likelihood and possible costs of a banking crisis. Caprio and Honohan (2004) identify four possible sources of market discipline for banking: depositors, debt holders, outside equity holders, and information specialists (rating agencies).

Introducing a deposit insurance system could have a twofold impact on bank deposit interest rates. First, depositors could consider insured (or partially insured) deposits as less risky and agree to lower interest rates. Second, government deposit insurance could add to bank moral hazard incentives, causing depositors in turn to require higher interest rates. A deposit insurance system may also degrade the effectiveness of market discipline on bank risk-taking.

There is a vast literature on banks market discipline and deposit insurance. Here we mention only a few of the most recent papers.

Hannan and Hanweck (1988) use 1980-1985 US bank data. They find that rates on uninsured deposits depend on the measures of the bank risk (likelihood of bank insolvency, variability of bank returns on assets and bank capitalization, size of bank, return on assets) in the manner predicted by the market discipline hypothesis.

Calomiris and Powell (2000) find the existence of market discipline in the Argentine banking sector in 1992-1999. They demonstrate higher loan interest rates or the loans-to-total-assets ratio increase deposit interest rates. Surprisingly, they find a negative effect of lagged bank capitalization, suggesting banks anticipate interest rate changes one quarter ahead and alter their capital ratios to compensate for anticipated increase in default risk.

Martinez Peria and Schmukler (2001) use data from the 1980s and 1990s for banks of Argentina, Chile, and Mexico. They find that depositors discipline banks and that deposit insurance does not apparently reduce market discipline, implying perhaps that none of the deposit insurance schemes in those countries was fully credible.

Demirgüç-Kunt and Huizinga (2004) consider two cross-country samples of banks from 30 to 50 countries (including Russia) over the 1990-1997 period. They show explicit deposit insurance lowers bank deposit interest rates and makes interest payment less sensitive to bank risks. Thus, deposit insurance reduces market discipline required by their creditors. They find certain measures of bank risk – equity, profit, and liquidity – significant with negative coefficients in the interest rates regressions.

The paper of Karas et al. (2005) is most closely related to our research as it deals with market discipline in the Russian deposit market following the 1998 financial crisis. It considers all (nearly 1,400) Russian banks in the period, covering 16 quarters from 1999:1 to 2002:4. The main finding of the paper is that Russian depositors discipline their banks mostly by reducing the amounts of their deposits. Market discipline in demanding higher (real) interest rates is found to be less pronounced. Highly capitalized banks and banks with high return on assets are shown to pay lower interest rates; the effect of excess reserves on deposit rates is nonlinear. Karas et al. find support for the idea that excessively high interest rates are perceived by Russian depositors as a sign of poor bank quality. On the other hand, information on bank compliance with Central Bank of Russia (CBR) regulatory standards showed no consistent disciplining reaction from depositors. The explana-

tion may be, at least at the beginning of the period under consideration, that Russian banks used reporting tricks to fit the standards.

All above-mentioned papers use implicit interest rates derived from bank balance sheets (specifically, the ratio of interest expenses to average deposit volume). Thus, the defined implicit interest rate is a biased estimator of the actual deposit interest rate; it includes demand deposits and card accounts. In contrast, our paper uses more detailed information. We consider actual private deposit interest rates of Russian banks separated by maturities and deposit volumes over the period 2002-2005, a period when banks generally offered higher deposit rates for longer deposit maturities and larger deposit amounts.

Some papers study how bank deposit insurance systems affect the likelihood of system bank crisis. Demirgüç-Kunt and Detragiache (2002), for example, consider panel data for 61 countries during 1980-1997, a period that includes 40 bank crises. They conclude that explicit deposit insurance increased the likelihood of banking crises, particularly where bank interest rates had been deregulated and the institutional environment was weak. Also, that effect was found more pronounced when the insurance coverage was extensive and the deposit insurance scheme was administered by the government rather than the private sector.

González (2005) examines a panel database of 251 banks in 36 countries over the 1995-1999 period. He considers two bank risk measures: bank stock price volatility and the non-performing loan ratio. Both risk measures are found to be significantly higher in countries with deposit insurance. The presence of higher regulatory restrictions on bank activity and a robust legal system are seen to reduce the adverse effects of deposit insurance, a result consistent with Demirgüç-Kunt and Detragiache (2002).

