THE EVOLUTION OF THE RUSSIAN SAVING BANK SECTOR DURING THE TRANSITION ERA

Martin A. Carree

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The Evolution of the Russian Saving Bank Sector during the Transition Era

Martin A. Carree

Faculty of Economics
Erasmus University Rotterdam

and

Faculty of Economics and Business Administration
Maastricht University

Abstract

Following the 1988 banking reform in Russia there was an enormous increase in the number of (registered) commercial banks. The Russian savings bank sector went through a period of shakeout after the August 1995 interbank crisis. Large banks were able to expand their market shares in the deposits market as a result of scale advantages and advertising. Entrants unsuccessfully sought to gain market share by having high deposit rates.

Keywords: Banking; Industry evolution; Savings market; Transition economies

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Corresponding address:

Martin Carree
MW-ORG
Faculty of Economics and Business Administration
Maastricht University
P.O. Box 616
6200 MD Maastricht
The Netherlands

e-mail: m.carree@mw.unimaas.nl
Tel. +31 43 3883763

1. Introduction

The shakeout is a phenomenon that is common to many industry evolutions. A period of high entry rates is followed by a subsequent period of high exit rates. Gort and Klepper (1982) and Klepper and Graddy (1990) show empirical evidence of this pattern for a range of U.S. manufacturing industries. Research into industry evolutions in transition economies is often hampered by the lack of (reliable) data. In the current paper we investigate the shakeout process of savings banks on the Moscovian deposits market using a novel (quarterly) data set. The 1988 Russian banking reform was decided upon already in the early days of the transition period. Many commercial banks entered afterwards and in August 1995 the shakeout of firms started. The starting point was the interbank crisis in that month. The entry rate dropped to about zero and the exit rate increased strongly after that crisis.

Entry barriers in the Russian commercial banking sector were very low in the early 1990s and many (small) firms entered the industry. One would expect that in such a case the shakeout process will start early in the industry evolution and will be severe. We will show firm data for the Moscovian deposits market in the 1994-1997 period which confirm this. In additon, we describe how the large Russian banks benefited from their mere size and advertising campaigns and were able to increase their market share in the three months Rouble deposits market. New entrants were faced with high barriers to growth and failed to attract savings money by offering high deposits rates.

The current study differs from most other studies into industry evolution in at least three respects. First, it considers a non-manufacturing industry. There have been more, like Fein (1998), but it remains the exception. Second, it considers an industry in a transition economy. Industry evolutions in (former socialist) transition economies share the common characteristic that they are relatively short in terms of years. The Russian commercial banking industry started in the year 1988. Third, the industry and its environment went through a period of almost constant turmoil. The development of the Russian financial market has been probably the fastest among transition economies (Buchs (1999)). During a few years time an enormous amount of commercial banks was founded. In contrast to other transition economies the (former) state bank(s) in Russia only had left a minority of banking assets in the mid 1990s due to the rapid privatization and reform process (Meyendorff and Snyder (1997)). The volatility was increased by political problems and problems with financially pressed state enterprises.

We investigate the concentration process that has been taking place on the Moscovian three months deposits market. We analyze the roles that advertising and reputation played in this process. We develop a model of the concentration process which predicts that high reputation banks will both have autonomous increases in market share as they are

considered as reliable and are more likely to have advertising campaigns so as to gain additional market share. We show how these two processes have given rise to a market structure consisting of about ten "reliable" large banks (Moscow's financial oligarchy) and a fringe of (very) small banks, many of which only survived due to certain "business networks", or relations with public authorities.

The analysis focuses on the impact of scale advantages on concentration. In this respect distinction is made between diversification, reputation and advertising. Generally the role of diversification is important for the scale of banking, because in this way the risks of loans can be spread over many parts in the national economy as well abroad. Given the one-sided asset portfolios, we assume that the factor of diversification has not been very important in the Russian banking system yet.[1] Reputation is related to scale by the category "total assets" in our data set. Large commercial banks are likely to be considered by the public to have more expertise and to have a lower probability of default because of their size. Advertising can be important to attract depositors as well. It is clear that small banks and entrants are handicapped in this respect, because an advertising campaign pushes up average cost, given that the total sum of deposits is low. We find empirical evidence for reputation and advertising intensity to have affected market shares. The alternative marketing instrument of high deposit rates is found to have been ineffective. It appears that it may have been simple to enter the market but very hard to grow in terms of market share without the financial means to advertise and convince the public that the deposits are safeguarded.

In Section 2 we discuss the rise and fall of the number of saving banks. Furthermore we discuss our data set and some elements of the Russian banking system. The various scale advantages in Russian banking are elaborated upon in Section 3. Our model of the concentration process is developed in Section 4. We go into detail about the interrelationship between market share and marketing efforts. In Section 5 we present the empirical estimates and Section 6 is used for the conclusion.

2. The rise and fall of the number of saving banks

Many commercial banks entered in Russia following the 1988 banking reform. This was to a large extent the consequence of the lack of supervision of the Central Bank. The entry barriers to getting a bank registered were very low and in 1995 there were around 2500 (registered) commercial banks active in Russia (Buchs (1999)). These included small money-changing boutiques and banks strongly connected to state enterprises. We confine our attention to a small subset of the commercial banks, namely those banks that were 'active'

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[1] Abarbanell and Meyendorff (1997), for example, claim that "All Russian banks have incentives to engage in less risky profit opportunities in the foreign exchange and government bond markets rather than lending" (p.65).

on the Moscovian three-months Rouble deposits market. The development of the number of firms on this market is representative of that of the Russian banking system as a whole. The banking system was confronted with an important crisis and turning point in August 1995: the interbank (liquidity) crisis. This crisis marked the change from a period of positive net entry to one of negative net entry. In 1998 the number of operating banks had fallen to about 1600 (Buchs (1999)). In our sample of the Moscovian three months deposits market the number of licensed banks almost halved as well.

