Supervisory oversight and internal fraud in failing banks

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Abstract:

This study assess the relationship between the supervisory attention and the extend of financial fraud in insolvent banks. Using novel dataset of 207 bankrupt Russian banks that failed during the 2014-2017 period and undergo an in-depth regulatory audit investigation for the balance sheet inconsistencies, I am able to exploit the direct measures of assets and loans extreme overstatements. On average, 53.5% of bank assets and 60.3% of loans are falsified on the failed bank balance sheet and have zero recovery value. I examine the relationship between the internal fraud outcomes and the degree of the supervisory attention during the final year of bankrupt banks' life. I find that the strength and the direction of such relationship are sensitive to the presence of potential corruption channels. In a high-corruption environment or if a bank has a close geographic proximity to its supervisory office, additional on-site inspections are associated with more severe cases of fraud. In the low-corruption local environment or if a distance between a bank and a supervisory headquarters is large, the higher frequency of inspections in a failing bank is associated with a lower degree of fraud. I also find that the presence of a permanent resident examiner in a bank is associated with significantly lower bank-level fraud.

Keywords: bank supervision, bank failure, financial statements fraud, on-site examinations, resident examiners, corruption, Russia

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1. Introduction

Understanding the overall effectiveness and intended and unintended consequences of ongoing bank supervision and enforcement actions on the financial stability and the individual banks' risk-taking behavior is an important component of the modern financial regulation structure. However, despite the cross-national diversity of the supervisory standards and approaches around the world[1], we still know little about the comparative effectiveness of different supervisory methods at a bank level and in different economic and regulatory environment.

Does intense supervisory attention promote the effectiveness of the regulatory discipline of banks and restrict bank's moral hazard and excessive risk-taking? Which supervisory tools and methods work best to perform this task? Which characteristics of the socio-economic environment and the bank-supervisor closeness and familiarity statuses enforce or undermine the quality of the supervision?

In this paper, I address these big picture questions by looking at the extreme financial fraud practices in the sample of closed down insolvent banks. The basic motivation of this study is to explore the role of bank on-site supervision in financial fraud, with a special focus on environments with high propensity to corrupt. I draw my study sample from the Russian banking market that experienced a wave of regulator-initiated bank closures since 2014. During the 2014-2017 period, almost 300 banks in this market were closed down by a regulator and in about 80% of these closure cases failed banks were accused of different forms of severe internal fraud, including financial statements misreporting and falsifications.

The uniqueness of this study builds on at least the following three institutional features of the Russian banking markets, all related to rich and previously unexplored dataset features. First, it

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[1] Barth, Caprio and Levine (2013; 2004) and Barth, Dopico, Nolle and Wilcox (2002) present a broad and convincing country-level descriptive evidence on the diversity of the supervisory tools and practices around the world.

provides a valuable laboratory to study a large, not related to a sharp crisis period, wave of bank closures in a relatively short period and with a very high frequency of fraud-related regulatory accusations. Well-documented fraud cases are rare in empirical finance and banking research and a large database of such case in one single industry represents a valuable research material. The study sample consists of 207 bankrupt banks cases, all with a varying degree of objectively measured financial fraud, ranging from 0% to 100%, with an average of 53.5% of falsified assets and 60.3% of falsified loans on a closed down bank balance sheet.

Second, the low forbearance of the Russian bank regulators and the actual closure of fraudulent banks (instead of receivership or regulator-assisted acquisition resolutions) allow a rare glimpse inside the black box of what is actually stored and reported on the failed banks accounting books on a day of a bank closure and to contrast it to the post regulatory audit true numbers, carefully reconstructed after the in-depth investigation and prior to any asset sales as of the exact day of each bank failure. Other useful disclosure, such as banks' monthly financial statements and the Deposit Insurance Agency liability in each failed insured bank are also publicly available now.

Third, due to the series of recently initiated high-transparency initiatives, the Russian regulators disclose now not only the reasons for each bank closure, but also the details of its liquidation balance sheet and, most importantly, the timing and the frequency of supervisory on-site interventions and monitoring intensity, including regular inspections, extra inspections, administrative fines, and the resident examiners' appointments.

The main results of this study can be summarized as follows. First, I document broad and pervasive dominance of accounting fraud in failing banks. At the time of a bank closure, an average assets overstatement (or falsification) exceeds 53%, while the average loans overstatement exceeds 60%. Second, I find that regulators seem to have limited knowledge about the degree of ongoing

fraud in a failing bank before that bank is actually closed down and the detailed regulatory audit is performed by a special temporary administration team.

Third, and most importantly for the purpose of this study, I find evidence that on-site supervision during the last twelve months preceding an insolvent bank collapse is significantly associated with the degree of bank-level internal financial fraud. Notably, the strength and the direction of this relationship is affected by the environment in which a bank and a supervisor commonly operate. In a low propensity to corrupt local markets, additional supervisory attention is associated with better supervisory quality, as evidenced with lower fraud in failed banks. In a high propensity to corrupt local markets, the supervisory attention, especially supervisor-initiated repeated extraordinary inspections, are associated with higher intensity of a bank internal fraud. Bank geographical proximity to a supervisor also seem to intensify the potential corruption and supervisory capture channel: inspections in banks that are close to a supervisory headquarters are associated with larger fraud, while inspections in banks that are geographically distance from the supervisory team location seem to constrain the intensity of fraud.

I also find a number of relevant supplementary results that provide new insights to the understanding of bank-level fraud incentives and the effectiveness of supervision in markets with high propensity to corrupt. More specifically, my results reveal strong disciplining effect in constraining fraud through the appointment of a permanent resident examiner in a bank. I also find that bank that report critically low financial performance numbers at the verge of closure (including banks that recognize their insolvency status pre-closure) demonstrate lower financial fraud outcomes.

[XXX The data analyses stage is in progress. Below, I outline the main findings to date XXX]

[XXX Add Lit XXX]

[XXX Add Contributions XXX]

2. Background

This section reviews the institutional background details relevant to this study, including unconventionally high bank failure rates due to pervasive internal fraud schemas. It also highlights the details of the recent "clean-up" supervisory regime in the Russian banking sector aimed at closing down fraudulent and/or financially unsound commercial banks.

2.1. Extreme financial fraud in failed Russian banks: Environment, motivation and methods

Figure 1 reports high shows that I draw from the Central Bank of Russia (CBR) official disclosure and press-releases issued on the day of each failed bank license withdrawal. The "clean-up" program was initiated in mid-2013, after the change in the CBR leadership. As shown on the graph, the bank failure numbers increased dramatically since that. Overall, since the end of 2005 the regulator executed 560 forced license revocations; 53% of these (or 295 banks) refer to the most recent, 2014-2017 period. As a result of this massive "clean-up" regulatory intervention, the total number of commercial banks in Russia has dropped dramatically, from 1,205 as of early 2006 to only 522 as of late 2017, i.e. more than a two-fold drop. Since Jan 1, 2014 every third bank was forced to exit the market. With a very few exceptions, these failed financial institutions were private domestic banks in various asset size groups.

[Figure 1]

Another notable trend shown in Figure one is high rate of bank closures due to the financial misreporting and/or underprovisioning practices for anticipated losses in low quality assets classes. For the whole 2006-2017 period as many as 39% of failed banks were closed down with an official accusation of an accounting misreporting; 56% of banks were closed down with the underprovisioning claim (these two reasons for a bank failure are not mutually exclusive in the regulatory bank closure press-releases). In the recent period, there is a visible trend that generally

more robust schemas of misreporting are substituted with the more subtle schemas of underprovisioning for potential losses.

What is the common motivation and methods behind all the reported multiple cases of financial fraud in the Russian banking sector? Why underprovisioning is a pervasive reason for a series of forced bank closures, especially in the recent (aka "clean-up") period? The first explanation is that the current Russian prudential regulation builds heavily on rules-based provisioning for impaired assets. The loss provisioning rules prescribe strict and specific provisioning rates for classified risky assets groups. Moreover, all provisioning deficiencies should directly affect the calculation of the regulatory capital levels by reducing the Tier 1 and Tier 2 capital levels (depending upon the type of deficiency and the asset class). Thus, underprovisioning reflects at least two related types of financial fraud: concealing bank asset risk and insolvency risk.

