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**TRANSPARENCY AND MARKET  
DISCIPLINE: EVIDENCE FROM  
THE RUSSIAN INTERBANK  
MARKET**

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## **TRANSPARENCY AND MARKET DISCIPLINE: EVIDENCE FROM THE RUSSIAN INTERBANK MARKET<sup>3,4</sup>**

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This paper investigates the role of bank voluntary disclosure, as a source of information about risk, in the interbank market. Using data on the 179 largest Russian banks over the period of 2004-2013 we test whether the ability to attract interbank loans is sensitive to various transparency indices such as those disclosing bank risks, board composition, or even corporate event details. We show that larger but riskier banks – at least in terms of credit risk – behave more transparently and disclose more. The article is also the first to provide evidence that the ability to attract funds in the interbank market is positively correlated with the degree of transparency. This result is stable for various aspects of disclosure.

JEL Classifications: G21, P2

Keywords: banks, interbank market, disclosure, transparency, banking governance

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# 1. Introduction

During the last two decades, the Basel Committee has advocated for a more transparent international banking sector. Its recommendations have evolved since the first Basel agreement of 1988. Basel II of 2004 was the starting point of the global enhancement of disclosure and transparency for banks located in countries which ratified the agreement. This attempt was the first to specifically target the banking sector including both public and private banks, compared to the US Sarbanes-Oxley act (2002) which targeted any type of corporation. The disclosure resulting from regulation provides information useful to bank counterparties such as depositors, investors or even regulators. A growing literature has analysed the benefits of bank disclosure and transparency. One of them is the enhancement of financial stability. Disclosing information regarding the financial situation of a bank decreases individual risk and total risk (Akhigbe and Martin, 2006). It is particularly helpful at reducing financial instability when the investment risk of a bank portfolio is chosen by bank managers (Cordella and Yeyati, 1998); Vauhkonen, 2012). Therefore, disclosure should be a prerequisite of market discipline as suggested by Flannery (2001).

The literature on the effects of banking disclosure and transparency has been well furnished over the past decade. The large majority of theoretical and empirical works have focused on the effect of disclosure on deposit volumes (Wu and Bowe, 2012), the cost of capital or risk shifting. Unlike those, this paper is the first attempt to analyse the effect of voluntary disclosure on the ability of a bank to borrow on the interbank market. Since the interbank market is mostly used to fulfil capital and liquidity requirements, the disclosure of information – allowing transparent banks to obtain more funds from the interbank market – may be an important factor facilitating its access to liquidity. It would also imply banks monitor other banks and their willingness to disclose information reflecting their financial status. Due to the non-volatile characteristic of mandatory disclosure, we do not focus on the impact of mandatory rules; we consider only voluntary disclosure. To that extent, the action of proactively deciding to transmit information to the public leads to an overall increase in transparency. Voluntary disclosure has an active component in it, while transparency is a more passive component. More importantly, we consider several aspects of transparency such as risk and risk management disclosure, financial performance disclosure, information on shareholder events, or board member information. Choosing specific disclosure items is important to identify the needs of loan issuers. Using various disclosure index components

allows us to separate the factors influencing the ability of a bank to attract loans on the interbank market.

For the purpose of this article, we focus our analysis on the Russian banking sector. The Russian banking sector is usually described as lacking transparency. (Karas, Schoors, and Lanine, 2008), analysing liquidity and risk transmission there, point out that this fact had deep consequences for the banking sector in 2008. The interbank market showed liquidity difficulties following the subprime crisis where the interbank market froze in September 2008 due to the lack of transparency, leading to a lack of confidence from market participants. A smooth-working interbank market is the key to a well-functioning banking sector and above all to a dynamic economic environment. This article is aimed to investigate whether attracted interbank loans are sensitive to voluntary disclosure. We believe banks decide to appear more transparent for two reasons: first, being opaque they cannot compete properly with the transparent competitors and secondly, because they are risky and choose to confess. Both reasons should provide a significant gain to obtain more interbank loans.

The Russian banking sector is particularly appropriate to test the impact of transparency on the capacity for interbank borrowing. First, the development of the modern Russian banking sector is fairly recent and is highly dynamic with a range of participating banks, where large state-owned banks are competing with domestic privately-owned institutions and foreign subsidiaries. This situation has evolved over the last three decades: the early 1990s, after the end of the Soviet era, saw a striking number of bank licenses issued by the Central Bank of Russian Federation (CBR). The size of the sector has now shrunk to 517 active banks<sup>5</sup> as of February 2018. Secondly, it is dominated by state-owned and state-controlled banks which account – according to CBR<sup>6</sup> – for up to 64% of the deposit market and up to 67% of the credit market, as of early 2017. The predominance of state-owned banks, enjoying additional implicit public guarantees, might be weakening the effect of market discipline because of moral hazard as pointed out by Gropp, Gruendl, and Guettler (2014) and Acharya et al. (2016) and this justifies our geographical choice. State-owned bank managers might have incentives to only satisfy the minimum mandatory criteria for transparency with the help of the implicit guarantees.