Our data set consists of banks 'active' on the three months Rouble deposits market in Moscow. The share of Rouble deposits in total household savings has not been very high according to official statistics.[2] Although statistics show that household savings as a percentage of disposable income have been relatively stable during the 1993-1997 period, the share of Rouble deposits and securities has been steadily declining (source: Russian Economic Trends (1999)). Hard currencies were a much more attractive alternative to many households. The period after the August 1995 crisis was one in which the Rouble exchange rate stabilised and some credibility in the Rouble was restored. The 1998 Rouble crisis during which the banking system collapsed marked an end to this short time period of economic recovery though. Our data do not cover this last crisis.

A bank is considered 'active' when (i) it has got a licence from the Central Bank allowing customers opening saving accounts for three-months deposits; (ii) it had advertised at least once in one of the Moscow newspapers; (iii) it fulfilled its obligation to report deposits data to the Central Bank. The licency and withdrawal of licency dates are not identical to the entry and exit dates. The entry date is taken to be the first quarter in which the bank had advertised in a Moscow newspaper and reported its deposits data. Generally, this is one or two quarters after the licency date. The exit date is the first date for which the banks fail to report deposits data. Usually the withdrawal of licency follows swiftly thereafter.

The data set was acquired by the ACE-project group 'Role of information on Russian individuals' savings market' (Avdasheva (1998)). The data cover the period of the first quarter of 1994 to the second quarter of 1997. Data on interest rates, personal deposits, licency dates and total assets of the registered banks were derived from *Finansovije Izvestia* and *Commersant Rating*, based on information of the Central Bank of Russia. Data on advertising outlays of Moscovian banks were derived from advertising in Moscow newspapers by the consultancy agency NEX-SV in Moscow. A summary of the data can be found in Table 1. From the table it is clear that the first quarter of 1994 deviates from the

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[2] However, see Gregory et al. (1999) who claim that the total household savings rate is overstated in the Goskomstat's estimates. As a consequence the share of deposits and securities in the total savings rate is understated (see their Table 2, p.696).

other quarters in that one firm (the former state bank Sber-bank) still had a quite high market share of one-third. For this reason we neglect this quarter in our analysis in Section 5.

It is a stylised fact that entrants are on average smaller than incumbent firms (Dunne et al. (1988), Geroski (1995)). This is also the case for the Russian deposits market during the 1994-97 period. Out of 36 entries there were 29 with less than 1% market share. An exit was recorded when the saving bank failed to report data on deposits. This may differ somewhat from the date of loosing the licence. Usually the exit is recorded one quarter before the licence is withdrawn. For example, the quarter with the highest number of licences being ended is the first quarter of 1996. Out of the 9 licence withdrawals in the first quarter of 1996 in all but two cases the exit was recorded in 1995.IV. Most of the exiting saving banks were small in terms of market share, but not all. Out of 45 exits there were 18 with more than 1% market share, although only four with a market share exceeding 3%. Saving banks which exited having considerable market shares were National Credit (7%) and the LLD-Bank (6%). Another leading bank which did not survive the period under consideration was the Tveruniversalbank.

The entry and exit data in Table 1 show a picture familiar to shakeout processes in other industries (Gort and Klepper (1982), Klepper and Graddy (1990), Jovanovic and MacDonald (1994)). In Russian banking the start of the shakeout can be easily determined: the August 1995 interbank crisis. Buchs (1999) reports that more than 150 banks failed to meet their obligations on overnight credits during this crisis. This start of the shakeout is very visible in Table 1. Right before the crisis, in 1995.II, market concentration was at its lowest point, both in terms of the Herfindahl index as well as in terms of C4 and C8. From 1995.III on this concentration has been rising slowly, at least in terms of the Herfindahl index and C8. Before the crisis there were at least a couple of entrants in each quarter. After the crisis the entry rate dropped strongly and in the last three quarters of the sample there was no entry at all. The average licency date reached its maximum right before the shakeout as well. From that moment on the average licency date dropped with almost one year. This is the consequence of the (virtual) absence of entry after the interbank crisis and the exit of relatively young banks.[3] The maximum share of a saving bank on the three months deposits market has been about constant at around 15% during the period from 1995 to 1997. At the end of the sample period there were 30 firms left of which 8 had market shares between 6.3% and 14.4% and 22 had market shares between 0.0% and 3.7%.

The severity of the shakeout phase has been largely the consequence of the spectacular inflow of (registered) commercial banks in Russia following the 1988 banking reform. Entry

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[3] The exit of newly entered banks strongly suggests that 'overshooting' has taken place (Klepper and Miller (1995)). See Szymanski et al. (1995) for a further discussion of the relation between order of entry and performance.

barriers were about absent as there was a lack of supervision of the Central Bank. The number of commercial banks had increased to around 2500 in 1995 already, many of them being just money-changing boutiques. Due to the lack of supervision four out of five banks conducted business with dangerously low funding capital (Buchs (1999)).[4] Therefore, it was not so much a question of whether there would be a shakeout of commercial banks. It was just a question of when. After the 1995 liquidity crisis the Central Bank withdrew about 1000 banks licences in three years time (Buchs (1999)).

Problems for Russian banks were not confined to low capitalisation. Other problems were shortage of professionals in banking and financial services and the accumulation of unpaid debts by financially pressed (state) enterprises – the so-called 'bad loans' problem. The Russian banking system in the 1990s was highly vulnerable as became visible not only in the 1995 liquidity crisis but also in the 1998 Rouble crisis. The banking sector also failed to perform its role in a market economy: the intermediation of savings and investments. Banks had no incentives to work with the real sector as profits from speculation were much higher than earnings expected from financing investment projects in the real sector. The situation is further complicated by the dominance of the Russian economy by a handful of financial clans (Buchs (1999)).

