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ETIENNE FARVAQUE,
CATHERINE REFAIT-ALEXANDRE, AND
LAURENT WEILL

Are Transparent Banks More Efficient?

Evidence from Russia

ABSTRACT: This study examines the relationship between bank transparency and efficiency. Using a unique data set for Russian banks, we find that transparency is important and that, among the dimensions of transparency, the transparency in board and management structure and process represents the most significant determinant. These results are controlled for size effects, the structure of liabilities, the structure of assets, and nonperforming loans. This highlights the role of transparency in improving efficiency, particularly in transition economies.

Are more transparent banks more efficient? Daring to ask may sound paradoxical, when most banking supervisors, including those of the Central Bank of Russia, demand more transparency from the banking sector. The necessity of bank transparency as a financial intermediary has become increasingly evident since the beginning of the century. Banking transparency is, in particular, at the heart of the Basel Committee recommendations: the so-called Pillar 3 requires disclosure to be enhanced. Transparency is also required by the new international financial reporting standards (IFRS), as these standards require that shareholders receive more information from corporations and banks. Financial regulation also requires

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transparency to protect shareholders' interests, as does the Federal Financial Markets Service (FFMS) created in 2004 in Russia. Increasing transparency is generally considered to reduce information asymmetries and thus to trigger many beneficial mechanisms, such as reducing agency costs, decreasing stocks' volatility, and reducing the cost of capital (see Akhigbe and Martin 2008; Baumann and Nier 2004; Leuz and Wysocki 2008). In particular, in the banking sector, transparency is supposed to increase market discipline, reduce risk-taking, and lead to higher capitalization (Cordella et al. 2000; Kanodia and Lee 1998). Many of these advantages have received empirical support in the literature, and the subprime crisis of 2007 has reinforced the general presumption that transparency is socially beneficial, especially when it comes to banks.

However, the sheer fact that strong disclosure regulations have to be imposed shows that firms in general, and banks in particular, may feel that transparency is costly and do not necessarily disclose willingly. Therefore, everything happens as if the economy as a whole benefits from transparency, whereas firms have to cope with a trade-off as, at least for some of them, transparency may be more costly than beneficial (Farvaque et al. 2009; Hermalin and Weisbach 2007; Verrechia 2001). Increased transparency may thus not be synonymous with increased efficiency for all, and firms may try to shirk disclosure regulations.

Assessing the real impact of transparency on efficiency is thus a relevant empirical aim. However, and surprisingly, although discussions about the benefits of transparency generally assume that transparency exerts its benefits through increased efficiency, the two concepts have not yet been discussed with measurements of efficiency made with the most adequate methodology: frontier efficiency techniques.

Our main contribution in this paper is thus to cross-breed the two strands of literature by measuring how transparency influences bank efficiency. Russia is a country of utmost interest for investigating the role of transparency for bank performance. The recent Organization for Economic Cooperation and Development (OECD) report on Russia (OECD 2009) stresses the efforts made by the Central Bank of Russia (CBR) to enhance transparency in the banking industry. As the country is still plagued by several institutional deficiencies that hamper the development of banking, one may wonder whether transparency, which is influenced by these deficiencies, has an influence on bank performance. A passionate issue is the role played by the disclosure of shareholders' names and natures. The CBR's attempt at improving disclosure for years may lead one to wonder whether transparency about governance may increase banking efficiency in Russia.

To investigate the role of transparency in the efficiency of Russian banks, we use the stochastic frontier approach. In so doing, we follow earlier studies on bank efficiency in transition countries, most notably the paper from Karas, Schoors, and Weill (2010), which investigates the link between ownership and bank efficiency in Russia. To assess the impact of transparency on bank efficiency, we must measure transparency, a concept that is notoriously tricky to measure. Fortunately, in the

case of Russia, we can rely on transparency ratings delivered for Russian banks by Standard and Poor's on the basis of the degrees of transparency these firms implement.

Our results show that transparency is important and that, among the four dimensions of transparency measured by Standard & Poor's, the transparency in board and management structure and process is the most significant, which highlights the need to focus on governance structure when dealing with efficiency recommendations, in developed as well as in transition economies.