Hoggarth et al. (2005) reach a similar conclusion on the impact of deposit insurance on market discipline using probit regression for probability of banking crisis with a dataset covering 29 countries in the period 1994-2001. They find that, while unlimited protection for depositors appears to reduce the overall impact of crisis on the economy, deposit insurance makes weak banking systems more susceptible to crisis. They propose that deposit insurance may reduce the link between a bank's risk of default and its funding cost, creating an incentive for the bank to increase default risk at the expense of depositors or the deposit insurance fund.

2 Data

We use quarterly bank data kindly provided by the "Mobile" information service. Sberbank is excluded from datasets, since the possible non-market structure of its deposit interest rates due to its monopoly status at the bank retail market. We use two datasets of deposit interest rates.

Dataset 1 − private deposit interest rates of 26 Russian banks over four quarters of 2004 as posted on bank websites.[1] For each observation on bank deposit interest rate, we relate the bank financial indicators to the quarter preceding the interest rate observation.

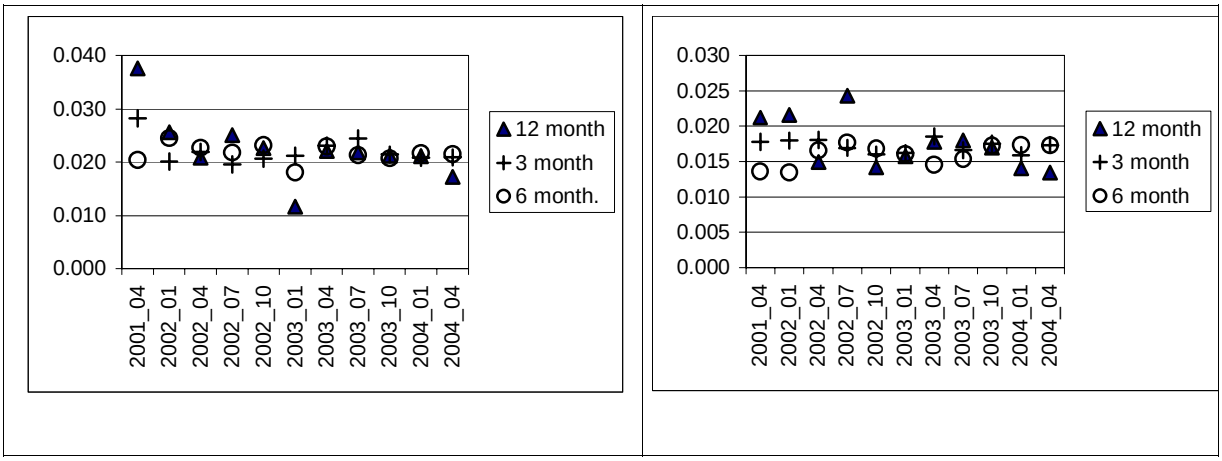
Dataset 1 consists of deposit interest rates for maturities of 3, 6, 9, and 12 months. We skip demand deposits and deposits with maturities less than 3 months due to their different formation mechanism (interest rate varies depending on the amount of deposit).

Dataset 2 − the monthly average of private deposit interest rates banks report each month to the CBR. Data available for the period 2002:1–2004:2, for deposits with maturity 3, 6, and 12 months. Observations with unrealistic interest rates values have been deleted. Since the nature of these data is different from the first dataset (monthly averaged vs. actual), we can check to see if our results depends on the data. Thus, we restrict the second sample to banks with equity no less than 730 million rubles to make the two datasets more comparable in terms of bank size.[2]

Variation of deposit interest rates over banks (measured as standard deviation) is rather high: 2-2.5% for ruble deposits and 1.5-2% for dollar deposits. Variation of deposit interest rates is presented in Fig. 1. Note that, despite the financial stabilization in Russia, the variation in private deposit interest rates shows no tendency to decrease with time. During the period 2001-2004, we observe no convergence of interest rates.