The 1995 liquidity crisis contributed to a shift in government policy. In 1994 inflation was very high because the government was printing money to combat budget deficits. Banks were able to earn inflation rents transferring centralised credit from the government to state enterprises and other public institutions (Schleifer and Treisman (1998), p. 44). In reaction to the financial crisis the government tightened its monetary policy successfully.[5] Commercial banks were forced to change their role from transferring subsidies to financing Russian government expenditures through the GKO-market (short-term state securities). GKOs were attractive to the banking sector because the government paid relatively high interest rates. The (household) savings market became an important financial source for banks to buy GKOs. The way in which the large commercial banks – belonging to Moscow's financial oligarchy – were able to achieve higher market shares on this market is the topic of the current paper.

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[4] The 1997 annual report of the Bank of Russia shows the problematic financial conditions of many banks (Statistical Addendum, Table 37, condition on May, 1st, 1997). Out of 2,594 banks there were 706 (27%) whose licence was revoked. Their total assets amounted to 8% of the total assets in banks. Additionally, there were 540 banks (21%) which were in critical financial condition. Their total assets equalled 5% of the total assets in banks. These figures show that mostly small banks encountered financial problems (at least before the 1998 Rouble crisis).

3. Scale advantages causing increased concentration

The most obvious cause of a steady increase in the rate of market concentration is the existence of important scale or scope economies. Alfred Chandler's seminal book *Scale and Scope* (1990) describes how giant corporations could emerge after the second industrial revolution of the second half of the 19th century by benefiting from those economies. It was a period of relatively well-defined technological trajectories, of a stable demand and of seemingly clear advantages of diversification.

There are various sources of scale economies. Average unit production costs can be lower when the fixed set-up costs are shared among more products. They can also decrease as large (cumulative) output enhances learning-by-doing. Sutton (1998, chapter 14) is an excellent source for learning effects on market structure. There may be scale economies in R&D as innovative improvements to the product or production process are more worthwhile when total output is larger (Cohen and Klepper (1996)). Firm size may also imply pecuniary benefits resulting from a stronger bargaining power. We discuss three important sources of scale advantages in (Russian) banking. (i) *Advertising*. Small saving banks may not have the means to start the advertising campaign necessary to attract customers. The impact of advertisements on total deposits may increase more than proportionally with their average costs; (ii) *Reputation*. Large incumbent banks with many banking activities generally have a better reputation than small and new banks. The size of the banks gives customers the (false or not) impression that the likelihood of loosing their saving money is limited.[6] Large commercial banks are assumed to be 'too big to go bust'; (iii) *Diversification*. Large saving banks may have access to more types of investments and spread their risk in this way. For example, in Russia only certain large banks were allowed to trade on the primary GKO market; Additional sources may include access to qualified personnel and political influence.

We do not have data on returns to scale for Russian saving banks. There have been many studies on the issue of bank scale and scope economies in developed economies. This literature generally concludes that the average cost curve is relatively flat with some empirical evidence of scale inefficiencies for the largest and smallest banks (Clark (1996)). McAllister and McManus (1993) argue that when econometric biases are removed, only the inefficiencies of the smaller units (up to about $500 million in assets) remain. There appears not to be consensus on the existence or the extent of scope economies in U.S. banking

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[5] In July 1995 the Russian authorities introduced a fixed exchange corridor for the Rouble versus the US dollar. The exchange rate remained relatively stable as a result. See Buchs (1999), Chart 1a, p. 695.

[6] The size of the banks did not protect Rouble deposit holders to be the ultimate losers of the 1998 crisis. In early September 1998 the Central Bank did not allow clients from the prominent banks to withdraw their deposits before mid November in a period when the Rouble was rapidly falling against the dollar and inflation was high. See Simanovskii (1997) for a discussion of the pros and cons of the introduction of a deposit insurance system into the Russian banking system.

(Clark (1996)). The importance of these findings for the Russian banking sector is limited. It may suggest that (very) small scale banking is inefficient. However, we think that the sources of scale advantages other than lower unit costs have been more important in Russian banking.

In the current analysis we address the question how the reputation of banks has affected the concentration process and how banks have used their marketing efforts – in terms of advertising outlays and deposits interest rates – to increase market shares. Reputation is related to two variables: the size of total assets and the age of the bank. Advertising is assumed to positively affect market shares.[7] Davies and Geroski (1997), for example, find confirmation for this for a sample of the top-ranked firms in U.K. industries. Their results also indicate that advertising can be described as a zero-sum game in many markets: in case each firm increases advertising in the some extent then market shares are left unaffected. Deposits interest rates are also assumed to have a positive effect on market share. It is similar to firms selling products that seek higher market shares by lowering prices. It is obvious that firms with large market shares will not be inclined to lower profit margins to attract more customers. Instead, they will prefer advertising of which the costs can be shared among products (cp. R&D costs in Cohen and Klepper (1996)).

4. The model of concentration

Our model consists of two linear equations. The first equation describes how market shares in period t (S_{it}) are influenced by a firm-specific constant (D_i) measuring 'reputation' and relative marketing efforts in the previous period ($M_{i,t-1}$). For the relative marketing efforts we will consider the ratio of own advertising efforts to the total advertising efforts by the market participants and the ratio of the deposit interest rate over the mean interest rate of the market participants. The persistence of market shares can be measured in equation (1) by a_1.[8] The smaller this parameter the faster market shares change from one market participant to another. The effect of relative marketing efforts on the market share in the next quarter equals a_3 but they have also an indirect impact on market shares in future quarters

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[7] Indirect evidence ifor this is given in Scherer and Ross (1990, p.137-138). They discuss the literature on the relation between concentration dynamics and promotion. It is argued that it is a robust result that "since World War II, concentration in American manufacturing industries has tended to rise more rapidly in differentiated consumer goods industries than in industries whose products are purchased by knowledgeable business firm users." (p.137). They refer to the 2 percent point decline on average in CR4 in US producer goods industries over the 1947-77 period compared to the 15 percent point increase in this ratio in highly differentiated consumer goods industries.