The Banking Sector and Regulation in Russia

The Russian banking sector is rapidly changing and has seen important modifications since 1987. Before that date, the only Russian bank was the Gosbank, which took on the roles of both a central bank and a commercial bank. The Gosbank did not grant loans after an analysis of risk and expected return, but did so according to the central planner's objectives. Before the fall of the Soviet Union, Mikhail Gorbachev created state banks, among which are Promstroibank, Zhilstoibank, Agrobank, Vneshekonombank, and Sberbank. The last one remains a large bank (and is included in our sample). After 1991, economic reforms led to the creation of numerous commercial banks. There were 2,552 credit institutions in 1997, including 2,526 banks.¹ Their main activity was not corporate lending but securities transactions, especially purchased government bonds. This situation has changed, and the share of lending in total banking sector assets has grown since 1999 (see OECD 2009). During the 1990s, the nascent banking sector was weak, as revealed by the crisis of 1998. Several reasons can explain this weakness. First, banks did not have satisfactory know-how in screening and monitoring loans. As a result, they suffered from severe informational asymmetries toward their debtors and from bad (risky) loans. Second, the softness of the institutional framework did not help banks confronted with customer bankruptcies (see, e.g., Mitchell 1993). Third, banks suffered from a lack of capitalization. Another weakness came from opacity: bank ownership was not transparent, and their accounting practices did not respect international standards. Many banking failures followed the so-called Russian crisis. In 2007, the last year of our study, there were 1,300 Russian credit institutions, including 1,247 banks. This number is still decreasing, dropping to 1,152 in September 2010 (including 1,091 banks; see CBR 2010<<ADD TO REF LIST>>><<WHAT ABOUT 2012? IF NO INFO AFTER 2010, SUGGEST "THIS NUMBER CONTINUED TO DECREASE, DROPPING TO...IN 2010.">>> However, banking activity grew significantly during the 2000s. Between 2002 and 2008, deposits rose from 16 percent to 35 percent of the GDP (OECD 2009).

The Russian banking sector is still fragmented, and the competition is biased due to the presence of large state banks, even if the creation of deposit insurance in 2004 reduced the competitive advantage of state-owned banks. Still, the five largest

Table 1. Main Russian Banks in 2009

Bank	Percent of total banking assets	Ownership
Sberbank	23.7	State
Vneshtorgbank	8	State
Gazprombank	4.7	State
Rosselkhozbank	2.9	State
Bank of Moscow	2.8	State
Alfa-Bank	2.5	Private domestic
UniCredit Bank	2.1	Foreign
Raiffeisenbank	2.1	State
Vneshtorgbank-24	2	Foreign
Rosbank	1.7	Foreign

Source: OECD Economic Survey of Russia 2009.

banks are state-owned, representing nearly 50 percent of the banking system's assets in 2007, and their weight increased further to 56 percent in 2010 (see Table 1).

To improve the banking sector's stability, the CBR is increasing the bank capital requirement (for January 2010, the amount of regulatory capital was set at \$3 million, and it must increase to \$6 million in January 2012). The CBR seems to hope that a stronger capital requirement will generate mergers and acquisitions in the banking sector, leading to larger and more efficient banks. However, the legal environment problem remains. Corruption still weakens the legal framework and the defense of property rights,² bankruptcy procedures can still take a very long time, and the enforcement of contracts can be difficult (loss rates can be large for banks in the case of customer bankruptcy). Banking efficiency could be improved by better enforcement of the law. However, the CBR continues to denounce deficiencies in corporate governance and risk management among banks. The need to improve prudential supervision is also highlighted (see, for instance, OECD 2009). Since the beginning of this century, the Russian government, especially the Ministry of Finance, and the CBR have tried to improve risk management and transparency in the banking sector and to impose more effective regulations. For instance, in 2001, an agency was created to fight money laundering. Since 2002, the CBR has published data about the Russian banking sector, "to make the Russian banking system more open and transparent" (CBR 2002, <<PAGE FOR QUOTE>>). Since 2004, the CBR has required annual IFRS reports to improve the transparency of banking accounting. The CBR also requires information about banks' shareholders, and banks must use a satisfactory method of screening to be accepted in the deposits insurance system (even if this point has not actually been respected).

In spite of the numerous reforms of the Russian banking sector, risk management and transparency still appear to require improvement (OECD 2009). One of the most prominent problems remains the opacity of bank ownership. Depositors and creditors do not know who the shareholders are and whether they will recapitalize the bank if needed. In its annual report (2009), the CBR highlighted the need for an improved degree of transparency toward the Central Bank to improve the quality of stress tests in particular and the quality of financial supervision in general.