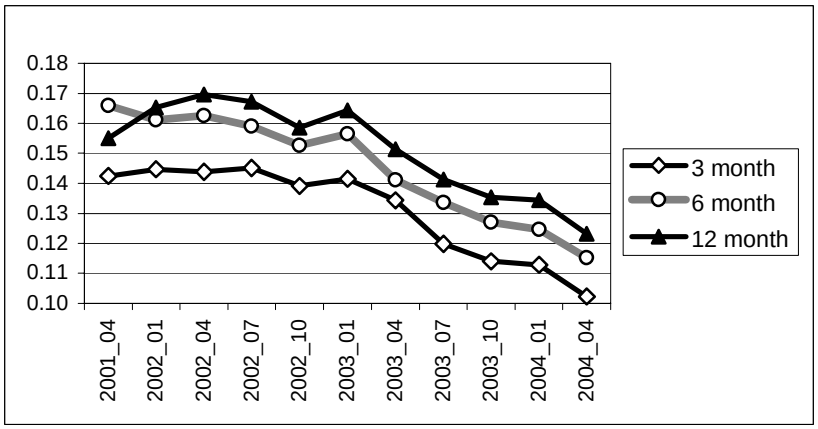
[1] The data were collected by research assistant Sergei Rtischev. The list of the banks is presented in Appendix 1.
[2] Descriptive statistics for dataset 1 and 2 variables are presented in Appendix 2.

Fig.1 Variation of ruble (left panel) and dollar (right panel) deposit interest rates.



At the same time mean values of interest rates both for ruble and dollar deposits decreased over the April 2001-April 2004 period. The evolution of ruble deposits interest rates is presented in Fig.2. During the period, ruble interest rates come down by 4-5% and dollar (and euro) deposit interest rates decrease by 0.5-0.8%.

Fig.2 Ruble deposit interest rates evolution, April 2001-April 2004



Weighted average interest rates on ruble deposits were below the inflation rate in 2005. According to the Center for Macroeconomic Research (CMR), the losses of depositors in real terms were 1.6%, 2.7%, 12.6% for dollar, ruble and euro deposits, respectively, during the period January-July 2005.

The observed decrease in deposit rates may be attributed to several reasons: bank incomes decreased due to tougher competition on the loan market; the upgrading of Russian sovereign ratings allowed banks to attract cheap funds from international financial markets; and the strengthening of ruble with respect to dollar made “mattress” saving unprofitable.

2.1 Bank fundamentals and macro variables

Some variables used in interest rate regressions are similar to the variables found to be significant in rating regression models and probability of default models in Peresetsky et al. (2003, 2004). We also tried variables found significant in interest rate regressions in the papers of Hannan and Hanweck (1988), Martinez Peria and Schmukler (2001), Graeve et al. (2004), Gambacorta (2004), and Karas et al. (2005). Here, we consider the following variables from bank balance sheets that might influence bank deposit interest rates.

OVL/LNI, share of overdue loans (over 5days) in loans to non-financial organizations, measure of risk of the bank investment policy. High values of this variable could mean that a bank gives risky loans with high interest rates. Alternatively, it could be an indicator of management inefficiency. Depositors would require higher interest rates from such banks.

LOG(Eq), logarithm of equity, measure of size of bank. A large bank can diversify its risks and hence be more credible. Such banks have access to cheaper money from other sources (e.g. interbank credits market), and hence offer low interest rates to private depositors. Depositors, in turn, are likely to see the large bank as more reliable and accept lower deposit interest rates.

Eq/As, equity to total assets ratio, capitalization, proxy for the capital sufficiency. A private depositor considers a highly capitalized bank as more credible and agrees on a low deposit interest rate. There could be an opposite tendency. A bank with excessive capitalization could be less efficient. This ratio is close in spirit to the CBR's H1 standard. The CBR sets a lower boundary for H1 standard and the most efficient banks can be expected to keep their H1 close to that boundary. Less efficient banks, in contrast, must seek to attract depositors by offering higher deposit interest rates. If the latter tendency is stronger than the former, we can expect a positive sign of Eq/As coefficient in regression.

LNI/As, share of loans to non-financial organizations in total assets. Since loans to firms could be considered by Russian depositors as risky, they can require a higher interest rate as a risk premium. An opposite effect could be also observed: a bank with successful relations with firms could consider retail business as less important and hence offer low interest rates to private depositors.

