

What Determines a Bank Failure? Survival in the Russian Banking Sector

Polina Bochenkova

University College Roosevelt
p.s.bochenkova@gmail.com

ABSTRACT

In Russia, an increasing number of banks fail every year for various reasons. Some banks get closed voluntarily, some merge with other banks, whereas others have their licenses revoked by the Central Bank for noncompliance with Central Bank rules. But is a bank's poor performance the only reason for a failure? With a use of new datasets on bank failures, this paper shows that bank survival is determined by far more than its performance.

Keywords

Bank supervision, survival analysis, Russian banks, banks survival, CBR, the Central Bank of Russia.

INTRODUCTION

Since 1991, more than 2,500 banks have failed due to various reasons in Russia. The pace of bank failures is reaching its maximum in the past two years with the coming of a new head of the Russian Central Bank, Elvira Nabiullina. The banks that survived until now experience unprecedented risks of failure. But what determines whether a bank will lose its license?

In the substantially regulated Russian banking sector, all banks must comply with a list of prudential norms imposed on them by the Central Bank of Russia (CBR). All banks are further required to report their performance on these norms regularly. In a case of noncompliance with the regulations, the banks are penalised by the CBR. The question is, however, whether, the breaches of the CBR regulations are, indeed, the only reasons for license revocation. Are banks equally penalised for their misbehaviour or are there other factors that determine bank survival? For instance, does the business cycle have a significant impact on the failure risks? Do armed-conflicts affect failure rates? Or can it be the personality of the CBR head that determines how many banks will fail?

Several studies assessed bank failures in the Russian banking sector and, in particular, analysed the relationship between the CBR and the failed banks. For instance, a study by Claeys and Schoors (2007) examined micro- and macro-prudential objectives of

the CBR's bank licensing policy. They found that high deposit banks that operate on the interbank market are less likely to lose their license. The results of this study also showed that the CBR is reluctant to revoke bank's license if there are too many failing banks in the sector.

The results of the study by Malyutina and Parilova (2001) suggest that the CBR may sometimes pursue its private interests and chose not to penalise the risky banks. This behaviour allows the CBR to cut down the costs associated with a preventive closure.

A more recent study by Karminsky and Kostrov (2014) examined the probability of default of Russian banks. The findings of the study suggest that CBR is often inclined to close a bank if the capital adequacy ratio of that bank is either too high and too low.

The results of the study by Konstandina (2006) suggest that, unlike macroeconomic factors, bank-specific characteristics affect the failure risks significantly. In particular, the management quality of the bank is an essential for the bank survival. Whereas, the study by Fungáčová and Weill (2009) found that an increased market competition has adverse effects on the survival of the banks in the sector.

Although these studies examined bank failures in Russia, none of them has analysed whether the CBR justifications of bank failures are grounded. In particular, no one studied whether the banks that fail because of a specific CBR rule violation are, indeed, the banks that violate this rule more frequently than others. Furthermore, no study analysed the roles of the different CBR heads in bank failures. Finally, previous studies have not examined what external factors influence bank failures.

This paper aims to test several determinants of bank failures in Russia and to examine whether banks that lose their license are penalised impartially for their misconduct. I use survival analysis framework in to assess failure risks of banks associated with specific bank characteristics or with an external factor. On the first question, I found that, overall, violations of the CBR rules lead to higher failure risks. Still, noncompliance with risk-regulating norms can sometimes lead to higher survival chances, which corresponds to the previous findings. Furthermore, in the time of armed conflicts, banks tend to have significantly lower failure risks than in peaceful time. Meanwhile, economic crisis tends to increase the risk of bank failure. The results of this study also show

that in some federal districts of Russia banks are consistently more vulnerable to failures than in others. On the second question, I found that not all CBR heads are equally impartial in their license revocation policies. Notably, the results show that license revocation decisions of the current CBR head Elvira Nabiullina are the most well-grounded, as compared to the central bankers before her.

The findings of this study correspond to the previous research. However, these results were impossible to obtain by the researchers in the past due to the lack of data on the CBR justifications of bank failures. For my study, I manually collected this data and generated a dataset that contains detailed information on all failed banks and their exact failure reasons since 1991. This dataset does not only consist of information on banks that lost their license, but also the banks that closed voluntarily or merged. In total, the dataset contains documented failure reasons for 2,569 banks across Russia. This dataset enables me to differentiate between the banks in the way nobody has done it before me. In particular, I can group banks based on the reason for their failure and study the trends in failure justifications. Furthermore, by comparing failure reasons and banks' actual performance, I can examine whether the CBR penalises banks for their misconduct impartially.