The second and related explanation is that insider (or connected) lending and high concentration of loan portfolios to a single borrow or a group of related borrowers (usually also affiliated with bank owners) is a common risk factor in this banking industry. Although such loans are not completely prohibited in Russia, they are subject to additional regulatory capital and close to 100% loss provisioning (and/or collateral) requirement. In practice, the combination of obscured ownership schemas and/or "technical" (or "day-fly") special purpose firms, including in offshore jurisdictions, allow to conceal bank-borrow affiliation in a bank lending decision[2]. These commonly used schemas allow a fraudulent bank to keep a highly concentrated loan portfolio in affiliated business(es) and to "optimize" loss provisioning, collateral and additional capital cushion requirements for related lending. This type of high-risk and concealed lending schemas is the most common story behind the "underprovisioning" claim in official regulatory language. Not reflection loss reserves deficiency in prudential regulatory forms represents a typical "misreporting" case.

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[2] For more details on such illicit activities and obscure ownership structures see Mironov (2013) and Chernykh and Mityakov (2017).

There are, of course, other and quite diverse internal fraud schemas that, based on the

regulatory assessment and post-closure legal prosecution disclosers, lie behind large-scale financial

statements falsifications. They include securities-related fraud schemas (typically overstatements of

value and/or substitution of liquid securities with The motivation behind these schemas varies as

well and may include asset tunneling from insolvent, insured deposits-financed bank (like the so-

called "intentional bankruptcies"), generation of additional, often concealed, fee income (like

facilitation of illicit capital flight or offshore transactions for corporate clients[3]) or outright theft of

cash or other liquid assets.

Since 2014, there are also relatively rare but notable and costly to resolve cases of the so-

called "unbooked deposits" schema when a bank formally collects insured term deposits from

unaware retail customers and immediately place these funds as loans to related parties without

recording any side of such transactions on official accounting books. This allows a fraudulent bank

to shield from a number of regulatory rules, including monitoring for aggressive insured deposit-

taking and loan loss provisions for "unbooked" (thus, concealed) loans.

Notably, the reliance of fraudulent banks with high but concealed assets and insolvency risk

on insured deposit funding increase the resolution costs in failed financial institutions. Figure 2

illustrates this point reporting the year-by year (not cumulative) Deposit Insurance Fund repayments

in failed banks and annual number of insured depositors in these institutions. It clearly shows the

concerning and growing trend in these numbers. In 2016 alone (the last full year on this graph), the

DIF liability in failed banks was at 516 billion rubles and the total number of eligible for insurance

repayment individual depositors was at about 1.8 million. In 2017, with several high-profile large

banks failures in November (not officially reported by DIA disclosures), the repayment numbers are

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[3] Using large dataset of the individual wire transfer transactions, the recent study of Chernykh and Mityakov (2017) provides comprehensive empirical evidence on the Russian commercial banks' involvement in facilitating illicit payment operations, including offshore capital flights, for the tax-evading corporate clients.

expected to beat the prior year record. Since 2015, the DIF is depleted and makes periodic borrowings from the CBR to meet its obligations to insured depositors of closed banks.

[Figure 2]

2.2. Supervisory environment and on-site monitoring efforts

Figures 3 to 5 to illustrate the most recent developments in on-site supervision in the Russian banking sector in post-crisis (since 2010) period at the aggregate level. According to the CBR official statistics, the supervisory block employed 5,387 specialist and inspectors. This is a combined headcount for the central and local branches. Figure 3 shows a clear trend towards the increasing centralization of the supervisory function in the Russia banking sector. In Figure 4, I provide aggregate-level statistics on the frequency and distribution of the Regular vs. Extra on-site examinations. Finally, in figure 5, I show the emergency of the new on-site supervisory tool – the appointment of a permanent Resident Examiner in a bank, with a mandate to increase bank transparency and to reduce the asymmetric information between a bank and a regulator. All resident examiners are CBR employees, with a permanent assignment and an office in a designated single bank.

[Figures 3, 4, 5]

[XXX ADD: More on large-scale reorganization of Regional Offices and the creation of seven Local Districts; why it is important for my identification strategy XXX]

Since the data on all three types of on-site monitoring channels are available at a bank level in Russia now, I use these three indicators – number of regular inspections, number of extraordinary inspections and the presence of a resident examiner in a bank, all observed during the final bank year – as reliable and countable measures of a supervisory attention to a failing bank.

3. Data

3.1. Sample construction and data source

Since the second quarter of 2014, the regulators in Russia consistently disclose the details of the bankrupt banks' balance sheets in the public domain. I was able to hand-collect such disclosures for a sample of 207 failed Russian banks, with the forced license revocation dates from early 2014 to October 2017.

This sample is cross-sectional and covers failed banks that were closed down by the CBR. When a bank is closed down and the license is revoked, all its normal operations are immediately suspended and a bank is transferred under the management of the regulator-appointed temporary administration team that should identify the bank liquidation method. The temporal administration has up to 60 days to investigate and to detect the true value of a closed down bank assets and to file a formal report to the regulator which further goes to an arbitrage court. If a bank is declared as insolvent (bankrupt), the liquidation balance sheet comprised by the temporary administration becomes publicly available[4]. Thus, all banks in my final sample are failed banks that were declared bankrupt by a court decision following the regulatory audit.

I supplement liquidation balance sheet data with hand-collected data on the supervisory interventions in the final year prior to a bank failure, including the frequency, type and timing of the on-site inspections. This information is released in case-by-case CBR press-releases on the ongoing basis. The data in the Resident Examiner appointments in a bank are also available through the regulatory press-releases.

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[4]in contrast to the so-called "forced liquidations" when a closed down bank is recognized as technically solvent but still subject to forced liquidation due to some criminal activity. In practice, some initial cases of "forced liquidations" can be later reclassified into bankruptcies. However, I exclude all such cases from my study sample as the balance sheet will be distorted by the temporary administration actions by that time.

All other data, including detailed banks' financial statements one year prior to failure, DIA liability in failed banks, geographical location of the local supervisory branches and sample banks, are obtained from official DIA and CBR disclosure portals. Bank failure reasons, as announced on the day of each bank closure, also come from the CBR press-releases and are hand-collected.

The regional corruption index is constructed from the 2014 annual report "Clean Hands" issued by the All-Russian Association of the Advocates for the Human Rights. I adjust raw numbers reported for each Russian region on the frequency of corruption-related legal complaints, then adjust these numbers for the size of each of the 80 regions population and normalize to one (equivalent to the country-averaged level). I further aggregate this data at the Supervisory district level, across seven Local Districts that currently represent the bank supervision network in Russia.

3.2. In-sample example of a bankrupt bank: The case of Fininvest

To better illustrate the nature and the extend of the unique bank-level data used in this study, I present the detailed example for the Fininvest bank failed in July 2014 and was officially declared bankrupt in September 2014 (see Appendix 1).

[Appendix 1]

[XXX ADD: Description of this case. How Fraud measures are constructed. Why Capital is the fraud shock absorber. Definition of the BS "Gap" XXX]

3.3. Summary statistics and descriptive evidence

The summary statistics for all variables used in this study is presented in Table 1. Below, I briefly discuss the construction of the main study variables, with the focus on the intensity and variability of falsified assets and loans in failed banks.

Bank financial condition. Panel A of Table 1 describes the distribution of the key financial condition indicators as the following three distinct snapshots: (1) One year prior to failure; (2) On a failure day, as reported by a bank; and (3) As of failure date after the balance sheet is uncooked by

the on-site regulatory audit team in a closed down bank. Notably, the median leverage ratio for this sample of failed banks is positive (6.68%) suggesting that half of the sample banks report financially healthy levels of solvency on a closure day. However, when the balance sheet is uncooked by the team of on-site regulatory auditors, the actual capital ratios drops down to as low as -105%. The mean ratio is even lower at -277% book equity to net asset ratio, suggesting the large negative outliers effect.

[Table 1]

Internal fraud measures. Panel B of Table 1 details bank failure reasons, as defined by the regulator on a bank closure day, and my constructed measures of Asset and Loan Fraud intensity. Overall, about 1/3 of sample banks were closed down with an allegation of a misreporting; about 3/4 of banks were closed with an allegation of severe underprovisioning. Notably, these regulatory claims are not mutually exclusive.

The Asset Fraud ratio that measures the difference between reported and actual assets, as the ratio of reported assets (i.e. the degree of reported assets falsification) is at 53.45% while the median is at 50.33%. These estimates suggest that about one half of assets in failed banks are inflated and do not have any recovery value. For the Loan Fraud ratio, the degree of falsification is even higher – at the 60.32% mean and 61.00% median values. The variation of these measures in the study sample is also substantial thus allowing powerful empirical tests with the relatively limited number of observations.