Background

Since the 2000s, a rich literature about the consequences of banking transparency has flourished. The consequences on financial stability have been analyzed, sometimes with skepticism (see, e.g., Hyytinen and Takalo 2002; Spiegel and Yamori 2005). The consequences for stakeholders and for both unlisted and listed banks have also been analyzed (see, e.g., Akhigbe and Martin 2006, 2008). The two literature fields are quite close, and both are linked to this paper's issue and provide some insight into the relationship between transparency and efficiency. Banking transparency influences efficiency in two ways. First, transparency allows a bank to decrease the cost of its capital. This decrease in the cost of capital allows banks to reduce the interest rate they can offer to their debtors. Therefore, transparency allows banks to increase the total amount of loans they make. Second, transparency increases the confidence of depositors and increases the amount of deposits that the bank can collect (see, e.g., Berger 1991; Coates 2007).

Following the production approach, we define efficiency as the ability to maximize the deposits and loans for a given level of inputs. As a consequence, transparency should increase banks' efficiency. Transparency allows for a reduction in the cost of capital and increased trust from stakeholders (including depositors) in different ways.

First, transparency is supposed to reduce asymmetric information between banks (listed or unlisted) and outsiders. This decrease in ex ante asymmetric information enables a better selection of a "good" bank by depositors and shareholders. For this first reason, transparent banks attract both groups, and shareholders require a reduced return. Actually, Urgan et al. (2008) empirically show that more capitalized and more liquid Russian banks have attracted depositors. They are sensitive to their bank's financial safety. Karas et al. (2010) also show the disciplining role of deposits in Russia. The reduction of asymmetric information also enables better governance of the bank. Market discipline is enhanced (see the theoretical model of Kanodia and Lee 1998): shareholders are supposed to improve their control of managers, who make decisions in their interest, <<"SUPPOSED TO" MEANS EITHER THEY ARE ASSIGNED THIS ROLE OR THEY ARE ASSUMED TO. IT IS UNCLEAR WHO "THEIR" REFERS TO IN "WHO MAKE DECISIONS IN THEIR INTEREST", BUT IT SEEMS LIKE YOU ARE SAYING THAT IT IS A FACT THAT "HAVING SHAREHOLDERS IMPROVES THE CONTROL

OF MANAGERS WHO MAKE DECISIONS IN THEIR OWN INTEREST (NO COMMA BETWEEN MANAGERS AND WHO), AS SHOWN BY ...”>>as shown by increased managerial turnover (see the theoretical prediction of Hermalin and Weisbach 2007 and the evidence in Wu and Zang 2009). Better governance leads to reduced agency costs (see the evidence provided by Barlev and Haddad 2003; Khurana et al. 2006). Depositors are also supposed to <<SUPPORTED BY WHOM? ARE YOU SAYING PEOPLE THINK THEY DO, THAT THEY ARE REQUIRED TO BY SOMEONE, OR THAT THEY MERELY SHOULD CONTROL?>>control banks’ behavior and are protected against expropriation, a very important issue in Russia. Excessive risk should be avoided, and financial stability should be improved (Cordella et al. 2000), thus leading to larger deposits. Lastly, and closing the loop, banking transparency improves banking regulatory control itself. Market discipline and regulatory control are therefore complementary, and banking sector regulators use disclosure from banks to outsiders to improve their control (Flannery 2001). Depositors’ trust is increased.

Second, other arguments can be added to the preceding one when one considers listed banks in particular. Transparency reduces uncertainty about future share values. Expectations are thus improved (see Bhat et al. 2006): the risk premium is reduced, as is the cost of capital (see, e.g., Lambert et al. 2007). This improved knowledge about banks leads to a reduction in stock price volatility (Baumann and Nier 2004) and a reduction in the beta. The beta measures the link between a given stock return and market return. If transparency is increased, investors use information given by the bank to price the share. Hence, its evolution depends less on the global evolution of the market and more on events that are specific to the bank (Akhigbe and Martin 2008; Ferrell 2007). In the end, transparency reduces informed trading. Market makers can decrease their bid-ask spread, share prices are smoothed, and therefore, the cost of capital can be reduced (Collver 2007; Diamond and Verrecchia 1991).

Following these different arguments, we aim to test whether banking transparency leads to improved efficiency, that is, greater deposits and larger loans.

Data and Variables

We use a sample of thirty-seven Russian banks, considered from 2005 to 2007. In 2007, they represented 67 percent of the total assets of the Russian banking sector (see Table 2).