NGS/As, share of non-government securities in total assets. Same reasoning as for LNI/As ratio is applicable with substitution of the field of activity "credits to firms" to "investment to non-government securities." Non-government securities are riskier, but more profitable, than government securities.

PBT/Eq, ratio of before tax profit to equity, indicator of efficiency of bank investments. A high value for this variable may suggest the bank is attracting deposits by offering high interest rates. Also, a private depositor could interpret a high value of PBT/Eq as an indication of high risk of the bank investments and require high risk premium. Conversely, a bank with access to other sources of funds may not need money of private depositors and offer low deposit interest rates.

LOG(LA/DPC), logarithm of the ratio of liquid assets to volume of private customers' deposits, a measure of liquidity. A bank with low liquidity could urgently need money and offer high deposit interest rates. Alternatively, high liquidity may be an indicator of a bank's involvement in speculative activity, so depositors would require a high interest rate.

NWA/As, share of non-working assets in total assets. Graeve et al. (2004) consider that variable as proxy for the default risk. Then depositors would require high risk premium. The indicator could also serve as proxy for inefficient management. An inefficient bank could not suggest high interest rates for depositors.

LOG(MAX_SUM), upper boundary for deposit interest rate (e.g. a bank offers an interest rate for a given maturity, say, 12 months at 9.5% for deposits of 100,000 to a million rubles). If the upper boundary is not indicated, it is accepted to be 300 million rubles. This variable is available only for the first dataset and used in regression as control variable.

The following macroindicators were used in models, estimated on the second dataset: inflation, INFL; export/import ratio for the year preceded the quarter of observation, EXP/IMP; and MIBID, the average bid rates for ruble credits from Moscow interbank credit market with maturities from 91 to 180 days, related to the quarter preceding the observation.

3 Interest rate models

Four interest rate models are presented in Table 1. Quarter time dummies are included in all models to eliminate the effects of the changing macro environment. The time dummies cross-terms with other variables are found to be insignificant. Thus, we conclude that all coefficients except intercept are constant over the considered time period. White standard errors are in brackets. Again, we note that dataset 1 covers the period 2004:1-2004:4, so the models for dataset 2 are estimated over the period 2003:1-2004:2 to make results more comparable. The last row in Table 1 is the ratio of R^2 in regression without bank fundamentals to R^2 with bank fundamentals. It is given to show to the extent to which the bank fundamentals are helpful in explaining interest rate variations.

Table 1 Interest rate models 1

	Rubles Dataset 1	Rubles Dataset 2	Foreign currency Dataset 1	Foreign currency Dataset 2
C	**0.114**	**0.201**	**0.0189**	**0.0846**
	(0.011)	(0.010)	(0.0059)	(0.0060)
LOG(OVL/LNI)	*0.000729*	**0.00150**	**0.00179**	**0.00118**
	(0.000634)	(0.00037)	(0.00033)	(0.00024)
LOG(Eq)	**-0.0073**	**-0.0043**	**-0.0019**	**-0.0018**
	(0.0006)	(0.0006)	(0.0003)	(0.0004)
Eq/As	**0.202**	0.0116**	**0.146**	-0.0086*
	(0.012)	(0.0065)	(0.007)	(0.0043)
LNI/As	**0.0760**	**0.0247**	**0.0739**	**0.0316**
	(0.010)	(0.0048)	(0.0056)	(0.0033)
NGS/As	**0.392**	**0.106**	**0.304**	**0.117**
	(0.031)	(0.017)	(0.018)	(0.011)
$(NGS/As)^2$	**-1.146**	**-0.188**	**-0.748**	**-0.191**
	(0.111)	(0.039)	(0.067)	(0.028)
PBT/Eq	**-0.0960**	**-0.0850**	**-0.102**	**-0.0661**
	(0.0140)	(0.0164)	(0.008)	(0.0133)
$(PBT/Eq)^2$	**0.164**	**0.133**	**0.131**	0.0674*
	(0.022)	(0.035)	(0.012)	(0.0339)
LOG(LA/DPC)	**-0.00933**	**-0.00250**	**-0.00319**	0.00062**
	(0.00083)	(0.00052)	(0.00045)	(0.00036)
LOG(MAX_SUM)	**0.00104**	-	**0.00086**	-
	(0.00014)		(0.00009)	
EURO	-	-	-0.0030	-
			(0.0006)	
D6	**0.0132**	**0.0121**	**0.0071**	**0.0114**
	(0.0013)	(0.0013)	(0.0008)	(0.0009)
D9	**0.0153**	-	**0.0090**	-
	(0.0016)		(0.0009)	
D12	**0.0224**	**0.0208**	**0.0158**	**0.0173**
	(0.0013)	(0.0016)	(0.0007)	(0.0010)
Time dummies	+	+	+	+
R2_adj	0.816	0.381	0.818	0.338
R2/R2*	0.61	0.74	0.69	0.52