Since the two fraud measures – asset fraud and loan fraud – are central to this study empirical analyses, I further detail their distributional characteristics in two simple graphs in Figure 6 (histograms for Asset Fraud and Loan Fraud measures, in percentages) and Figure 7 (scatterplot for reported vs. actual log-levels of assets and loans as of the day of bank closure). These additional

illustrations further confirm the heterogeneity in the intensity of fraud among banks and that fraud practices can be found across all bank size groups.

[Figures 6 and 7]

Supervisory oversight characteristics. The first three variables in Panel C of Table one report the supervisory attention to a failing bank as measured by the intensity of on-site monitoring: (1) Regular on-site examination; (2) Extraordinary on-site examinations; and (3) the presence of a Resident Examiner in a bank. The last two measures in this panel capture the supervisory environment characteristics: bank distance to the local regulatory headquarters and the Regional Corruption index (I describe its construction in more details in section 3.1.). These variables capture the potential effects of the supervisory capture and corruption.

Deposit insurance effects. Finally, to account for the regulatory incentives to monitor a troubled bank, I include three alternative measures of a bank deposit insurance status: membership, total amount of insured deposits (as revealed at closure), and reliance on insured deposits for funding (one year prior to failure). This summary statistics are reported in Panel D of Table 1.

4. Regression results *(Preliminary)*

Below, I outline the main regression results to date and highlight their big picture implications. Given the nature of the data, all multivariate regression are cross-sectional, for a sample of 207 commercial Russian banks that failed during the early 2014 to late 2017 period. All outcome variables are at the time of a bank closure. Control variables that account for bank condition are contemporaneous for regressions in Section 5.1 and one-year lagged in all other model specifications. The standard errors are robust to the heteroskedasticity.

Given the discrete nature of regulatory interventions and low count numbers of inspections (in line with the macro-level evidence in Figure 4), I create simple buckets for the number of bank-

level extraordinary inspections during the last year: zero in 135 banks (a reference group), one inspection in 61 banks and two supervisor-initiated inspections in remaining 11 banks. Regular inspections occur at the annual rate – thus, they are naturally coded and zero or one, as reflected in the summary statistics (Table 1).

I follow the same logic for construction of the Resident Examiner presence buckets and classify them as none (in 182 banks); temporary (in 10 sample banks) or permanent for the whole year (in 15 banks).

4.1. Does the last bank accounting report predict the degree of financial fraud?

As the first step of regression analyses, I test if there is any association between a bank reported financial condition on the final day of its life and the degree of financial fraud. There are at least three notable results that come from this exercise, as reported in Table 2. First, the fraud outcomes are not completely random and can be predicted from observable financial reporting statements, as reported by a bank.

[Table 2]

Second, bank negative equity is strongly and significantly associated with the *lower* fraud outcomes. Other things being equal, if a bank recognizes that it is insolvent in its final day balance sheet (negative book equity dummy = 1), the falsified asset gap is expected to be 6.6% lower compared to a bank that reports positive equity on the day of closure. In other words, seemingly solvent position is not good news in a failed bank as it is likely does not disclose the true extend of its insolvency.

The third notable result is that deposit insurance, in this setting, seem to be associated with significantly *lower* propensity to perform financial fraud, i.e. it seems to have the disciplining effect. This effect is most likely driven by more intense regulatory monitoring of banks with substantial holding of insured deposits as such banks impose higher risks to the already depleted DIF. The

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inclusion of both insurance-related variables – bank deposit insurance status indicator variables and the exact size of insured deposits in a bank under the DIS coverage (also disclosed only following the actual bank closure) - reveal that the later plays more significantly defined role. Thus, this is not merely bank insurance status but rather the actual size of the DIF risks exposure in this bank that drives this regulatory discipline channel.

Finally, the regression results in Table 2 imply that larger banks tend to engage more in the insider fraud activity (not good news) and that banks with higher loan portfolio concentration on the balance sheet end up with significantly higher loans overstatements as revealed post-closure.

4.2. How accurate are regulatory claims of a bank-level fraud on a closure day?

Coefficient estimates in Table 3 for the bank closure reasons association with the actual fraud outcomes are largely insignificant. The only sizeable coefficient of interest is the 3 to 6% higher asset fraud in banks that were closed down with a misreporting regulatory claim. However, it is not statistically significant at the conventional level and is not measured with any reliable precision. Even when I interact the misreporting and underprovisioning claims (i.e. the regulator cites both reasons for a bank closure in its press-release), the combined effect of a strong statement of ongoing fraud in a bank, as claimed by a regulator at closure, remains insignificant.

[Table 3]

Thus, empirical evidence in Table 3 suggest that the regulators are essentially "blind" at the time of a bank closure and cannot reliably assess and predict the actual degree of assets and loans falsification in failed bank prior to the in-depth closed bank investigation. In other words, the regulatory verdict on which failed banks are most involved in financial falsifications on their balance sheet are, at best, inaccurate.

This finding, even though it should be taken with caution due to the relatively small sample size, has important practical implications. If regulators themselves fail to distinguish bad from very

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bad lemons at the time of a bank closure – they should not expect other market participants, including uninsured depositors, with worse access to bank-specific information, to exhibit market discipline behavior. This result may further question the external auditors ability to see through the banks' fabricated financial statements as such auditors are also commonly criticized by a regulator for inadequate financial statements certification.

4.3. Does on-site supervision constrain internal fraud in failing banks?

Although the regulators seems to be mostly "blind" at the time of a failed bank closure in assessing the scale of its fraudulent activity, it is still plausible that extensive supervisory attention and inspections prior to a bank closure may contribute to constraining the internal fraud intensity in a failing bank. To examine the relationship between on-site monitoring and the fraud outcomes, I run a series of additional regressions. In all this follow-up specifications, I now lag all financial control variables to a one-year lagged period to better control for initial bank financial conditions (and potential red flags) as I trace supervisory intensity during the next twelve months, is during the whole final year of a failing bank life.

The results of these estimations are reported in Table 4. Overall, the evidence is mixed. On one side, permanent resident examiners seem to have very sizeable disciplining effect on failing banks: about -10% for asset fraud and an even larger, -15% marginal effect for the loans fraud outcome variable. On another side, regular (or scheduled) examination of a bank is positively associated with loans fraud, with an almost +8% to +10% (although insignificant) marginal effect. High frequency extra examination cases (two exams in the last year) are also positively and sizably associated with worse financial fraud outcomes, another counter-intuitive result.

[Table 4]

Overall, based on the evidence from Table 4, the only good news that are consistent with the effectiveness of on-site supervision and monitoring is the presence of the permanent resident

examiner in a bank. All other supervisory channels of influence on a bank produce not only mixed but adverse effects by increasing the magnitudes of fraud. I resolve this evident puzzle in the follow-up sections by controlling for the proxies of the regulatory capture and environmental corruption effects.

4.4. Adding corrupted environment effects

As the next step, I extend results in Table 4 by adding the mediating effects of the regional corruption and a bank geographical proximity to the local supervisory headquarters. I start from interacting the Regional Corruption Index with the regular and extra on-site inspection dummies. For the resident examiner dummies, I cannot reliably test the interaction of interest because all but one banks in the study sample are concentrated in Moscow - i.e. in one location with a very high corruption index and short distance to a supervisory headquarters. Thus, I leave resident examiners presence indicator variables unchanged.

The results of this modified estimation test that account for the regional-level propensity to corrupt are reported in Table 5. The estimated coefficients reveal that the relationship between the supervisor attention to a bank and the financial fraud outcomes is highly sensitive to the degree of corruption in the local regional market. In environments with lower corruption, supervisory inspections seem to contribute to lower bank fraud, thus constraining it. In contrast, in environments with higher propensity to corrupt, higher supervisory attention is associated with increasing degree of fraud in failing banks. This result is particularly strong for extraordinary (i.e. supervisor-initiated) and repeated inspections.