[8] Equation (1) is an extension of the familiar Gibrat process. See also Davies and Geroski (1997, p. 385).

depending upon the extent of the persistence of market shares. The sum of the effects on the future market shares (the long-term effect) equals, ceteris paribus, $a_3/(1-a_1)$.

(1) $S_{it} = a_0 + a_1 S_{i,t-1} + a_2 D_i + a_3 M_{i,t-1} + e_{it}$

There are several determinants of the marketing efforts of firms. The size of the bank, both in terms of assets and in terms of market share, is an important one. Large banks have more financial means to pursue an advertising or low price (high deposits interest rate) strategy. Banks with high market shares are likely to prefer an advertising strategy when compared to offering a high deposit rate. Their large amounts of deposits would make the latter strategy expensive. In order to develop a simple linear model to consider the marketing efforts of savings banks, we assume that the banks have a certain target market share (S_{it}^*) in mind given the financial means available and their current market share:

(2) $S_{it}^* = g_0 + g_1 S_{i,t-1} + g_2 D_i$

We may then derive marketing efforts by equating $E_t S_{i,t+1}$ with S_{it}^* to find:[9]

(3) $M_{it} = \dfrac{g_0 - a_0}{a_3} + \dfrac{g_1 - a_1}{a_3} S_{it} + \dfrac{g_2 - a_2}{a_3} D_i$

The second equation describes then how marketing efforts vary across firms of different market shares and firm-specific effects. Having $b_j = \dfrac{g_j - a_j}{a_3}$ and adding an error term gives:

(4) $M_{it} = b_0 + b_1 S_{it} + b_2 D_i + h_{it}$

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[9] Another way to arrive at equation (3) is the following. Assume that the banks maximize the difference between expected market share and a function of marketing efforts: $E_t S_{i,t+1} - q\, g(M_{it})$ where $g' > 0$. The first order condition then gives that $M_{it} = g'^{-1}(a_3/q)$. The parameter q is likely to depend upon the size of the firm both in terms of current market share and total assets. A linear approximation to the first order condition then gives equation (3). A good introduction into micro-economic modelling in banking is Freixas and Rochet (1997).

The error terms e and h are assumed to have zero mean and possibly to be correlated. Combining equations (1) and (4) we find the autoregressive representation of the market shares:

(5) $S_{it} = a_0 + a_3 b_0 + (a_2 + a_3 b_2)D_i + (a_1 + a_3 b_1)S_{i,t-1} + e_{it} + a_3 h_{i,t-1}$

The limiting expression of the average market share of firm i depends upon the value of D_i and equals $\dfrac{a_0 + a_3 b_0 + (a_2 + a_3 b_2)D_i}{1 - a_1 - a_3 b_1}$, where $1 - a_1 - a_3 b_1 > 0$. It should be stressed that the model does not predict the market shares to converge to some limiting value. Instead banks of a certain D_i-type are predicted to have *on average* the given limiting expression.

The dummy variable D_i can take eight values. It is a combination of a dummy variable whether or not a bank is among the top banks in terms of total assets and a dummy variable representing the licency date. The first dummy variable, K_i, equals one in case the firm is among the eight largest banks (C8) in terms of total assets during at least three of the time periods, otherwise zero.[10] The second dummy variable, L_i, has values from 1 to 4 depending upon the date of licency for saving activities.[11] Class 1 means that the banks have the oldest licency date and class 4 means that the banks have the newest licency date. The value of D_i is then equal to $K_i + dL_i$. Saving banks with high total assets and an old licency date (high reputation banks), for example, have a value of D_i equal to $1 + d$, while the banks with a small amount of assets and the newest licency dates (low reputation banks) have a value equal to $4d$. In terms of, for example, equation (4) we have that $b_2 D_i = b_{21} K_i + b_{22} L_i$.

We have chosen to have a binary variable to measure assets size instead of using the assets data themselves for two reasons. First, the data on total assets may not be that reliable. It is unclear what categories of assets are taken into account for each of the saving banks. However, each of the firms that are labelled 'large' in terms of assets (as given in Table 2) indeed belong to banks which were considered as prominent banks at the time.[12] Second, there has been a tendency of the bank sector to have "insiders" and "outsiders". The large banks were, for example, able to profit from the GKO-market, while small banks were

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[10] These banks account for the vast majority of assets in the sample, see Table 2.
[11] An important disadvantage of using licency dates instead of the four classes mentioned is that the oldest bank, the Sberbank, has no licency date as it has been in the market almost since the Russian Revolution.
[12] There is one bank, Most-Bank, which is considered as a prominent bank as well, but is just outside the top 8 of banks in terms of assets in most of the quarters. We stick to the reputation condition as mentioned in the text and label the Most-Bank as 'small'. The Most-Bank was a bank which served a big part of Moscow municipality budget accounts but lost ground as the city government withdrew funds in 1995.

not given those opportunities. For such reasons the prominent banks form the so-called 'Moscow's financial oligarchy'.