Coefficients insignificant at 10% level are in italic; *, ** – significant at 5% , 10% level;
Coefficients in bold are significant at 1% level.

Maturity dummies D3, D6, D9 and D12 are indicators for deposits with maturities of 3, 6, 9 and 12 months. Dummy D3 is omitted to avoid collinearity and D9 is presented only in the first dataset. The two dummies for 3-month deposits in 2004 for Vneshtorgbank and Raiffeisen bank added to all regressions significantly raised R2 values. In 2004, both banks offered very low interest rates on 3-month deposits as they were uninterested in attracting short money.

Determination coefficients are higher for the equations estimated on dataset 1 because the dataset 1 consists of a more homogeneous set of banks and covers a shorter period.

From Table 1, we see that bank fundamentals are significant, indicating the presence of market discipline in Russian banking sector. The number of significant parameters in the interest rate regressions in Table 1 is larger than in most of similar regressions for the banks in industrial countries (e.g. Graeve et al, 2004, Gambacorta, 2004). This could mean that in the country with a less developed and less reliable bank regulation system, depositors must themselves apply market discipline.

The share of overdue loans is significant in three of the four models. The positive sign of the coefficient means higher overdue loans are driving higher deposit interest rates. In other words, depositors treat a bank with a high proportion of overdue loans as risky and require high interest rates. Since most of loans to firms during the period under review were denominated in foreign currencies (dollar, euro), overdue loans are significant in both regressions for foreign currency interest rates.

A bank's size is significant, because large banks typically offer the lowest deposit interest rates. This is notable since similar regressions applied for developed countries generally suggest bank size is insignificant. Thus, bank size matter more for Russian depositors in their assessment of bank credibility than in industrial countries. Moreover, variation in bank credibility in Russia is much higher than in industrial countries.

Coefficient at bank's capitalization, Eq/As is positive for ruble deposits and has different signs for the two models for foreign currency deposits. A negative sign corresponds to the hypothesis that depositors require higher interest rates from less credible banks. The possible difference between ruble depositors and foreign currency depositors could be that the latter are more informed. Also, the foreign deposit market is competitive, while the ruble deposit market is dominated by Sberbank. It might be that the opposite tendency dominates for ruble deposits: highly capitalized banks have good management, are profitable, and can offer high interest rates to depositors. A coefficient of 0.202 would mean that if capitalization increases by one standard deviation (0.05), the interest rate would rise by 1%. In turn, a coefficient of -0.0086 would mean that if capitalization increases by one standard deviation (0.107, dataset 2), the interest rate would decrease by 0.1%, i.e. a negative impact is not significant from an economic point of view.

The share of loans to non-financial institutions LNI/As has a positive relation to the interest rates in all models. This confirms the first of the two suggested hypotheses: depositors consider loans to firms to be risky and therefore require high interest rates.

The coefficient at non-government securities ratio NGS/As is positive in all models. Depositors consider investments to non-government bonds to be risky and require high interest rates. However, we observe a U-shaped effect here. There exists a turning value of this variable, such that after a certain point any further increase in the non-government securities ratio does not lead to an increase in deposit interest rate. Our results show the turning point is outside sample values of the variable and the influence of that variable is always positive, but decreases with its growth.

The effect of profitability PBT/Eq is significant and U-shaped. Again, the turning point is higher than maximum value of the PBT/Eq in the sample. Hence, the second hypothesis is confirmed: a bank with high profitability can rely on sources of funding other than deposits and hence can offer low interest rates on deposits.

The liquidity ratio is significant and has a negative impact on interest rates in three of the four models. The bank with low liquidity needs money, which suggests high interest rates to depositors.