[Table 5]

4.5. Adding proximity to a local supervisory headquarters effects

In Table 6, I use alternative proxy for the supervisory "closeness" to a bank and substitute the Regional Corruption index with the Proximity to a supervisory headquarter dummies. As a part

of its centralization of supervision policy, the CBR reorganized its 80 geographical branches (one in each of the Russia's federal subjects) into seven 7 so-called main regional offices. After this regional supervisory structure reform, some banks are now supervised by the already familiar teams of examiners (if one of the seven branches is located in their federal subject administrative boarder) while remaining banks are locally supervised from one of the regional office that is geographically outside their administrative federal unit. Since this reform occurred prior to the beginning of the sample period, I cannot use it for identification as an external shock. However, I can use it as a source of exogenous variation to distinguish banks that are close to a supervisor (proximity = 1, i.e. a bank and a supervisory office share common administrative location) and banks that are geographically distance and do not have prior history of supervision from the new and more centralized supervisory location (proximity = 0).

[Table 6]

Collectively, the regression results in Table 6 broadly support the prior findings (from Table 5). If a bank and a supervisory team share common administrative location (and, thus, have a long history of prior interactions) – the frequency of supervisory inspections if associated with wider balances sheet gaps at a bank closure. In the absence of such geographic proximity (and prior familiarity with the supervisory team), the higher frequency of supervisory inspections is associated with lower financial fraud in failing banks. Notably, these results are especially strong for the Loans fraud dependent variable.

From a big picture of view, these results suggest that the geographic proximity between a bank and its supervisor (that can potentially reduce asymmetric information) does not necessary beneficial to a quality of the supervision if we add potential corruption channel into consideration.

5. Conclusions

{in process}

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Appendix 1. In-sample example: Construction of Fraud measures

Panel A. Financial reporting numbers

LIMITED LIABILITY COMPANY "BANK FININVEST"
(*All numbers are in Rb Million)*

	One year prior to closure (Jul 1, 2013)	Liquidation Balance Sheet: Closure day (Jul 7, 2014)			
		Reported (pre-audit)	Actual (post-audit)	Overstated	BS "Gap"
ASSETS:					
Net Loans	14,130	14,537	694	95%	
Other net assets	2,534	1,215	626	48%	
Total Net Assets	**16,664**	**15,752**	**1,320**	**92%**	**-14,432**
LIAB. & CAPITAL:					
Liabilities	15,086	14,027	14,027	0%	
Capital	1,578	1,725	**-12,707**	837%	**-14,432**
Total Liab. & Cap.	**16,664**	**15,752**	**1,320**	**92%**	
CAPITAL RATIO:	**9%**	**11%**	**-963%**		

In the case of this bankrupt bank: Assets Fraud: 92%; Loans Fraud: 92%.

Panel B. Description of the Fininvest Bank case

The screenshot below is extracted from the English-language Banking News section at the Banki.ru portal (discontinued now). It describes the actual internal fraud schemas and large-sclale asset tunneling behind the asset and loan fraud numbers reported in Panel A.

Главная • Новости • Banking News • CBR: Fininvest Bank's obligations exceed assets by nearly 11x

CBR: Fininvest Bank's obligations exceed assets by nearly 11x

24.09.2014 • 👁 318

The value of the assets held by Fininvest Bank is not higher than Rub 1.3 bln, while its obligations to the creditors total Rub 14 bln, the Bank of Russia said in a report compiled by the temporary administration team, which was appointed at Fininvest Bank on July 7, the day when its license was revoked.

The temporary administration team revealed facts when the bank's assets were withdrawn by issuing knowingly irrecoverable loans and executing transactions to substitute liquid collateral with loans granted to the entities with unknown creditworthiness for a total of Rub 19.5 bln, the regulator specified.

Besides, ahead of the license revocation the bank's former management and owners executed a transaction to alienate real estate at the price twice below the book value. This being the case, contrary to the law the bank's former executives abstained from providing the temporary administration team with documents of title to the real estate facilities and concealed the fact of the transaction itself.

The Bank of Russia sent information on financial operations with signs of penal acts, which were taken by the bank's former management and owners, to the Prosecutor General's Office and the Interior Ministry.

The court declared Fininvest Bank insolvent on August 19 and initiated bankruptcy proceedings. The State Depositary Insurance Agency (DIA) was approved as the bank's receiver.

Appendix 2. Definition of Variables

[XXX To be added XXX]

Appendix 3. Construction of the Regional Corruption Index

[XXX To be added XXX]

Appendix 4. Construction of the Proximity to a Supervisor Location dummy

[XXX To be added XXX]
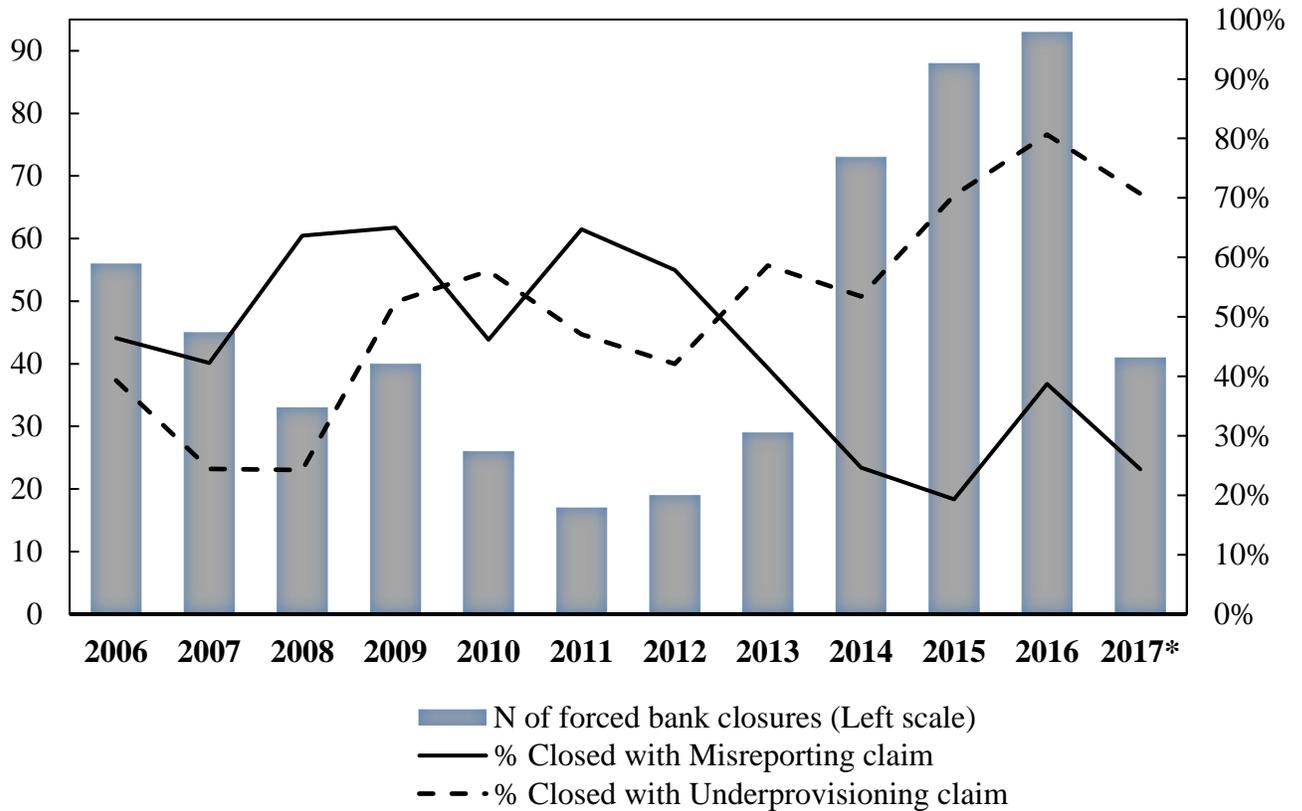
Figure 1. Russian banks failure rates (2006 to Dec 1, 2017)