The model does not take into account that marketing efforts may not be independent over time. Advertising campaigns can for example take longer than one quarter. We can take this into account by adding an autoregressive term in equation (4):

(6) $M_{it} = b_0 + b_1 S_{it} + b_2 D_i + b_3 M_{i,t-1} + h_{it}$

For the limiting expression presented below equation (5) this means that the b_i ($i=0,1,2$) should be replaced by $b_i/(1-b_3)$. We use two different marketing instruments for M_{it}. The first is the share of advertising outlays, A_{it}. The second is the relative deposits interest rate, INT_{it}. The expected sign for both variables in equation (1) is positive ($a_3 > 0$). Customers are more likely to choose a bank which advertises a lot and which offers high deposits interest rates. The expected signs for the parameter b_1 in equation (4) are different. We expect firms with large market shares to avoid using the interest rate as a marketing instrument. Usually they have enough financial means to advertise though. So, for advertising we expect b_1 to be positive and for the interest rate we expect it to be negative.

5. Data and empirical results

We decided to divide the saving banks into two categories: one of banks with a relatively large amount of total assets and one with banks with a relatively small amount of total assets. It should be noted that the three months deposits market constitutes only a small part of the total assets of the banks. For example, the Sberbank was by far the largest bank in terms of assets while its market share in the three months deposits market was relatively small. In Table 2 we show the 11 saving banks which had total assets in the top 8 in at least 3 out of the 14 quarters. These banks are in the category of "large" banks. Most of them had relatively high shares in the saving market with the exception of the Imperial Bank. In 1997.II the total share of the 11 TOP8 saving banks was equal to 77%.[13]

Leaving aside entrants and exiting firms we have in total 523 observations of which 204 from the seventeen banks which were present in each of the quarters. For some observations not all advertising and interest rate data are available, though. For the observations for which

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[13]See Gavrilenkov (1998, p.97) for a somewhat different and more recent list of the big Russian commercial banks in terms of assets.

these variables are available we have the following summary statistics. The average value of advertising by the Moscow saving banks in newspapers ranged from 38 to 84 thousand US dollars during the period under investigation with no clear trend over time. The overall average is 67 thousand dollars with a median of 30 thousand dollars. Interest rates have been far from constant during the 1994-97 period. Before the 1995 liquidity crisis the deposit interest rates were high. In Table 3 we show that the average deposit interest rate was between 65% and 111% per annum in that period. After the crisis interest rates dropped steadily over time and in the second quarter of 1997 the average deposits interest rate was 25% on a yearly basis. The standard deviation of the interest rates has been falling after the August 1995 crisis as well. However, the ratio of the standard deviation and the mean (i.e. the coefficient of variation) has remained relatively stable over time. It shows that in each quarter there is quite some variation in the deposits interest rates offered by banks. Because the interest rates vary over time we will consider the relative interest rate as the marketing instrument variable. This equals the deposits interest rate of a bank divided by the average in that period.

There are eight categories for the firm-specific constant D_i. A firm can be in one of four different licency classes and be a TOP8-firm or not. A firm is classified to be in licency class 1 in case the licence was given before the year 1992. A firm is classified to be in licency class 2 and 3 when the licency dates were in the years 1992 and 1993, respectively. A firm was classified in licency class 4 in case the licency date was in 1994 or later. In Table 4 we show the number of observations (out of 523) in each of the eight possible categories. We also show the distribution in the third quarter of 1994 and the second quarter of 1997. The system of equations to be estimated is summarized in equations (7) through (9).

(7) $S_{it} = a_0 + a_1 S_{i,t-1} + a_{21} K_i + a_{22} L_i + a_{31} A_{i,t-1} + a_{32} INT_{i,t-1} + e_{it}$

(8) $A_{it} = b_{10} + b_{11} S_{it} + b_{121} K_i + b_{122} L_i + b_{13} A_{i,t-1} + h_{1it}$

(9) $INT_{it} = b_{20} + b_{21} S_{it} + b_{221} K_i + b_{222} L_i + b_{23} INT_{i,t-1} + h_{2it}$

In Table 5 we present the estimation results for this recursive system of equations. We allow for correlation between the error terms e_{it}, h_{1it} and h_{2it} and apply the SUR regression technique. The number of observations is reduced to 492 in case advertising and interest data (both current and lagged) are required to be available. We present the estimation results both for the case when there is a lagged dependent variable in the marketing effort

equations and when there is not ($\boldsymbol{b}_{13} = \boldsymbol{b}_{23} = 0$). Additionally, we estimate the system for three subperiods of four quarters: (I) before the liquidity crisis, 1994 III - 1995 II; (II) post-crisis period, 1995 III – 1996 II; (III) consolidation period, 1996 III – 1997 II. Entrants ($S_{i,t-1} = 0$ and $S_{it} > 0$) and exiting firms ($S_{i,t-1} > 0$ and $S_{it} = 0$) are excluded from the analysis. For entrants there is no information about $M_{i,t-1}$. For exiting firms this information is sometimes available, but including them would bias the results: firms which exit in period t, and hence each have $\Delta S_{it} < 0$, often chose to cease advertising in the period before.

The estimation results for the three equations for the entire period without a lagged dependent in the marketing effort equations can be found in the third column of Table 5. The estimate for $\boldsymbol{a}_1$ is 0.853 implying that the persistence of market shares is about 85% per quarter. Considering that it is on a quarterly basis we would not consider this rate of persistence to be particularly high. We find evidence for TOP8-firms to extent their market share. It indicates that customers are attracted by the reputation of the large banks, probably as they were aware of the vulnerability of many of the small banks. There is no effect of the licency date variable, though. This implies that entrants suffered not so much from their low age but from their low size in terms of total assets. The advertising share has a significantly positive effect on the market share of banks. The relative deposit interest rate fails to have a significant effect on market share. This may point at deposit holders perceiving higher interest rates as suspect because they think that the bank is more likely to go default.[14] Russian deposit holders have been more than once the ultimate losers of a financial crisis and they will have been reluctant to rely on small, new and unknown saving banks offering high interest rates. The risk averseness of Russian deposit holders may have been an important entry and mobility barrier for new firms to achieve a sound market position.