Information on transparency was obtained from Standard & Poor’s reports (Standard & Poor’s 2005, 2006, 2007). Each annual report contains information on the thirty largest banks of the year and provides four transparency scores. These scores are based on public information, essentially annual reports, public regulatory reporting, and all of the disclosure information available on the Internet. For the score of year N , Standard & Poor’s uses the information available until the publication of the score, for example, August of year $N + 1$. The score reflects three dimensions

Table 2. Sample of 37 Banks

Bank	Net assets (billion USD)*	Ownership
Sample in 2007		
Sberbank	151.7	Owned by federal government or central bank
Gazprombank	41.8	Owned by state-owned companies
Vneshtorgbank	33.1	Owned by federal government or central bank
Alfa-Bank	15.3	Private domestic bank
Bank of Moscow	15.0	Owned by regions and municipalities
Bank Uralsib	12.0	Private domestic bank
Rosselkhozbank	10.3	Owned by federal government or central bank
Rosbank	9.9	Private domestic bank
MDM-Bank	8.6	Private domestic bank
Promsvyazbank	7.1	Private domestic bank
Russian Standard Bank	7.0	Private domestic bank
Bank Petrocommerce	4.9	Private domestic bank
NOMOS-BANK	4.6	Private domestic bank
AK Bars Bank	4.4	Private domestic bank
URSA Bank	4.1	Private domestic bank
Bank ZENIT	3.9	Private domestic bank
International Industrial Bank	3.3	Private domestic bank
Transcreditbank	3.2	Owned by state-owned companies
Bank Vozrozhdeniie	3.1	Private domestic bank
Bank of Khanty-Mansiisk	2.7	Owned by regions and municipalities
Bank St. Petersburg	2.7	Private domestic bank
Moscow Bank for Reconstruction and Development	2.7	Private domestic bank
GLOBEXBANK	2.6	Private domestic bank
Sviaz-Bank	2.5	Private domestic bank
B.I.N. BANK	2.3	Private domestic bank
Bank SOYUZ	2.3	Private domestic bank
CIT Finance	2.2	Private domestic bank
Sobinbank	1.9	Private domestic bank
National Bank Trust	1.8	Private domestic bank
Bank Rossiia	1.6	Private domestic bank

(continued)

Table 2. (Continued)

Bank	Net assets (billion USD)*	Ownership
In 2006		
Absolut Bank	1.3	Private domestic bank
Surgutneftegazbank	1.2	Private domestic bank
In 2005		
Evrofinance Mosnarbank	1.5	Private domestic and foreign bank
Impexbank	1.4	Private domestic bank
National Reserve Bank	0.9	Private domestic bank
First Czech-Russian Bank	0.8	Private domestic bank
Zapsibcombank	0.7	Private domestic bank

Sources: S&P and OECD. <<ANYTHING MORE SPECIFIC? DATES AS IN THE REFERENCE LIST?>>

Note: We consider the assets during the last year in which the bank belongs to the sample.

of transparency. <<IT SEEMS FROM THIS THAT S&P PUBLISHES ONLY ONE SCORE THAT TAKES 3 DIMENSIONS INTO ACCOUNT, YET YOU THEN SPEAK OF 3 AND EVEN 4 SCORES. PLEASE CLARIFY>> First, a score rates the transparency in ownership and corporate structure (this includes the disclosure of the number of shares issued, of shareholders' types, and of the identity of the main shareholders). A second score rates the transparency of financial and operational information (e.g., the disclosure of the bank's accounting policy or the capital adequacy ratio). A third score rates transparency in board and management structure and process (e.g., the disclosure of CEO contracts or the board of directors).

The global score is the average score obtained for the three dimensions. We thus benefit from four transparency scores, which we use alternatively in the estimations: total transparency score, ownership and corporate structure score, financial and operational information score, and board and management structure and process score. Our sample includes only banks for which we have information on transparency. As Standard & Poor's enriches its database each year and increases the number of rated banks, our sample varies over time. It is homogeneous in the sense that it systematically includes the largest banks in Russia, whereas the Russian banking system is very fragmented, with about 1,100 banks in 2007, including many small banks.