This graph shows annual number of failed banks in Russia in each year during the 2006-2017 period and the ratio of failed banks with an accounting fraud allegation (Misreporting and/or Underpovisioning) in the regulatory disclosure of the reasons of bank license revocation. The current (2017) year failure data are up to the end of November 2017. The total number of bank failures during the depicted period is 560. Bank failure event is defined as a forced license revocation by the Central Bank of Russia. Fraud-related failure events are accounting misreporting and loss reserves undeprovisioning, as defined by the Central Bank of Russia in a bank closure official press-release. For comparison, the total number of banks in the Russia banking sector as of the beginning of 2006 was 1,205 institutions; largely due to massive failure rates (and occasional mergers) it dropped to only 522 active banks in November 2016.
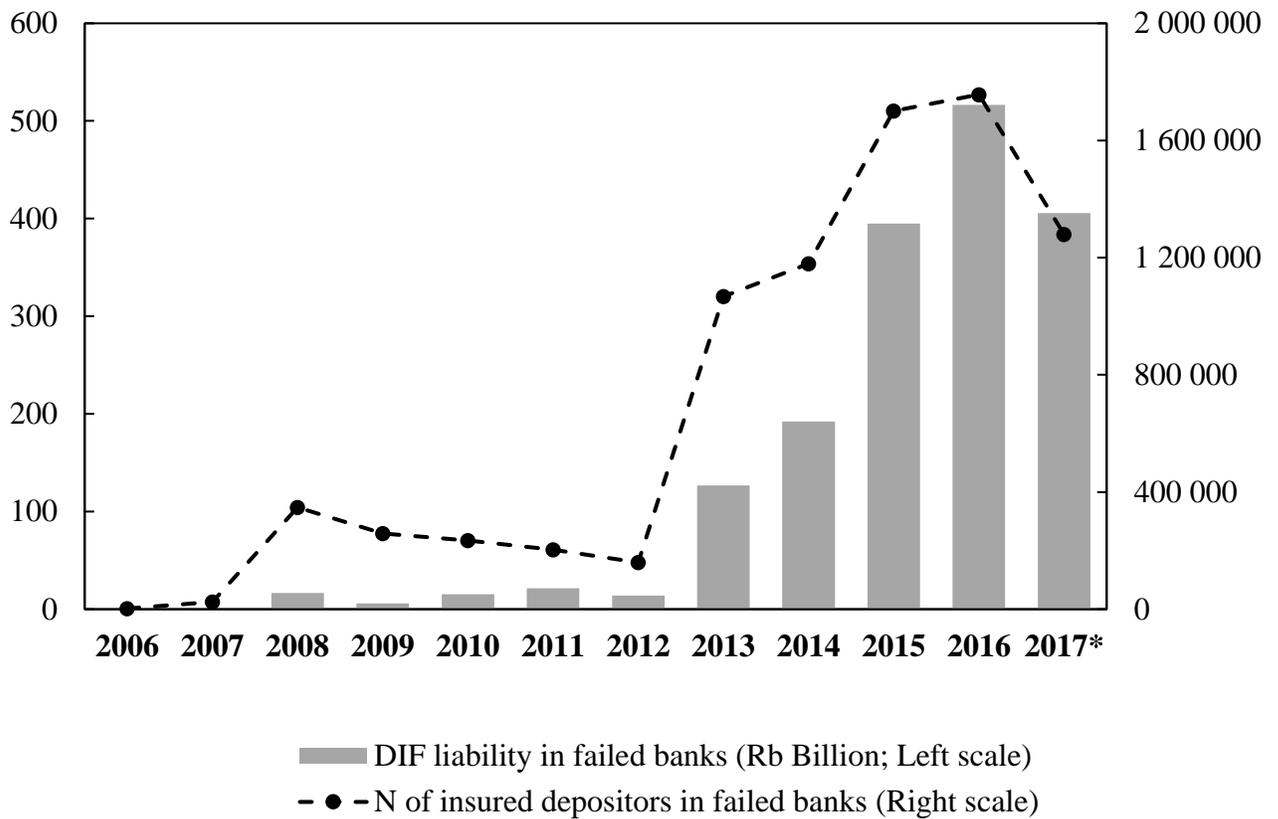
Figure 2. Deposit Insurance Fund repayments in failed banks (2006 to Dec 1, 2017)

DIS was fully introduced in Russia by the end of 2005. Thus, this graph depicts the full history of the Russian DIS repayments to date. All data on this graph as annual (i.e. not cumulative). By October 2017, the cumulative DIF repayments surpassed Rb 1.7 trillion while the total number of eligible insured depositors exceeded 8 million people. *Data source*: Russian Deposit Insurance Agency (DIA) annual and quarterly reports disclosures.
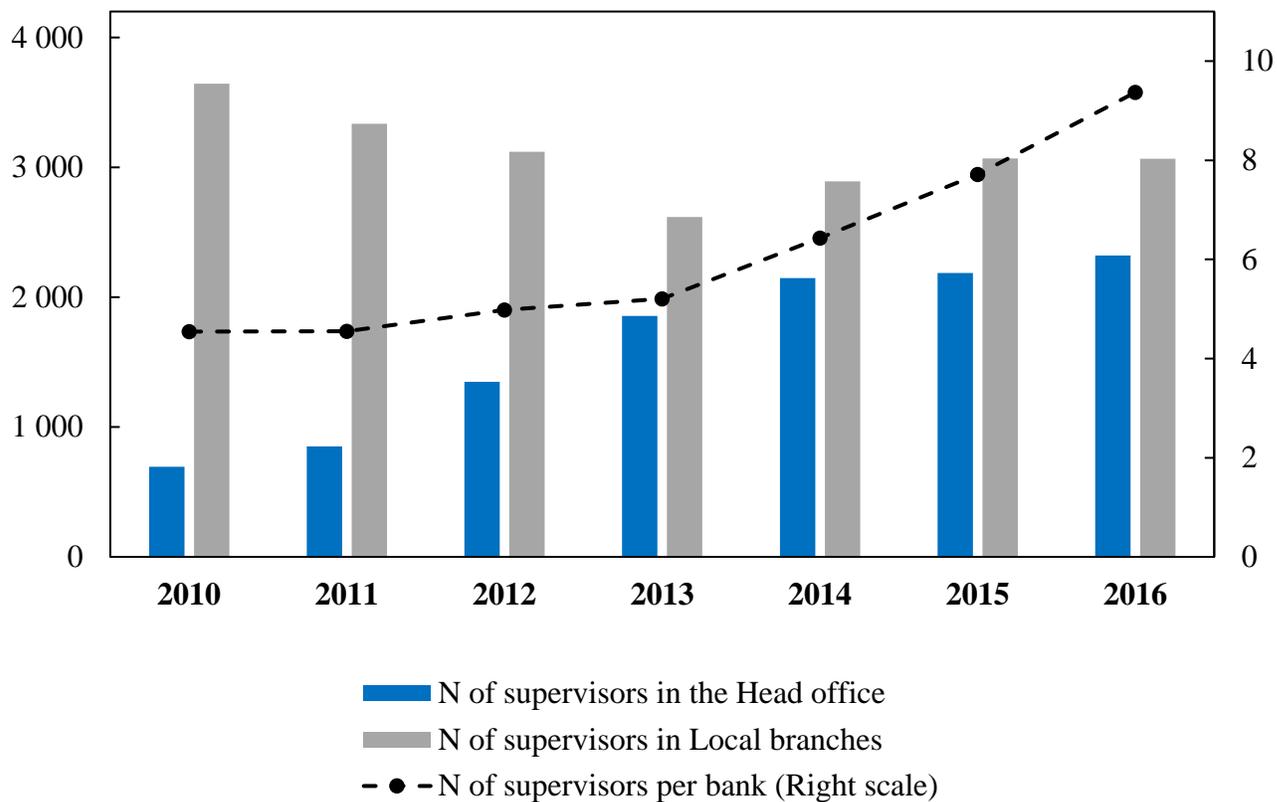
Figure 3. Distribution of Supervisors by Head vs. Reginal offices and per bank (2010-2016).