DATA

In the scope of this research, I have worked with five different datasets. My supervisor Dr Alexei Karas has provided me with three datasets, and two datasets I generated manually on my own. Table 1 describes the sources and contents of all datasets I used. The combination of the five datasets provided me with access to quarterly bank performance data, the reasons and the types of bank failures, and the location of the banks. I could also see whether Russia experienced an economic crisis or participated in any armed conflict, as well as who was the head of the CBR in a given quarter of the year.

METHODS

I used survival analysis framework to assess vulnerability to failure of banks associated with a particular characteristic of a bank or with an external factor. A bank enters the dataset at the time of its registration and exits at the time of its failure. I distinguished between 3 types of bank failures:

- Killed: the banks whose licenses were revoked by the CBR due to a certain misconduct.
 - Died: banks that closed voluntarily.
 - Merged: banks that merged with other banks.
- Furthermore, I distinguished between 5 different failure justifications groups as will be explained later in this paper.

The analysis covers **105** quarters (26 years) and **3,152** banks. In the end, only 18% of the banks survived.

RESULTS

1. External factors

In this study, I found that external factors such as geographical location, business cycle and war have different effects on the risks of failure in different failure-type groups.

a. Killed banks

According to the findings of this study, the banks experience statistically higher risks of license revocation at the time of economic crisis.

Furthermore, banks in Central, North Caucasian and Southern districts of Russia face higher failure risks than banks in other federal districts. Disturbingly, the results show that banks have lower risks of losing their license when Russia is engaged in an armed conflict.

b. Banks that died

I observed similar trends in the group of banks that chose to close voluntarily. The results suggest that the risks of failure increase in peaceful times and during an economic crisis. Furthermore, I found that failure risks are higher in North Caucasian, Far Eastern and Volga districts as compared to others.

c. Merged banks

Banks have statistically higher risks of stopping their operation due to a merger in peaceful times, whereas crisis has no statistically significant effect on failure risks. In North-western, Siberian and Volga districts, the risks of a merger are the highest among all federal districts.

2. Bank performance

The findings of this study suggest that, overall, the violations of the CBR rules committed by banks tend to be statistically significant predictors of whether or not the bank will lose its licence. Table 2 illustrates the regression outcomes for each failure-type group.

Violations of capital and liquidity norms (N1-N3) are associated with increased risks of license revocation, and this relationship is highly statistically significant. However, violations of norms that regulate risk-taking decrease chances of license revocation. This finding goes in line with the previous research. Considering voluntary shutdowns and mergers, I found that violations of CBR norms are insignificant determinants of failures. The only exception is the violation of norm N11. This norm regulates the ratio of individual deposits to bank capital. The results of this study show that banks that violate N11 have statistically higher risks of merging.

3. CBR heads

The results are distinct if I compare licence revocation risks associated with different heads of the CBR. More differences emerge if I consider different failure justifications.

When the CBR revokes a bank's license, it has to present a justification for its decision. Having collected the relevant data, I divided banks into the groups based on the justification of their failure. In

this study, I focused on the following five categories of banks:

- 1) Banks that lost their license because of violation of norm N1 (capital adequacy ratio).
- 2) Banks that lost their license because of violations of norms N2, N3 and N4 (liquidity ratios).
- 3) Banks that lost their license because of violations of norm N7 (risk measure).
- 4) Banks that lost their license because of poor management.
- 5) Banks that lost their license because of detected frauds.

Tables 3-7 illustrate the regression outcomes for each of these groups and compare the coefficients obtained for different heads of the CBR. Overall, I found that the only central banker, whose decisions on license revocation are highly sensitive to the actual bank performance is Elvira Nabiullina, the current head of the CBR. Since her appointment as the CBR chair, increased number of norm violations lead to drastically higher risks of license revocation in every failure group.