As information on transparency is given for the years 2004, 2005, and 2006, we obtained data on banks for the twelve quarters of these years. Quarterly data on Russian banks come from the financial information agency Interfax.³ These data have been used in several papers on Russian banks (e.g., Claeys and Schoors

2007; Fungacova and Solanko 2008; Karas et al. 2010; Weill 2011). The panel is unbalanced, as the sample for which information on transparency is provided varies over time. The final sample therefore includes information on thirty-seven banks for twelve quarters, delivering 334 observations.

For the definition of inputs and outputs, we adopted the production approach, following the application by Karas et al. (2010) of efficiency frontiers to Russian banks. These authors assume that banks use labor and capital to produce deposits and loans (as opposed to the intermediation approach, which views banks as collecting deposits to transform them, using labor and capital, into loans). Several papers have shown that the choice of the approach may have an impact on the level of efficiency scores but not on their rankings (e.g., Wheelock and Wilson 1995), a fact confirmed by Karas et al. (2010), who alternatively use both approaches in their investigation of the link between ownership and efficiency for Russian banks. In our case, the weak degree of development of the financial system in Russia led us to consider that deposits should not be neglected as an important output in that country. Therefore, two outputs are included: loans and deposits. The inputs, whose prices are used to estimate the cost frontier, include labor and physical capital. As data on the number of employees were not available, the price of labor is measured by the ratio of personnel expenses to total assets, following Altunbas et al. (2001), Karas et al. (2010), and Weill (2003), among others.⁴ The price of physical capital is defined as the ratio of other operating expenses to fixed assets. The total costs are the sum of personnel expenses and other operating expenses.

When investigating the impact of transparency on efficiency, three control variables were considered. We first considered size, using the logarithm of total assets. We then controlled for the structure of liabilities, with the ratio of deposits to assets. Finally, we considered the structure of assets, making use of the ratio of loans to assets. Descriptive statistics for the data set are reported in Table 3.

Methodology and Results

Methodology

Cost efficiency measures how close a bank's cost is to a bank's optimal cost for producing the same bundle of outputs. It then provides information on waste in the production process and on the optimality of the chosen mix of inputs. It is the most commonly used concept for appraising the efficiency of banks in works on transition countries (e.g., Bonin et al. 2005; Karas et al. 2010).

Several techniques have been proposed in the literature to measure efficiency with frontier approaches. Whereas nonparametric approaches (e.g., <<SPELL OUT>>[DEA]) use linear programming techniques, parametric approaches, such as the stochastic frontier approach or the distribution-free approach, apply econometric tools to estimate the efficiency frontier. We adopted the stochastic frontier approach in our study, following many studies on banking efficiency in transition

Table 3. **Variables and Summary Statistics** (means and standard deviations for variables used in subsequent estimations)

Variable	Description	N	Mean	Standard deviation
Variables used for the cost frontier				
Loans	Total loans in million rubles. ¹	334	68,452.94	161,798.56
Deposits	Total deposits in million rubles. ¹	334	69,504.76	185,397.39
Price of labor	Ratio of personnel expenses to total assets. ¹	334	0.0051	0.0031
Price of physical capital	Ratio of other operating expenses to fixed assets. ¹	334	22.1605	65.6590
Total costs	Sum of personnel expenses and other operating expenses in million rubles. ¹	334	5,306.30	10,236.42
Equity	Total equity in million rubles. ¹	334	10,715.22	22,729.80
Variables used to explain efficiency				
Size	Logarithm of total assets in million rubles. ¹	334	10.5087	1.0885
Loans to assets	Ratio of total loans to total assets. ¹	334	0.7795	0.1386
Deposits to assets	Ratio of total deposits to total assets. ¹	334	0.6946	0.1317
Nonperforming loans ratio	Ratio of nonperforming loans to total loans. ¹	334	0.0162	0.0158
Total transparency score	Total transparency score in percentage. ²	334	45.99	13.29
Ownership and corporate structure score	Ownership and corporate structure score in percentage. ²	334	47.16	20.87
Financial and operational information score	Financial and operational information score in percentage. ²	334	49.09	13.96
Board and management structure and process score	Board and management structure and process score in percentage. ²	334	36.46	8.59

¹ Source: Interfax.² Source: Standard & Poor's.

countries, including Russia (Bonin et al. 2005; Karas et al. 2010; Weill 2003). In comparison to the DEA method, this approach presents the advantage of disentangling inefficiency from statistical noise, taking exogenous events into account in the residual (the distance from the efficiency frontier).