The ratio of centrally located supervisors increased from 16% in 2010 to 43% as of the end of 2016, reflecting a steady trend towards increasing centralization of the supervisory function. At the same time, the number of supervisors per bank has almost doubled, from 4.5 in 2019 to 9.4 in 2016. This increase is explained by a combined effect from an increase in supervisors (from 4339 to 5387) and from a sharp decrease in the number of banks (from 955 in 2010 to 575 in 2016). *Data source:* Central Bank of Russia annual disclosures.
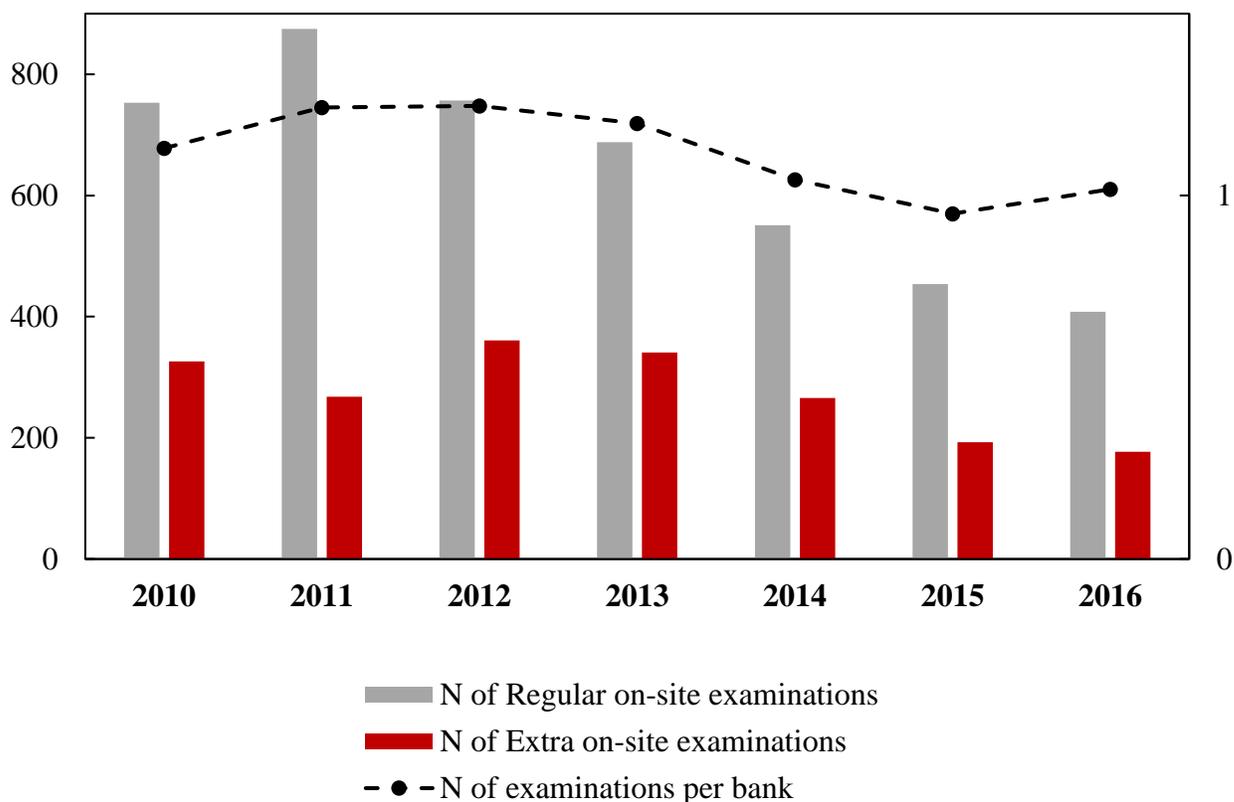
Figure 4. On-site examination activity of the Russian banks' supervisors (2010-2016).

The frequency of regular (or scheduled) on-site examinations is limited by law and, in the case of full-scale inspections, should not exceed one in a year. Thus, the downward trend in the aggregate number of the regular examinations is explained by the shrinking number of banks. The number of extra (or targeted) examinations is not limited but the reasons of such on-site interventions are also legally defined. The number of total on-site exams per bank remains relatively stable for the whole period and varies from 0.95 in 2015 to 1.25 in 2012. *Source*: Central Bank of Russia annual disclosures.
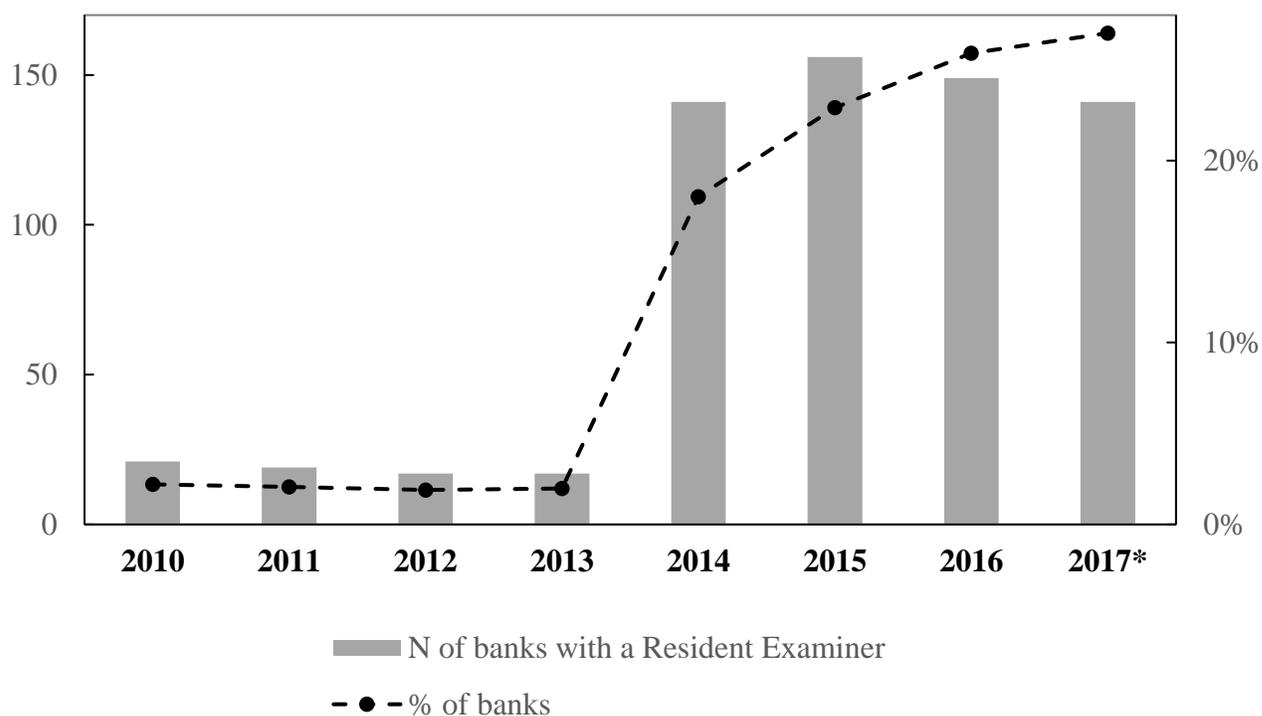
Figure 5. On-site Resident Examiners in Russian banks' (2010-2016).

The sharp increase in the number of banks with a permanent Resident Examiner is explained by a regulatory change that allowed the Central Bank of Russia to make such appointments with more discretion. In the earlier period, the prerequisite of such appointment was bank reliance on the government support funds. This prerequisite is released now and the share of active banks with a Resident Examiner jumped from 2% in 2010 to 27% (or in 141 banks) as of November 2017.
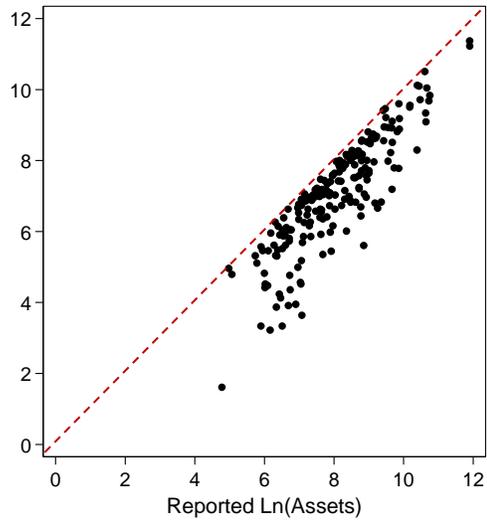
Panel A. Assets Fraud
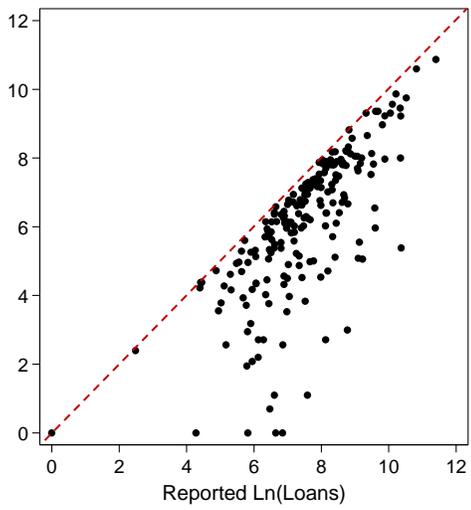
Panel B. Loans Fraud