As expected, interest rates increase with deposit maturity. Ruble deposit interest rates with maturities of 6, 9, and 12 months are 1.3%, 1.5%, and 2.2% higher, respectively, than interest rates on 3-month ruble deposits. For foreign currency deposits, the corresponding increments are 0.7%, 0.9%, and 1.6%.

A dummy for deposits in euro is included in the third regression. Interest rates on euro deposits average 0.3% less than interest rates on dollar deposits.

Finally, we consider the influence of variables reflected the bank financial environment that are designate important for bank financial policy in Berger and Udell (1992), Graeve et al. (2004), Gambacorta (2004). These are LNI_LONG/LNI, ratio of long-term (over one year) loans to total loans, a measure of bank's sensibility to the risk of money market interest rates on the bank deposit interest rates (long-term in Russia means maturities longer than one year); NWA/As, non-working assets to total assets ratio, a proxy for bank management inefficiency, or default risk; and DPC/TOTDPC, the bank's share of the private deposit market, a measure of market competition.

Regressions are presented in Table 2. All regressions are estimated on the second dataset over the period 2001:2-2004:2. Since we do not take into account the peculiarities of

3-month deposits in 2004 for Vneshtorgbank and Raiffeisen bank, determination coefficients are lower than determination coefficients of similar models in Table 1.

Table 2 Interest rate models 2

	Ruble deposits		Foreign currency deposits	
LOG(OVL/LNI)	**0.0015**	**0.0016**	**0.0011**	**0.0010**
	(0.0003)	(0.0003)	(0.0002)	(0.0002)
LOG(Eq)	**-0.0023**	-0.00229*	-0.00072*	*0.0007*
	(0.0004)	(0.00096)	(0.00034)	(0.0007)
Eq/As	*0.0042*	*0.0049*	**-0.0114**	**-0.0171**
	(0.0051)	(0.0075)	(0.0040)	(0.0055)
LNI/As	**0.0289**	**0.0272**	**0.0339**	**0.0300**
	(0.0039)	(0.0043)	(0.0031)	(0.0034)
NGS/As	**0.0946**	**0.0940**	**0.1057**	**0.1031**
	(0.0115)	(0.0121)	(0.0100)	(0.0103)
$(NGS/As)^2$	**-0.1410**	**-0.1427**	**-0.1525**	**-0.1532**
	(0.0296)	(0.0300)	(0.0239)	(0.0241)
PBT/Eq	**-0.0445**	**-0.0529**	**-0.0609**	**-0.0670**
	(0.0152)	(0.0155)	(0.0112)	(0.0111)
$(PBT/Eq)^2$	*0.0596*	*0.0686*	0.0521**	0.0599*
	(0.0414)	(0.0420)	(0.0297)	(0.0296)
LOG(LA/DPC)	**-0.00246**	**-0.0028**	*0.00027*	*-0.00104*
	(0.00039)	(0.0009)	(0.00033)	(0.00069)
D6	**0.0139**	**0.0138**	**0.0109**	**0.0109**
	(0.0010)	(0.0010)	(0.0008)	(0.0007)
D12	**0.0215**	**0.0213**	**0.0153**	**0.0155**
	(0.0012)	(0.0011)	(0.0009)	(0.0009)
LNI_LONG/LNI	**-0.0152**	**-0.0137**	*0.00037*	*0.0022*
	(0.0031)	(0.0031)	(0.00220)	(0.0022)
NWA/As	*-0.0038*	-	**-0.00815**	-
	(0.0027)		(0.00207)	
Log(DPC/TOTDPC)	-	*-0.0004*	-	-0.0020*
		(0.0010)		(0.0008)
time dummies	+	+	+	+
R2_adj	0.501	0.498	0.303	0.306
R2/R2*	0.26	0.43	0.85	0.86

Coefficients insignificant at 10% level are in italic; *, ** – significant at 5% , 10% level;
Coefficients in bold are significant at 1% level.

The share of long-term loans is significant (and with a correct sign) only for the ruble deposit interest rate equations. Since most long-term loans were denominated in dollars or euros, this variable reflects interest rate risk and exchange rate risk.

The share of non-working assets and bank's market share are significant only for the foreign currency deposits. This could be explained by the fact that the foreign currency deposits market is more competitive; Sberbank's market share in this market is below 40% (compared to over 60% on the ruble deposits market).