We now turn to the question which firms were the ones with the highest advertising expenditures and deposit rates. The results of the advertising share equation show that large firms – both in terms of market share and total assets – were advertising more, on average, than smaller firms (S and K have a positive effect on A). There is no significant effect of the age of the firm. It is clear that the size of the firm in total assets is the key determinant of the amount of advertising. Large firms have the financial means to advertise intensively to gain market share. The deposit rate equation shows a quite different picture. Firms that offer high interest rates are those that have small market shares (S has a negative effect on INT) and are young (L has a positive effect on INT). The size of the bank in terms of total assets appears not to affect the deposit rates. Price competition is a costly strategy for banks with

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[14] For the 45 banks that exit in our sample we had data available for the relative interest rate in the period before for 32 firms and for that in two periods before for 40 firms. The average relative interest rates were 1.053 and

an already high share of the deposits market and they seem to have avoided that. For young firms the situation was different: offering high deposit rates was the only strategy available to most of them as they failed to have access to financial resources to pursue, for example, an advertising strategy. The absence of an effect of the interest rate on the market share shows that this policy has been unsuccessful, on average.

In the fourth, fifth and sixth column of Table 5 we show the parameter estimates for the three subperiods. The extent of persistence of market shares has changed strongly over the subperiods, from 75% in the period 1994.III – 1995.II up to 99% in 1995.III – 1996.II and again down to 89% in 1996.III – 1997.II. Market shares were very unstable before the August 1995 crisis. In this volatile market firms could gain and loose many percentages of market share from one quarter upon the other. Many firms were active on the market and in 1995.II the rate of market concentration dropped to its lowest level (see Table 1). In the post-crisis period market shares became very stable with only the TOP8-firms gaining some market share. This period provided entrants and small firms with much less opportunities to increase their market share because deposit holders had become more aware of the risks of default. In the third subperiod the market regained some of its dynamics as the extent of persistence dropped.

The results for the effect of advertising on market share show that this effect became more important over time. This improved the position of large banks that could afford to advertise versus their smaller counterparts. In the third subperiod the advertisment effect was the strongest and in this same period the number of market participants dropped most strongly (see Table 1). In the interest rate equation we find some evidence for one size determinant to become less important over time (S), while the other gains importance (K). The TOP8-banks became more interested in the deposits market as it provided them with funds for the GKO-market. These banks were probably willing to pay above average deposit interest rates to benefit from the high GKO interest rates offered by the Russian government.

In the last four columns of Table 5 we show the results for the total period and the three subperiods when the lagged marketing variables are included (b_{13} and b_{23} are no longer restricted to be zero). The effects for the market share equation are limited, but the effects for the other two equations are substantial. Both the lagged advertising variable and the lagged interest rate variable have a highly significant effect with coefficients of about 0.6. Firms appear to have followed certain marketing strategies (campaigns). Those which spent a lot on advertising or those which offered high deposit rates in one quarter were likely to do so likewise in the next quarter. The size of the coefficients of the other determinants drops when

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1.067, respectively. These are in excess of unity showing that on average exiting firms had higher deposit rates than survivors.

including the lagged dependent variables. It should be taken into account that these coefficients should now be interpreted as short-term effects.

These results provide a clear picture about the extent of market dynamics and about which banks used which marketing instruments and whether these were successful. However, the results were found using a subsample (of 492 observations) of the dataset due to data limitations. In case advertising and interest rate requirements would have been absent, the number of observations would have increased to 523. If we would also have added entrants ($S_{i,t-1} = 0$) and exiting firms ($S_{it} = 0$) this number would have been 595 observations. In Table 6 we show the estimation results for a simplified version of the market share equation for the extended samples. The regression results in the first block of the table (with 523 observations) are quite close to those found in Table 5. The inclusion of entrants and exiting firms has a much larger effect, though. The extent of persistence of market shares (a_1) drops while the effect of assets size (a_{21}) increases, compared to the estimates in Table 5. It is not surprising that including entrants and exiting firms leads to increased market dynamics because their market shares change 'by definition'. Whereas the 'average' incumbent had its market share persist for 87% over the total period, the 'average' firm (including entry and exit) had a percentage of only 81%. The effect of being a TOP8-firm becomes stronger because (i) those banks have not exited during the 1994-1997 period; (ii) those banks sometimes already had a sizeable market share upon entry. The results in Table 6 show that omitting the entrants and exiting firms does change the estimates in the market share equation to quite some extent but does not change our main conclusions drawn from this equation.

Because there is no effect of the deposit interest rate on market share, we will leave it out of consideration when determining the limiting vale (on average) of the market share. Additionally, we do not find an effect of the licency class on either advertising or market share. This makes the limiting expression particularly simple. In case we use the results presented in the seventh column of Table 5 we find as limiting expression $0.016 + 0.059 K_i$.

The TOP8-firms have been converging – on average – to a market share of 7.5 percent, while the other banks have been converging – on average – to a market share of 1.6 percent. This is confirmed when considering the members of the eight firms with more than 5% market share in 1997.II. These are all TOP8-firms with the exception of the (strongly Moscow-oriented) Most-Bank. The Most-Bank bank has a value of total assets which was small enough to have it drop just outside the TOP8-firms (in fact it had rank nine in 1997.II). The important difference in the limiting values of average market shares shows that new saving banks were not so much confronted with entry barriers – maybe they were even too

low – but they were confronted with very strong barriers to growth after the 1995 liquidity crisis.