Figure 6. Assets Fraud and Loans Fraud intensity in 207 sample banks: Reported vs. Actual values
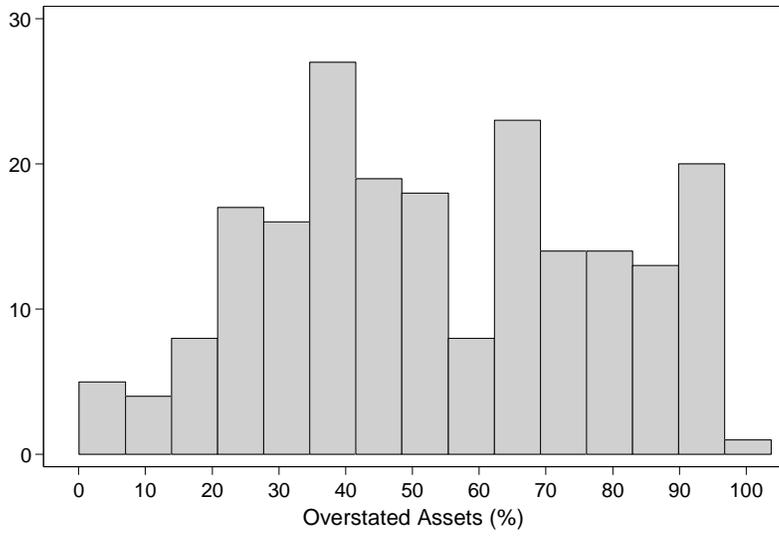
Panel A. Assets Fraud
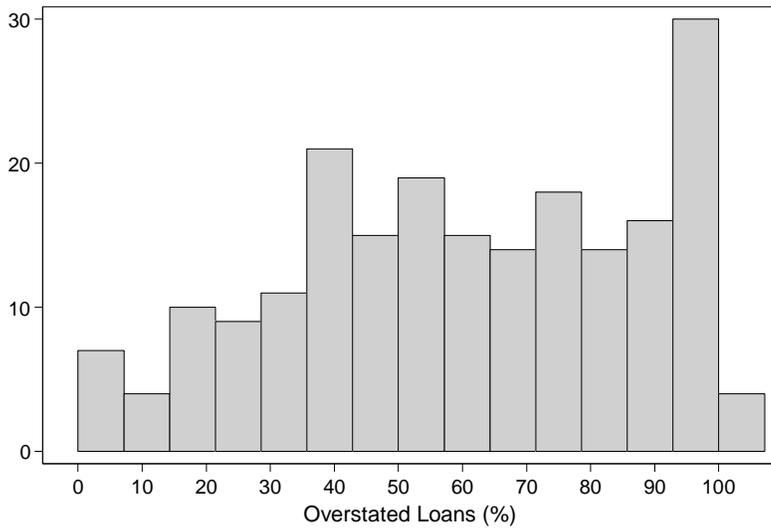
Panel B. Loans Fraud

Figure 7. Distribution of Assets Fraud and Loans Fraud intensity in 207 sample banks

Table 1. Summary statistics

This table presents summary statistics for a sample of 207 domestic private Russian banks that were closed down and declared bankrupt during the period from 2014 to 2017.

Panel A. Financial reporting: Asset size, solvency and lending ratios in failed banks

	Mean	Median	SD	Min	Max
One year prior to closure (bank-reported):					
Bank size (log of Assets in Rb M)	8.33	8.29	1.25	5.74	11.68
Capital ratio (%)	19.41	13.69	14.95	4.82	88.38
Loans to assets ratio (%)	62.24	63.26	17.17	4.01	92.69
On a closure day (bank-reported):					
Bank size (log of Assets in Rb M)	8.05	8.02	1.31	4.78	11.90
Capital ratio (%)	-7.75	6.68	91.58	-811.72	77.05
Loans to assets ratio (%)	67.02	72.82	23.34	0.00	97.29
As of closure day, post regulatory audit (regulator-reported):					
Bank size (log of Assets in Rb M)	8.05	8.02	1.31	4.78	11.90
Capital ratio (%)	-276.98	-105.14	488.30	-4060.00	-1.50
Loans to assets ratio (%)	49.92	52.67	26.80	0.00	96.42

*Panel B. Financial Fraud: Regulatory assessment before and after bank balance sheet uncooking*

	Mean	Median	SD	Min	Max
Ex-ante regulatory assessment of a bank closure reasons (not mutually exclusive)					
Bank closed for misreporting (0; 1)	0.34	0.00	0.47	0	1
Bank closed for underprovisioning (0; 1)	0.76	1.00	0.43	0	1
Ex-post regulatory audit in a closed bank					
Assets Fraud: Overstated assets (%)	53.45	50.33	24.77	0.09	96.80
Loans Fraud: Overstated loans (%)	60.32	61.00	27.43	0.00	100.00

Panel C. Supervisory oversight during the final year: On-site monitoring intensity

	Mean	Median	SD	Min	Max
Regular inspection (0; 1)	0.57	1	0.50	0	1
N of Extra inspections	0.37	0	0.56	0	2
Resident examiner (N of months last year)	1.11	0	3.26	0	12
Regional corruption index	1.21	1.60	0.57	0.18	1.60
Supervisory office proximity (0; 1)	0.68	1	0.47	0	1

Panel D. Other control variables: Bank deposit insurance status and reliance on insured deposits

	Mean	Median	SD	Min	Max
DIS member bank (0; 1)	0.90	1.00	0.30	0	1
DIA liability at closure (Log-level, in Rb M)	6.86	7.65	2.75	0	10.61
Insured deposits / Assets (one year to failure, %)	42.89	46.08	23.09	0	84.99

Table 2. Does the last bank accounting report predict the degree of financial fraud?

All control variables are as of the bank closure day (last bank-reported daily financial statement).

	Dependent variable:	
	Assets Fraud	Loans Fraud
Bank size	4.25**	5.29**
	(0.018)	(0.030)
Negative Capital (0; 1)	-6.62*	-4.70
	(0.059)	(0.237)
Net loans / Assets	0.08	0.19**
	(0.316)	(0.029)
Ln (DIA liability)	-2.68**	-4.23**
	(0.022)	(0.015)
DIS member-bank (0; 1)	-4.91	2.14
	(0.577)	(0.845)
Constant	38.81***	33.77**
	(0.009)	(0.040)
Observations	207	207
R-squared	0.11	0.14

Robust pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3. How accurate are regulatory claims of a bank-level fraud on a closure day?

All variables are as of the bank closure day (last bank-reported daily financial statement).

	Dependent variable:					
	Assets Fraud			Loans Fraud		
	(1)	(2)	(3)	(4)	(5)	(6)
Bank closure reasons:						
Misreporting (0; 1)	3.14		6.26	0.57		-1.56
	(0.372)		(0.317)	(0.882)		(0.812)
Underprovisioning (0; 1)		0.57	1.26		1.93	1.23
		(0.881)	(0.776)		(0.649)	(0.805)
Misrep. x Underpov.			-3.93			2.47
			(0.606)			(0.760)
Control variables:						
Bank size	4.28**	4.32**	4.27**	5.29**	5.49**	5.51**
	(0.016)	(0.024)	(0.025)	(0.030)	(0.035)	(0.035)
Negative Capital (0; 1)	-6.77*	-6.64*	-6.83*	-4.73	-4.78	-4.77
	(0.055)	(0.060)	(0.057)	(0.239)	(0.230)	(0.237)
Net loans / Assets	0.08	0.09	0.08	0.19**	0.19**	0.19**
	(0.324)	(0.315)	(0.334)	(0.030)	(0.027)	(0.028)
Ln (DIA liability)	-2.74**	-2.74**	-2.76**	-4.24**	-4.44**	-4.44**
	(0.018)	(0.033)	(0.031)	(0.015)	(0.017)	(0.017)
DIS member-bank (0; 1)	-4.10	-4.67	-3.51	2.29	2.95	2.72
	(0.641)	(0.605)	(0.703)	(0.836)	(0.790)	(0.809)
Constant	37.33**	38.05**	36.17**	33.50**	31.21*	31.63*
	(0.012)	(0.018)	(0.025)	(0.043)	(0.086)	(0.084)
Observations	207	207	207	207	207	207
R-squared	0.11	0.11	0.11	0.14	0.14	0.14

Robust pval in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4. Does on-site supervision constrain internal fraud in failing banks?