4 Interest rates and credit ratings

Table 3 presents signs of coefficients at the selected bank fundamentals in private deposit interest rate regressions and Russian bank ratings regressions from Peresetsky et al. (2003). For example, the coefficient for the bank's size variable is negative. This means the larger the bank, the better its rating and the lower its deposit interest rate. (Bank ratings are quantized so that the more credible the bank, the lower the number assigned to the bank; e.g. an AAA rating is quantized as 0.)

Table 3 Interest rates and ratings

Bank fundamentals	Deposit interest rate models	Bank rating models
Size	-	-
Capitalization	+	+
Credits to economy to total assets ratio	+/-	+/-
Non-government securities to total assets ratio	+	+
Profitability	-	-

From the table we can see that signs coincide for most of the variables. Increasing a variable pushes the rating down and the deposit interest rate up. In this sense, interest rates may serve as an indicator of bank credibility. Indeed, Karas et al. (2005) note "… the pyramid schemes of early 1990s emblazoned in Russian minds the strong connection between the highest promised returns and the lowest levels of reliability."

5 Interest rates and deposit insurance

The Russian Deposit Insurance Agency was established in January 2004 under the federal law "On the Insurance of Household Deposits in Banks of the Russian Federation." The deposit insurance system launched in September 2004 and the first wave of banks was admitted into the system. The process of admission continues; today 946 Russian banks have been admitted to the deposit insurance system.

Under the law, depositors are entitled to 100% reimbursement of their aggregate deposits in the failing bank up to a maximum of 100,000 rubles (approximately $3,500). If a depositor has several deposits in one bank with aggregate obligations in excess of 100,000 rubles, compensation is effected with regard to each deposit proportionate to its size. If a depositor has deposits with several banks in the event of multiple bank insolvencies, the amount of insurance coverage is calculated in relation to each bank separately.

In an interview with *Kommersant Daily*, September 22, 2005, the General Director of the State Deposit Insurance Agency, Alexander Turbanov, reported that "as of September 1, 2005, about 63% of the total banking system deposits were protected by deposit insurance system … 98% of all depositors are guaranteed 100% coverage."

To study the effect of introducing of the deposit insurance on the private deposit interest rates (and Russian banking system as a whole), we enlarged dataset 1 with posted bank interest rates for 2005. We have observations on 26 banks at the points 2004:1, 2004:2, 2004:3, 2004:4, 2005:3, and 2005:4.

A dummy variable INCL is created so that INCL = 1 if bank was admitted to the deposit insurance system before the time of observation of the bank's deposit interest rates. The results are presented in Table 4.

Model 1 is used as a reference point. Model 2 is obtained from Model 1 adding INCL to regressors. In Model 3, we use macrovariable MIBID (interest rate on the interbank credit market) as a replacement for time dummies. Adjusted R2 in the Model 3 is only slightly lower than adjusted R2 in Model 2. Hence, the macrovariable absorbs almost all impact of the macro environment.

Nevertheless, the data are somewhat problematic. In the sample of 26 banks, only a quarter contain both banks included and not included in the deposit insurance system. Moreover, in 2004:1 and 2004:2, no bank was included into the deposit insurance system. In 2004:4, 2005:3, and 2005:4, all banks were included in the system. This suggests a possible multicollinearity problem, so we add Model 3, which is better from that point of view. In models 2 and 3, we have positive effect of introducing the deposit insurance system. Given other bank variable fixed, interest rates are approximately 1% higher for the bank included into the deposit insurance system.[3]