6. Conclusion

After an initial phase of entry of many small saving banks, the market structure of banking in Russia has tended to become more concentrated. This concentration process is the consequence of the existence of some important scale advantages, like perceived reliability, the possibility of diversification and the access to the GKO market. We have developed a model consisting of three equations to analyze the reasons behind the concentration process. At the end of the period, in 1997, the Moscovian saving market consists of a small group of about ten large saving banks which have a high amount of assets and which are international in scope *and* of a collection small banks specialising in niches in the saving market. The analysis shows that the Moscovian saving market became relatively stable in terms of market shares during 1997. However, this balance was again disturbed one year later due to the 1998 Rouble crisis. An important element in the concentration process has been the role of advertising. The large banks that had the financial means to advertise were able to attract many customers by pursuing advertising campaigns.

In the prevalent circumstances on the Moscovian savings market the scale of banking, measured in our study by total assets, has been very important for two reasons. First, a small bank usually is not well-known and it cannot convince savers that the organisation is sound by their mere size. Second, a small bank does not dispose of the necessary funds to advertise and attract customers. Many of the small and young banks tried to enhance their market position by competing on the interest rate. A consequence is that small banks either have low profit rates or seek higher returns with risky and one-sided investments. This entails a very unstable banking sector.

The high interest rate strategy was not only risky but also unsuccessful because it failed to attract additional market share. This was probably due to a problem of informational asymmetry. Deposit holders may have been cautious in choosing the high interest rates saving banks as they were thought to be more likely to default. This may have been an important reason for only a fairly large bank (in terms of assets) to have had a reasonable chance to enter the Moscovian individuals' savings market successfully.

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Table 1: Market structure statistics of the Moscovian three months deposits saving market

Quarter	Firms	Ent	Ext	S>5%	Herf	C1	C4	C8	Mean licency date
94.I	39	-	-	3	0.153	33	60	75	92.8
94.II	48	9	0	6	0.090	18	51	72	92.9
94.III	54	9	3	6	0.066	18	41	60	93.0
94.IV	56	5	3	5	0.082	23	44	62	93.0
95.I	55	4	5	7	0.053	12	35	57	93.0
95.II	56	3	2	5	0.049	13	34	54	93.1
95.III	53	1	4	4	0.063	16	42	59	93.0
95.IV	48	2	7	4	0.062	15	42	59	92.8
96.I	48	2	2	4	0.064	15	42	59	92.8
96.II	45	0	3	7	0.071	16	44	64	92.7
96.III	39	1	7	7	0.068	13	42	66	92.6
96.IV	36	0	3	8	0.074	12	45	71	92.5
97.I	31	0	5	8	0.079	13	47	74	92.3
97.II	30	0	1	8	0.080	14	45	75	92.3

Note: The table presents the number of firms, the number of entrants (Ent), the number of firms which exited (Ext), the number of firms with market share (S) in excess of 5%, the Herfindahl index, the largest market share (C1), the C4 and C8 concentration ratios and the average licency date. The Sberbank is excluded when computing the average licency date.

Table 2: The firms in the assets TOP8

name	# quarters in TOP8	share 95.IV	share 97.II	% assets 97.II
Incombank	14	14.6	14.4	6.4
Russian Credit	14	7.6	3.7	3.5
Alfa-Bank	10	2.0	6.3	2.5
Stolichniy Saving Bank	14	4.1	8.3	4.5
Sber Bank RF	14	4.7	12.2	63.3
Imperial Bank	4	0.7	1.0	2.1
Avtobank	3	3.4	7.1	1.4
Menatep-Bank	11	3.0	3.6	2.5
Unicombank	4	2.2	3.0	1.3
East-West Bank	10	12.5	9.3	1.5
Promstroybank	8	4.7	7.9	3.6

Note: The firms have been in the top 8 of firms with highest assets at least during three out of 14 quarters. The market shares for the fourth quarter of 1995 and the second quarter of 1997 are given in the next two columns. Each of the banks in the table except the East-West Bank had a licency date of the first quarter of 1994 or earlier. The eleven banks in the table are each in the top twelve of banks arranged in order of assets in the second quarter of 1997, as given in the last column. The only bank missing is the Most Bank with 1.9%.

Table 3: Summary statistics for the deposit interest rates

	94.III	94.IV	95.I	95.II	95.III	95.IV	96.I	96.II	96.III	96.IV	97.I	97.II
Mean	83	65	83	111	96	78	74	65	62	50	36	25
Stdev	10.1	7.7	9.9	11.8	8.7	7.3	10.4	9.4	5.9	5.9	3.7	2.3
CV	0.122	0.118	0.119	0.106	0.091	0.094	0.141	0.145	0.095	0.118	0.103	0.092

Note: The table shows the mean, standard deviation and the coefficient of variation (CV) of the deposit interest rates. The coefficient of variation (CV) is the ratio of the standard deviation and mean.

Table 4: The eight categories for the firm-specific constant

		1994.III		1997.II		Total	
		0	1	0	1	0	1
TOP8							
LIC	1	1	2	1	4	12	40
	2	8	2	5	3	81	35
	3	25	2	11	3	222	35
	4	4	0	2	1	88	10
total		38	6	19	11	403	120

Note: Cells show the number of observations for the eight categories. TOP8 denotes whether a bank is in the TOP8-group as given in Table 2. LIC denoted the licency class. The four classes are licency before 1992 (1), in 1992 (2), in 1993 (3) and in 1994 or thereafter (4).