For other central bankers, norm violations also have a positive relationship with bank failure risks, yet the coefficients are ten times smaller than in the case of Nabiullina. Lower coefficients suggest a weaker relationship between banks' behaviour and the penalty they receive. Furthermore, when the CBR is not lead by Nabiullina, an increased number of norm violations decreases the risks of bank failure in several failure groups. A negative relationship between violations and failure risks may signal that central bankers before Nabiullina sometimes failed to implement their license revocation policies impartially.

Primarily, the results this study show that banks have considerably lower survival chances when CBR is lead by Elvira Nabiullina. When Elvira Nabiullina is a head of the CBR, regardless of the failure reason there are two CBR norms that, if violated, substantially increase the chances of license revocation. Those norms are N2 (quick liquidity ratio) and N7 (large risk to capital ratio). Depending on a failure reason, however, there can be other significant predictors of a failure, the sensitivity of failure risks will vary as well.

CONCLUSION

The results of this study show that the survival of a bank in Russia is not determined by its performance only. Depending on who leads the CBR, some banks that violate the rules can still have good survival chances. Furthermore, external factors such as war, crisis and geographical location can significantly affect bank survival.

A successful survival formula for a Russian bank that violates CBR norms is to function at the times of armed-conflict with Russian participation, with no

economic crisis going on and with a head of the CBR different than Elvira Nabiullina. Fortunately, it is not up to banks to chose the external conditions. In the current circumstances, the most plausible locations for Russian banks to survive are Ural and North-western districts. The banks that want to survive will also need to avoid breaches of norms N2 and N7 at all costs.

STUDENT CONTRIBUTION

As it was described earlier in this paper, I have collected the data and generated a dataset on failed banks. This dataset covers a period of 1991-2017 and contains detailed information on failure justifications for 2,569 banks. Furthermore, I generated a dataset on external factors of bank failures that also covers the period of 1991-2017. Data analysis and paper writing were all performed by me.

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TABLES

Table 1: A brief description of the datasets used in the study.

Origin	Content	Alterations
Dataset on CBR Prudential Norms		
Provided by Dr Alexei Karas.	Values of the CBR norms, which establish the borders for several bank performance-measures.	Change the way the data is stored from monthly to quarterly; Merged with other datasets.
Dataset on Bank Self-Reported Performance		
Provided by Dr Alexei Karas.	Data on banks' performance on every CBR norm from 1997 till 2016.	With the use of Regulations dataset, I generated variables that count whether or not a bank has violated a certain CBR norm (norm-performance); Merged with other datasets.
Dataset on Bank Official Data		
Provided by Dr	Contains information on the geographical location of banks and the dates of	Merged with other datasets.

Alexei Karas.	their registration in the system.	
Dataset on Bank Failures		
Manually generated by myself with the data from banki.ru.	Contains detailed information on the reasons of all bank failures starting from 1991 and ending with 2017.	Based on documented failure reasons, I grouped banks into several categories to test whether banks are penalised for their misconduct fairly.
Dataset on External Factors		
Manually generated by myself.	Contains binary variables that would assign 1 to quarters of the year in which there was: a war with official participation of Russia or an economic crisis.	N/A
	Also contains information on particular CBR heads that were in charge at a particular time.	

Table 5: The determinants of failure for N6-N7 violations.

VARIABLE	Nabiullina	Ignatiev	Dubinina	Gerashchenko
N1 violations	-1.449 (2.318)	2.759 (3.218)	2.103*** (0.469)	-0.524 (0.550)
N2 violations	38.36*** (7.384)	4.216*** (1.516)	2.572*** (0.684)	3.842*** (0.786)
N3 violations	-4.673 (6.785)	-2.622 (1.677)	4.049*** (0.653)	1.366* (0.774)
N7 violations	28.99*** (5.301)	-3.365 (5.520)	-111.5 (4,156)	-1.720 (3.271)
N12 violations	-141.5 (9,986)	1.027 (3.660)	-1.622 (1.292)	3.126*** (0.988)
N11 violations	-	-2.204*** (0.824)	-2.542*** (0.797)	0.180 (0.451)
N13 violations	-	-2.208 (2.748)	0.106 (1.325)	1.742** (0.843)
N10 violations	-	-2.850** (1.268)	-3.436* (1.946)	0.485 (0.677)
Constant	-8.940*** (0.646)	-7.273*** (0.252)	-4.859*** (0.111)	-6.895*** (0.343)
Observations	9,954	52,192	23,395	17,353

Table 7: The determinants of failure for frauds.