Table 4 Deposit insurance

	Model 1	Model 2	Model 3
		0.0170	**0.0119**
INCL	-	(0.0041)	(0.0025)
			0.362
MIBID	-	-	(0.076)
	0.00423	**0.00414**	**0.00321**
LOG(OVL/LNI)	(0.00042)	(0.00042)	(0.00041)
	-0.00706	**-0.00693**	**-0.00669**
LOG(Eq)	(0.00052)	(0.00053)	(0.00051)
	-0.348	**-0.410**	-0.150*
Eq/As	(0.071)	(0.075)	(0.064)
	1.284	**1.439**	**0.789**
$(Eq/As)^2$	(0.185)	(0.194)	(0.175)
	0.0260*	**0.0325**	*0.0020*
LNI/As	(0.0092)	(0.0095)	(0.0081)
	0.0678	**0.0895**	*0.010*
NGS/As	(0.0268)	(0.0272)	(0.026)
	-0.270	**-0.311**	*-0.134*
$(NGS/As)^2$	(0.083)	(0.082)	(0.090)
	-0.00672	**-0.00654**	**-0.00622**
LOG(LA/DPC)	(0.00058)	(0.00058)	(0.00061)
	-0.0366	**-0.0342**	**-0.0445**
LNI_LONG/LNI	(0.0035)	(0.0036)	(0.0033)
maturity dummies	+	+	+
time dummies	+	+	-
R2_adj	0.720	0.722	0.695

Hence, we can conclude that after the deposit insurance system was introduced Russian banks increased interest rates and their financial policy became more risky. This conclusion comports with the findings of Demirgüç, Detragiache (2002), who conclude that introducing a deposit insurance scheme generally increases the likelihood of banking crises. To make matters worse, Russia's deposit insurance system is run by the government and degree of the insurance coverage is going to double or triple in a year.[4] Given this state of affairs, the general concern of financial experts over the explosive growth of consumer credit in the last two years is understandable. They foresee increasing risk and systemic problems for the Russian banking system.

[3] That result depends on the model specification; the value of the coefficient varies from 0 to 1.5% in different specifications, but never was found to be negative and significant. The result needs to be verified using more reach data on actual deposit interest rates.

[4] From an interview of General Director of State Deposit Insurance Agency, A.Turbanov, on the "Mayak" radio station on March 10, 2006.

6 Conclusions

The results here suggest market discipline in the Russian banking system involves Russian depositors demanding higher deposit interest rates from banks with risky financial policies. This discipline seems stronger than in developed countries. Thus, in the country with a less developed and less reliable bank regulation system, it appears depositors have to take the job of market discipline into their own hands.

Demirgüç, Detragiache (2002) observed that introducing a deposit insurance scheme increases the likelihood of banking crises. Our study of the impact of the introducing of the deposit insurance system further suggested that the risks taken by banks increased after introducing the deposit insurance. Moreover, Russia's planned increase in the maximum level of insured deposits may add to the moral hazard already facing banks.

Such findings should give Russia's bank supervising authorities cause for concern, especially in light of the explosive growth in consumer credit over the past two years.

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Appendix 1

Banks included in dataset 1

Абсолют банк	Внешторгбанк	НОМОС-банк	Русский стандарт
Авангард	Газпромбанк	Первое ОВК	Ситибанк
Автобанк-Никойл	ГЛОБЭКС	Промсвязьбанк	Собинбанк
Альфа-банк	ГУТА-банк	Райффайзенбанк Австрия	Транскредитбанк
Банк Зенит	Диалог-оптим	Росбанк	Уралсиб
Банк Москвы	МДМ-банк	Русский генеральный банк	ХКФ-банк
БИН-банк	Международный московский банк		

Appendix 2

Descriptive statistics of bank fundamentals

	Dataset 1				Dataset 2			
	Mean	Max	Min	Std.dev.	Mean	Max	Min	Std.dev.
OVL/LNI	0.017	0.098	0.0003	0.023	0.022	0.745	0.000	0.052
LOG(Eq)	16.04	17.83	13.51	1.010	14.59	17.83	13.50	0.95
Eq/As	0.146	0.316	0.088	0.050	0.201	0.735	0.050	0.107
LNI/As	0.542	0.840	0.319	0.128	0.470	0.926	0.052	0.157
NGS/As	0.099	0.283	0.002	0.084	0.124	0.551	0.000	0.106
PBT/Eq	0.130	0.667	0.004	0.146	0.081	0.647	-0.035	0.100
LOG(LA/DPC)	-0.079	3.171	-1.594	0.721	0.506	5.715	-2.081	1.216
LNI_LONG/LNI	0.319	0.674	0.00006	0.158	0.295	0.889	0.0001	0.171
NWA/As	0.263	0.724	0.014	0.169	0.202	0.761	0.005	0.284
LOG(MAX_SUM)	13.80	19.52	6.91	3.62				

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