The stochastic frontier approach assumes that the total cost deviates from the optimal cost by a random disturbance, v , and an inefficiency term, u . Therefore, the cost function is $TC = f(Y, P) + \varepsilon$, where TC represents the total cost, Y is the vector of outputs, P is the vector of input prices, and ε is the error term, which is the sum of u and v . u is a one-sided component representing cost inefficiencies, meaning the degree of weakness of managerial performance. v is a two-sided component representing random disturbances, reflecting luck or measurement errors. u and v are independently distributed. u is assumed to have a truncated normal distribution, while v is assumed to have a normal distribution. σ_v^2 and σ_u^2 are the respective variances of u and v . According to Jondrow et al. (1982), firm-specific estimates of inefficiency terms can be calculated by using the distribution of the inefficiency term conditional on v . **“CONDITIONAL” IS AN ADJECTIVE AND CANNOT BE USED WITH “ON”. DO YOU MEAN THE INEFFICIENT TERM IS DEPENDENT ON THE ESTIMATE? IF SO, CHANGE TO “DEPENDENT ON” OR “SUBJECT TO”. IF IT IS THE DISTRIBUTION THAT DEPENDS ON THE ESTIMATE, PUT A COMMA AFTER INEFFICIENCY TERM (AND USE “DEPENDENT ON” OR “ACCORDING TO”).** the estimate of the composite error term.

We aimed at investigating the impact of transparency on the cost efficiency of Russian banks. Two procedures for this purpose have been proposed in the literature. The more straightforward procedure is the so-called “two-stage procedure”: the stochastic frontier model is estimated in the first stage, whereas the obtained efficiency scores are regressed on a set of explanatory variables, including ownership variables, in the second stage. Although often applied in the literature, this two-stage procedure presents two important econometric problems, as observed by Kumbhakar and Lovell (2000). First, it assumes that the efficiency terms are identically distributed in the estimation of the stochastic frontier model of the first stage, whereas in the second stage, this assumption is contradicted by the fact that the regression of the efficiency terms on the explanatory variables suggests that the efficiency terms are not identically distributed. Second, the explanatory variables must be assumed to be uncorrelated with the variables of the cost frontier function, or the maximum likelihood estimates of the parameters of the cost frontier function would be biased due to the omission of explanatory variables in the first stage. However, the estimated efficiency terms that are explained in the second stage are biased estimates, as they are estimated relative to a biased representation of the cost frontier.

Therefore, we chose to use the “one-stage procedure” proposed by Battese and Coelli (1995), which solves these econometric problems. They propose a procedure for panel data in which the non-negative inefficiency term is assumed to have a truncated distribution, with different means for each firm. As a result, the distributions of the inefficiency terms are not the same, but are expressed as functions of explanatory variables. The inefficiency terms are then independently but not identically distributed. They are obtained by truncation at zero of the $N(\mu_{it}, \sigma_{it}^2)$ distribution: $\mu_{it} = z_{it} \delta$, where z_{it} is a vector of explanatory variables and δ is a vector of parameters to be estimated. <<VARIABLES CORRECT?>>

The estimated model consists of the cost frontier function and an equation explaining inefficiency. As is common in the literature on bank efficiency in transition countries (Bonin et al. 2005; Karas et al. 2010; Weill 2003), we used a standard translog specification of the cost frontier:

$$\ln\left(\frac{TC}{pk}\right) = \beta_0 + \sum_m \alpha_m \ln y_m + \beta_1 \ln\left(\frac{pl}{pk}\right) + \frac{1}{2} \sum_m \sum_j \alpha_{mj} \ln y_m \ln y_j + \beta_2 \left[\left(\frac{pl}{pk}\right)\right]^2 + \sum_m \gamma_m \ln\left(\frac{pl}{pk}\right) \ln y_m + \ln equity + \varepsilon, \quad (1)$$

<<IN THE PREVIOUS EQUATION, THE NEXT TO LAST TERM, IS $\sum_m \gamma_m$ CORRECT? THAT IS, IS gamma subscript m CORRECT? IF NOT, PLEASE LET ME KNOW WHAT IT SHOULD BE / IF YOU SEND A PDF OF THE ORIGINAL THAT SHOULD HELP TO ENSURE I CAN READ WHAT IS MEANT>>where TC is the total cost, y_m is the m th bank output ($m = 1, 2$), pl is the price of labor, pk is the price of physical capital, $equity$ is the bank’s total equity, and ε is the composite error term. Following Karas et al. (2010) and Mester (1996), we included the level of equity in the cost frontier to control for differences in risk preferences: if managers from one bank are more risk-averse than managers from other banks, they <<THE MANAGERS OR THE BANKS?>> can maintain a higher level of equity than simply the cost-minimizing level. Consequently, by omitting the level of equity, we may consider a bank to be inefficient even if it behaves optimally, given the risk preferences of its managers.