On-site supervision variables cover the final year of a bank's life.
All control variables are lagged one year prior to a bank failure and are reported by a bank.

	Dependent variable:							
	Assets Fraud				Loans Fraud			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
On-site supervision:								
Regular inspection	4.18			3.94	9.45***			7.91**
	(0.211)			(0.262)	(0.009)			(0.041)
Extra inspections:								
One		-3.48		-1.95		-7.99*		-4.75
		(0.384)		(0.641)		(0.069)		(0.300)
Two		7.97		10.15		-4.96		-1.70
		(0.337)		(0.259)		(0.558)		(0.858)
Resident examiner:								
Temporary			2.92	4.45			-3.56	-1.34
			(0.687)	(0.560)			(0.703)	(0.887)
Permanent			-10.06	-10.32			-15.49	-14.19
			(0.240)	(0.207)			(0.106)	(0.126)
Control variables:								
Bank size	0.59	0.51	1.92	1.70	2.21	2.00	4.80*	4.11
	(0.739)	(0.777)	(0.382)	(0.454)	(0.288)	(0.339)	(0.054)	(0.104)
Capital ratio	-0.02	-0.04	0.04	0.02	-0.06	-0.13	0.04	-0.01
	(0.920)	(0.797)	(0.835)	(0.911)	(0.761)	(0.517)	(0.846)	(0.944)
Net loans / Assets	0.20*	0.22**	0.19*	0.20*	0.32***	0.33***	0.32***	0.31***
	(0.058)	(0.041)	(0.079)	(0.061)	(0.005)	(0.006)	(0.007)	(0.008)
Insured dep./ Asset	-0.26**	-0.28***	-0.25**	-0.27**	-0.33***	-0.33***	-0.29**	-0.31**
	(0.011)	(0.010)	(0.019)	(0.012)	(0.005)	(0.008)	(0.019)	(0.010)
DIS member-bank	-9.02	-8.77	-9.44	-9.51	-12.93*	-12.70*	-13.68*	-14.05*
	(0.207)	(0.221)	(0.190)	(0.195)	(0.073)	(0.083)	(0.069)	(0.059)
Constant	53.73***	57.07***	44.82**	45.00*	43.44**	54.03**	25.76	31.34
	(0.007)	(0.006)	(0.049)	(0.058)	(0.042)	(0.014)	(0.295)	(0.201)
Observations	207	207	207	207	207	207	207	207
R-squared	0.11	0.11	0.11	0.13	0.16	0.15	0.15	0.18

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5. Adding Regional Corruption Index effects

On-site supervision variables cover the final year of a bank's life.
All control variables are lagged one year prior to a bank failure and are reported by a bank.

	Dependent variable:					
	Assets Fraud			Loans Fraud		
	(1)	(2)	(3)	(4)	(5)	(6)
On-site supervision:						
Regular inspection	1.37		-1.37	10.98		9.08
	(0.860)		(0.867)	(0.231)		(0.349)
Regular x Corruption	2.63		5.24	-1.01		-0.06
	(0.644)		(0.377)	(0.878)		(0.993)
Extra inspections:						
One		-8.26	-8.68		-8.44	-5.92
		(0.316)	(0.324)		(0.390)	(0.563)
One x Corruption		3.90	5.94		0.27	0.94
		(0.543)	(0.383)		(0.971)	(0.904)
Two		-16.62	-18.15		-31.59***	-31.64**
		(0.141)	(0.109)		(0.009)	(0.020)
Two x Corruption		21.90***	24.47***		23.77***	25.75***
		(0.007)	(0.002)		(0.009)	(0.007)
Corruption index	2.36	1.01	-2.52	4.83	1.51	2.27
	(0.598)	(0.790)	(0.648)	(0.364)	(0.706)	(0.727)
Resident examiner:						
Temporary	2.54	3.64	3.88	-3.05	-1.92	-1.16
	(0.737)	(0.634)	(0.621)	(0.746)	(0.841)	(0.903)
Permanent	-10.27	-11.15	-11.34	-15.20*	-15.07	-15.04*
	(0.216)	(0.172)	(0.151)	(0.098)	(0.100)	(0.089)
Control variables:						
Bank size	1.17	1.16	1.24	3.70	3.58	3.32
	(0.610)	(0.617)	(0.599)	(0.154)	(0.163)	(0.200)
Capital ratio	0.02	0.01	0.04	0.01	-0.04	-0.02
	(0.905)	(0.941)	(0.820)	(0.952)	(0.852)	(0.938)
Net loans / Assets	0.17	0.19*	0.19*	0.29**	0.30**	0.29**
	(0.113)	(0.086)	(0.084)	(0.012)	(0.013)	(0.015)
Insured dep./ Asset	-0.22**	-0.23**	-0.23**	-0.26**	-0.28**	-0.28**
	(0.039)	(0.031)	(0.031)	(0.031)	(0.028)	(0.027)
DIS member-bank	-9.95	-9.56	-9.89	-14.30*	-13.98*	-14.35*
	(0.169)	(0.186)	(0.179)	(0.052)	(0.064)	(0.055)
Constant	46.41**	50.28**	50.39**	25.26	39.11	34.57
	(0.042)	(0.036)	(0.036)	(0.298)	(0.114)	(0.158)
Observations	207	207	207	207	207	207
R-squared	0.13	0.15	0.16	0.18	0.19	0.21

Robust pval in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6. Adding Bank Geographic Proximity to a Regional Supervisory Office

On-site supervision variables cover the final year of a bank's life.
All control variables are lagged one year prior to a bank failure and are reported by a bank.

	Dependent variable:					
	Assets Fraud			Loans Fraud		
	(1)	(2)	(3)	(4)	(5)	(6)
On-site supervision:						
Regular inspection	-1.68		-4.73	1.88		-0.50
	(0.784)		(0.480)	(0.788)		(0.950)
Regular x Proximity	9.66		14.26*	11.48		13.01
	(0.186)		(0.068)	(0.158)		(0.156)
Extra inspections:						
One		-9.35	-10.89		-5.53	-5.74
		(0.162)	(0.137)		(0.496)	(0.522)
One x Proximity		8.80	13.98		-3.04	1.97
		(0.281)	(0.109)		(0.751)	(0.849)
Two		-3.29	-4.75		-12.97	-13.24
		(0.767)	(0.651)		(0.230)	(0.230)
Two x Proximity		28.09*	32.07**		21.65	25.31
		(0.062)	(0.021)		(0.222)	(0.127)
Supervisor Proximity	0.66	2.23	-7.58	-2.57	2.59	-5.76
	(0.909)	(0.635)	(0.302)	(0.698)	(0.611)	(0.517)
Resident examiner:						
Temporary	2.36	2.56	3.52	-2.59	-2.60	-1.48
	(0.758)	(0.733)	(0.649)	(0.784)	(0.787)	(0.878)
Permanent	-10.22	-12.38	-11.56	-14.87	-16.39*	-15.65*
	(0.209)	(0.139)	(0.146)	(0.101)	(0.082)	(0.081)
Control variables:						
Bank size	0.76	0.98	0.57	3.66	3.88	3.38
	(0.731)	(0.661)	(0.797)	(0.147)	(0.128)	(0.180)
Capital ratio	0.01	0.02	0.03	0.01	-0.04	-0.02
	(0.949)	(0.915)	(0.859)	(0.948)	(0.855)	(0.933)
Net loans / Assets	0.17	0.19*	0.18*	0.29**	0.30**	0.29**
	(0.111)	(0.072)	(0.086)	(0.011)	(0.011)	(0.014)
Insured dep./ Asset	-0.21**	-0.21*	-0.22**	-0.27**	-0.28**	-0.28**
	(0.047)	(0.055)	(0.043)	(0.024)	(0.030)	(0.024)
DIS member-bank	-9.79	-9.51	-9.65	-14.18*	-14.00*	-14.27*
	(0.175)	(0.187)	(0.183)	(0.057)	(0.065)	(0.058)
Constant	52.13**	50.31**	58.31**	33.78	36.49	41.86*
	(0.021)	(0.031)	(0.012)	(0.159)	(0.141)	(0.092)
Observations	207	207	207	207	207	207
R-squared	0.14	0.15	0.18	0.19	0.18	0.21

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1