Table 5: Regression results of the recursive system of three equations (7)-(9) using SUR

	Variable	Total	I	II	III	Total	I	II	III
a_0		0.003	0.012	-0.000	-0.000	0.002	0.008	-0.004	0.005
		(0.7)	(1.3)	(0.1)	(0.0)	(0.3)	(0.9)	(0.9)	(0.5)
a_1	S_{-1}	0.853^a	0.753^a	0.994^a	0.887^a	0.860^a	0.765^a	0.992^a	0.905^a
		(43.7)	(20.9)	(45.5)	(23.2)	(44.0)	(21.2)	(45.4)	(23.6)
a_{21}	K	0.007^a	0.008^b	0.004^a	0.003	0.007^a	0.008^a	0.004^b	0.003
		(4.3)	(2.5)	(2.7)	(0.9)	(4.5)	(2.8)	(2.3)	(1.1)
a_{22}	L	-0.000	0.000	0.001	-0.002^c	-0.000	0.000	0.000	-0.002
		(0.1)	(0.3)	(0.9)	(1.8)	(0.1)	(0.3)	(0.6)	(1.5)
a_{31}	A_{-1}	0.046^a	0.010	0.019	0.093^a	0.029^c	-0.020	0.039^b	0.052^c
		(2.7)	(0.2)	(1.3)	(3.1)	(1.7)	(0.5)	(2.5)	(1.7)
a_{32}	INT_{-1}	-0.002	-0.010	-0.001	0.006	-0.000	-0.006	0.003	0.001
		(0.4)	(1.2)	(0.3)	(0.7)	(0.0)	(0.7)	(0.6)	(0.1)
b_{10}		0.004	-0.001	0.007	0.003	0.002	-0.002	0.003	0.003
		(0.9)	(0.2)	(0.8)	(0.3)	(0.6)	(0.3)	(0.5)	(0.4)
b_{11}	S	0.314^a	0.398^a	0.203^b	0.318^a	0.059	0.197^a	-0.021	0.014
		(5.9)	(5.2)	(2.1)	(3.0)	(1.3)	(2.8)	(0.3)	(0.2)
b_{121}	K	0.024^a	0.017^a	0.037^a	0.018^b	0.013^a	0.010^c	0.017^a	0.012^c
		(5.8)	(2.9)	(4.9)	(2.2)	(3.8)	(1.8)	(3.0)	(1.8)
b_{122}	L	0.002	0.004	0.001	0.005	0.001	0.002	-0.000	0.002
		(1.5)	(1.6)	(0.2)	(1.6)	(0.4)	(0.9)	(0.1)	(0.7)
b_{13}	A_{-1}					0.640^a	0.509^a	0.727^a	0.631^a
						(17.6)	(7.1)	(13.6)	(9.5)
b_{20}		0.911^a	0.954^a	0.914^a	0.866^a	0.393^a	0.431^a	0.321^a	0.497^a
		(47.2)	(27.3)	(28.6)	(28.5)	(10.4)	(6.9)	(4.8)	(7.4)
b_{21}	S	-0.483^b	-0.914^a	-0.663^c	-0.049	-0.186	-0.453	-0.097	-0.039
		(2.4)	(2.7)	(1.8)	(0.1)	(1.1)	(1.6)	(0.3)	(0.1)
b_{221}	K	0.004	-0.038	-0.004	0.050^c	0.005	-0.015	-0.006	0.038
		(0.3)	(1.4)	(0.1)	(1.9)	(0.4)	(0.7)	(0.3)	(1.6)
b_{222}	L	0.037^a	0.027^b	0.035^a	0.048^a	0.018^a	0.009	0.014^c	0.034^a
		(5.9)	(2.4)	(3.5)	(4.6)	(3.4)	(1.0)	(1.7)	(3.6)
b_{23}	INT_{-1}					0.564^a	0.559^a	0.646^a	0.409^a
						(15.0)	(9.3)	(9.7)	(6.0)
$R^2_{(7)}$		0.898	0.829	0.958	0.922	0.898	0.830	0.959	0.923
$R^2_{(8)}$		0.280	0.255	0.311	0.246	0.559	0.419	0.639	0.568
$R^2_{(9)}$		0.110	0.162	0.129	0.156	0.390	0.431	0.417	0.343
N		492	186	185	121	492	186	185	121

Note: T-values between brackets. The superscripts a, b and c stand for significance at the 1%-, 5%- and 10%-significance level, respectively. The 'total' period are the 12 quarters from 1994.III to 1997.II. This period is subdivided into three subperiods: 1994.III-1995.II (I in the heading), 1995.III-1996.II (II in the heading) and 1996.III-1997.II (III in the heading). N is the total number of observations for each of the three equations.

Table 6: Estimation results for extended samples

	Variable	Without entries/exits				With entries/exits			
		Total	I	II	III	Total	I	II	III
$\boldsymbol{a}_0$		0.002^a	0.003^a	-0.000	0.001	0.001^b	0.003^a	-0.001	0.000
		(2.8)	(2.7)	(0.0)	(1.2)	(2.1)	(2.8)	(0.8)	(0.2)
$\boldsymbol{a}_1$	S_{-1}	0.866^a	0.756^a	0.998^a	0.922^a	0.814^a	0.690^a	0.937^a	0.914^a
		(47.7)	(24.1)	(46.4)	(25.5)	(41.9)	(20.7)	(34.5)	(25.5)
$\boldsymbol{a}_{21}$	K	0.008^a	0.008^a	0.005^a	0.005^c	0.012^a	0.015^a	0.008^a	0.007^b
		(5.6)	(3.1)	(3.1)	(1.9)	(8.1)	(5.2)	(4.5)	(2.5)
N		523	199	189	135	595	233	210	152

Note: T-values between brackets. The superscripts a, b and c stand for significance at the 1%-, 5%- and 10%-significance level, respectively. The 'total' period are the 12 quarters from 1994.III to 1997.II. This period is subdivided into three subperiods: 1994.III-1995.II (I in the heading), 1995.III-1996.II (II in the heading) and 1996.III-1997.II (III in the heading). N is the total number of observations. In the first part of the table entries (share in the previous period was zero) and exits (share in the current period becomes zero) are excluded while in the second part these are included. That is, in the second part 27 entries and 45 exits are included next to the 523 observations giving a total of 595.

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