Inefficiency is a function of bank-specific variables:

$$u = \delta + \delta \text{Transparency} + \delta_2 \times \text{Size} + \delta_3 \times \text{Loans to Assets} + \delta_4 \times \text{Deposits to Assets} + W, \quad (2)$$

<<IS THERE PREVIOUS EQUATION CORRECT? IF NOT, PLEASE PROVIDE A PDF FILE SHOWING WHAT EQUATION 2 SHOULD LOOK LIKE>>where u is the inefficiency, W is a random variable defined by truncation of a normal distribution with mean zero and variance σ'' ($\sigma'' = \sigma_v'' + \sigma_v^2$). We used the software program Frontier 4.1 to perform the maximum likelihood estimation of the cost frontier.

Table 4. Main Estimations

Explanatory variables	(1)	(2)	(3)	(4)
	Transparency score			
	Total transparency score	Ownership and corporate structure score	Financial and operational information score	Board and management structure and process score
Intercept	0.233 (0.57)	1.444 (1.05)	0.202 (0.36)	0.286*** (9.95)
Transparency	-0.014*** (5.48)	0.002 (1.12)	-0.001 (0.43)	-0.043*** (4.88)
Size	0.070*** (2.65)	0.107 (0.88)	0.063 (1.40)	0.035 (0.39)
Loans to assets	-0.105 (0.61)	3.078*** (6.24)	-0.375 (1.38)	1.179*** (4.16)
Deposits to assets	-0.548* (1.94)	-5.588*** (8.69)	-0.605 (1.46)	-0.397 (0.70)
Log-likelihood	-261.150	-250.400	-265.283	-259.739
N	334	334	334	334

Notes: Maximum likelihood estimates. The dependent variable is inefficiency. Definitions of variables appear in Table 1. Table 4 reports coefficients with absolute *t*-statistics in parentheses. *, **, *** Estimate is significantly different from 0 at the 10 percent, 5 percent, or 1 percent level.

Results

The results of the estimations are displayed in Table 4. We report only the results of the equation explaining inefficiency. It must be stressed that, because it is inefficiency that is explained in the equation, a minus sign indicates that an increase in the explanatory variable implies a reduction in inefficiency or, in other words, a rise in efficiency.

In regression (1) the efficiency is explained by the total transparency score and control variables. The main result is the significant and negative coefficient for the transparency variable. In other words, as we assumed, a more transparent bank is a more efficient bank: the disclosure of information to stakeholders allows the banks to collect more deposits and to grant more loans.

Another interesting result is the negative impact that the size of a bank has on its efficiency. The largest banks could be disadvantaged as compared to the smallest ones. The study from Karas et al. (2010) does not report the coefficients for the

Table 5. **Robustness Check: Estimations Without Control Variables**

Explanatory variables	(1)	(2)	(3)	(4)
	Transparency score			
	Total transparency score	Ownership and corporate structure score	Financial and operational information score	Board and management structure and process score
Intercept	0.316*** (3.84)	0.135 (0.11)	0.078 (0.15)	0.821 (3.08)
Transparency	-0.008** (2.20)	-0.006 (0.38)	-0.003 (0.31)	-0.025*** (2.84)
Log-likelihood	-266.503	-266.632	-266.882	-263.403
N	334	334	334	334

Notes: Maximum likelihood estimates. The dependent variable is inefficiency. Definitions of variables appear in Table 1. Table 5 reports coefficients with absolute *t*-statistics in parentheses. *, **, *** Estimate significantly different from 0 at the 10 percent, 5 percent, or 1 percent level.

control variables, so we cannot compare our results. Nonetheless, it is of interest to observe that this finding is not at odds with previous literature in transition countries: in their research on Central and Eastern European transition countries, Bonin et al. (2005) also point out a negative effect of size on bank efficiency and conclude that smaller banks are more efficient in transition countries.

Finally, the ratio of deposits to assets positively influences the efficiency score. This can be related to the specific structure of the Russian banking system, which hosts many banks but concentrates its deposits among a few of them in several regions.