VARIABLE	Nabiullina	Ignatiev	Dubinina	Gerashchenko
N2 violations	41.20*** (10.24)	1.614 (1.746)	4.421* (2.327)	3.159** (1.305)
N3 violations	-10.34 (9.843)	-1.238 (1.747)	4.942** (2.367)	2.372* (1.271)
N7 violations	27.38*** (6.601)	7.182 (6.015)	-131.9 (15,305)	-0.745 (4.365)
N11 violations	-	-2.266*** (0.807)	1.773 (1.469)	0.936 (0.678)
N13 violations	-	-11.91 (7.776)	3.308 (2.488)	2.724** (1.157)
N10 violations	-	-6.278*** (1.825)	2.612 (3.255)	-0.235 (1.200)
Constant	-6.174*** (0.449)	-6.574*** (0.219)	-8.920*** (0.577)	-7.213*** (0.538)

Table 2: The determinants of failure risks.

VARIABLE	Killed	Died	Merged
N1 violations	2.692*** (0.255)	2.521 (2.687)	1.505 (1.673)
N2 violations	1.889*** (0.403)	-2.977 (3.731)	-1.679 (2.015)
N3 violations	2.219*** (0.388)	4.486 (2.998)	1.725 (1.485)
N7 violations	-7.816*** (1.955)	-171.5 (31,564)	3.449 (2.685)
N11 violations	-2.130*** (0.309)	-11.09 (9.125)	1.474*** (0.377)
N10 violations	-1.994*** (0.468)	-10.69 (9.419)	-1.077 (1.037)
Constant	-4.537*** (0.0473)	-8.484*** (0.284)	-8.019*** (0.190)
Observations	102,894	102,894	102,894

Table 3: The determinants of failure for N1 violations.

VARIABLE	Nabiullina	Ignatiev	Dubinina	Gerashchenko
N2 violations	27.45*** (7.265)	3.869* (2.064)	-136.7 (64,416)	-4.213 (4.249)
N3 violations	6.208 (5.922)	-2.047 (2.312)	-159.6 (70,143)	7.365** (3.530)
N7 violations	31.33*** (5.701)	-8.361 (11.66)	323.0 (2.176e+06)	2.915 (7.021)
N11 violations	-	-2.010** (0.990)	-154.1 (84,713)	-0.451 (2.514)
Constant	-7.624*** (0.644)	-7.792*** (0.327)	-9.150*** (1.142)	-12.82*** (2.346)
Observations	9,954	52,192	23,395	17,353

Table 4: The determinants of failure for N2-N4 violations.

VARIABLE	Nabiullina	Ignatiev	Dubinina	Gerashchenko
N2 violations	36.63*** (12.63)	6.740** (3.297)	-136.7 (64,416)	-4.213 (4.249)
N3 violations	4.862 (10.83)	-4.877 (4.249)	-159.6 (70,143)	7.365** (3.530)
N4 violations	38.20*** (13.21)	-154.4 (16,445)	-117.1 (185,111)	-0.640 (6.470)
N7 violations	26.22** (12.54)	6.861 (12.21)	323.0 (2.176e+06)	2.915 (7.021)
Constant	-9.153*** (1.420)	-9.029*** (0.649)	-9.150*** (1.142)	-12.82*** (2.346)
Observations	9,954	52,192	23,395	17,353

Table 6: The determinants of failure for poor management.

VARIABLE	Nabiullina	Ignatiev	Dubinina	Gerashchenko
N2 violations	31.81*** (7.607)	2.895* (1.710)	7.795*** (2.485)	3.700*** (0.870)
N7 violations	27.50*** (5.608)	-0.928 (6.873)	-95.88 (5,758)	-2.137 (3.654)
N12 violations	-139.8 (9,169)	1.852 (3.877)	-3.256 (3.940)	3.447*** (1.023)
N11 violations	-	-2.038** (0.837)	1.175 (1.476)	-0.0632 (0.525)
N10 violations	-	-5.724*** (1.898)	-0.709 (3.970)	-0.481 (0.861)
Constant	-8.101*** (0.592)	-6.884*** (0.251)	-6.412*** (0.296)	-6.793*** (0.369)
Observations	9,954	52,192	23,395	17,353

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1