Regressions (2) and (3) show that, if global transparency plays a role, disclosures about ownership and corporate structure and about financial and operational information are not significant, despite the CBR's wish to increase transparency about shareholders. However, Regression (4) shows that disclosure about board and management structure and process plays a positive and significant role in a bank's efficiency. Therefore, from the point of view of efficiency, the relevant disclosure is this one. Transparency in the mechanisms of governance and in the way in which the governance is organized influences banking efficiency to a greater extent than financial disclosure or disclosure about the nature of those who are responsible for governance. These results should not only strengthen the CBR's commitment to improving the Russian banking sector's corporate governance and risk management, but also confirm the importance of the links between transparency and governance (Hermalin and Weisbach 2007).

Table 6. Robustness Check: Estimations with the Nonperforming Loans Ratio

Explanatory variables	(1)	(2)	(3)	(4)
	Transparency score			
	Total transparency score	Ownership and corporate structure score	Financial and operational information score	Board and management structure and process score
Intercept	0.033 (0.04)	1.415 (0.93)	0.068 (0.13)	1.496* (1.84)
Transparency	-0.017* (1.74)	0.002 (1.10)	-0.211E-3 (0.26)	-0.035*** (5.14)
Size	0.118 (1.58)	0.108 (0.79)	0.079** (2.17)	0.027 (0.33)
Loans to assets	0.045 (0.08)	3.061*** (5.90)	-0.265 (0.99)	0.454 (1.55)
Deposits to assets	-0.931 (1.58)	-5.554*** (8.28)	-0.756** (1.99)	-1.585 (1.41)
Nonperforming loans ratio	0.589 (0.46)	0.701 (0.29)	2.927 (1.51)	5.966** (2.19)
Log-likelihood	-261.519	-250.358	-263.975	-258.684
N	334	334	334	334

Notes: Maximum likelihood estimates. The dependent variable is inefficiency. Definitions of variables appear in Table 1. Table 6 reports coefficients with absolute *t*-statistics in parentheses. *, **, *** Estimate significantly different from 0 at the 10 percent, 5 percent, or 1 percent level.

We performed two robustness checks to test the validity of our results. First, we estimated the model without the three control variables. The results are displayed in Table 5.

We obtained similar results for the transparency measures: only the total transparency score and the score for the board and management's structure and process have a significant impact on bank efficiency, which is positive. Our findings are thus not influenced by the chosen set of control variables. Second, we added the ratio of nonperforming loans to total loans as a control variable. This variable is commonly used to control for the risk-taking behavior and the loan portfolio quality of the bank. However, we already controlled for the risk preferences by including the level of equity in the cost frontier. Therefore, we considered the simultaneous inclusion of the equity in the cost frontier and the nonperforming loans' ratio in the equation to explain inefficiency as a robustness check more than as the main

specification. The results are displayed in Table 6. Again, we obtained similar findings for the transparency measures. We also observed that the nonperforming loans ratio is not significant in the three estimations. This finding is in accordance with the investigation of Russian banks by Karas et al. (2010), who also find no significance for the nonperforming loans ratio when including this variable in the estimations. Consequently, these robustness checks strengthen the relevance of our findings.

Conclusion

This paper investigates the role of transparency in bank efficiency in Russia. As the Russian banking system is still in transition, an understanding of what drives its efficiency can have important policy implications.

We computed efficiency scores for our sample of Russian banks and then examined how transparency impacts those efficiency scores. Our empirical results lend credit to the view that transparency is important for efficiency, and they particularly emphasize the influence of board management (i.e., governance structures) on efficiency.

These results are not only important for Russia but, given that political decision-makers (and notably the G20) have focused on the case for higher transparency in banks to avoid the repetition of the recent (so-called “subprime”) financial crisis, also call for further research. One goal would be to determine whether these results can be replicated, should data (particularly transparency scores) be available for other countries.

Notes

1. Source: Bulletin of Banking Statistics (CBR 1997, 2007, and 2010).<<THERE IS NO CBR 1997 OR 2010 IN REF LIST>>

2. See, for instance, www.heritage.org/index/country/russia.

3. Karas and Schoors (2005) provide a detailed description of the data set.

4. As observed by Maudos et al. (2002), this variable can be interpreted as the labor cost per worker (personnel expenses/number of employees) adjusted for differences in labor productivity (number of employees/total assets), as it is the product of these ratios.

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