In this article, we analyse the relationship between disclosure by banks and their ability to attract interbank loans for the period 2004-2013. Using data on 179 Russian banks, which accounts for

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<sup>5</sup> As opposed to “zombie banks”, Karas & Schoors (2010)

<sup>6</sup> [http://www.cbr.ru/publ/bsr/bsr\\_2016.pdf](http://www.cbr.ru/publ/bsr/bsr_2016.pdf)

almost 77% of the interbank market in 2013, we show that voluntary disclosure is negatively related to bank credit risk. In other words, riskier banks are more transparent to negate their risk profile. This finding is important and sets our results in the same strand of the literature as Spargoli (2012) where banks are better off disclosing negative signals than remaining opaque in a competitive environment. The second result is the core of our analysis. Higher transparency levels increase the level of interbank loans attracted by a bank. The result is fundamental to answer liquidity concerns in the interbank market and to assess the importance of transparency as a tool to further enhance market discipline. This result is particularly innovative: we show voluntary disclosure, when it conveys information on bank fundamentals, increases interbank borrowing capacities.

This article provides several contributions to the disclosure and market discipline literature. It contributes to the literature emphasizing the benefits of disclosure for accessing liquidity, such as Baumann and Nier (2008) and Akhigbe and Martin (2006). It also contributes to the literature dedicated to Russian banks emphasizing the need for transparency such as Karas et al., (2008), who advocate for more disclosure to avoid the illiquidity of the interbank market and Andrievskaya and Semenova (2015), who point out the existence of quantity-based market discipline and its efficiency in the Russian interbank market during the 2008-2009 financial crisis.

The rest of the paper is structured as follows. Section 2 presents the background, reviewing the literature in line with our article. It also briefly presents the state of the Russian interbank market. Section 3 describes the empirical strategy and the dataset used for the analysis. Section 4 presents our results; Section 5 tests for their robustness. Section 6 concludes.

## **1. Literature and the state of the market**

### **a. Banking disclosure and the interbank market**

Pillar 2 of Basel II, and then Basel III, are aimed at enhancing banking supervision by regulatory authorities and are based on the requirements of the first pillar. In particular, Pillar 3 is aimed at increasing market discipline to reduce bank risk by increased public disclosure towards market participants (BIS 2006 and 2015). Banks must provide a precise description of the nature of their equity, how adequate they are with their equity regulation and must give a precise the level of the capital expected to cover each type of risk (credit risk, market risk and operational risk).

Generally, market discipline is associated with market monitoring (Flannery 2001). Therefore, market participants assess the quality of other market participants with the available information: the hypothesis of market efficiency says all information is reflected in market prices, or borrowing rates. Unfortunately, the subprime crisis of 2008 was evidence for the need for information disclosure to complement market prices. Disclosure can be either qualitative or quantitative. Disclosure of quantitative information relates to the volume of precise and technical financial data, while qualitative disclosure relates mostly to corporate social responsibility, corporate events or risk managements procedures. To this extent, banks are viewed as information processors (Hyytinen and Takalo, 2002) by their obligation to disclose (as a public good) or by their decision to allow private monitoring from bank users or investors (as a private good). Two kinds of disclosure actions are possible: mandatory disclosure, where banks must comply with regulatory rules, and voluntary disclosure, where banks can go beyond those regulatory measures and use different channels to release information that is not required to be disclosed (e.g. attendance of board members at board meetings).

Transparency regulation aims at reducing financial fragility by strengthening market discipline (Hyytinen & Takalo, 2002). A significant share of the literature used voluntary disclosure as a prerequisite to market discipline and this article contributes to such literature. More specifically, most authors studying the existence of market discipline in addition to disclosure have focused their analysis on deposit levels, share prices or derivatives. Wu and Bowe (2012) and Hasan, et al. (2013) emphasized the monitoring of depositors, while more transparent banks are able to capture a higher share of depositors. The theoretical model of Cordella and Yeyati (1998) also emphasizes the above when banks are able to manage the risk of their investment portfolio. Hamid (2015) investigated how depositors discipline constrained bank behaviour during the East Asian Crisis by extracting an increase in available information. The author shows that the link between the deposit levels of healthy banks and disclosure score *à la* Nier and Baumann (2006) is positive, encouraging healthy banks to be more transparent to benefit from a competitive advantage over riskier banks. Similarly, Bourgain et al. (2012) assessed the disciplining effect of depositors on risk-taking behaviour through the channel of disclosure, in the presence of international openness and competition. When financial openness increases, a higher level of disclosure makes emerging banking systems more likely to opt for sound risk management. This result is theoretically and empirically crucial for potential investors to assess the risk behaviour of the firm they intend to invest in. For financial market participants, Nier (2005) draws a link between disclosure, market discipline and sound risk-taking

behaviour. In the presence of information, shareholders are able to align their interests with those of managers, therefore reducing the cost of capital throughout a reduction of the risk premium. Alexandre, et al., (2016) showed that most transparent institutions suffer less during periods of strong financial instability. They showed a negative relationship between bank credit default swap spreads and the level of disclosure at the surroundings of sovereign downgrades during the European Sovereign debt crisis. Dergiades, et al. (2015) consider evidence that voluntary information, dispersed through social media and available through Google search queries, is causally related to CDS spreads.

Although the literature above emphasizes the need for, and the positive effects of, disclosure, disclosure remains negative in certain frameworks and therefore is difficult to apply. First, disclosure is costly, directly and indirectly. The cost of disclosure depends directly on the complexity of the approach used to comply with the Basel II and III Pillar 1 (Farvaque & Refait-Alexandre, 2016). Admati & Pfleiderer (2000) state disclosure is costly (the direct cost of emitting and controlling the exactness of the information) and a conveyor of externalities between banks which transfers to indirect costs: information about one firm will lead to consequences in other firms and potentially lead to a contagion. This point is particularly crucial in periods of financial and economic distress: a culture of permanent disclosure should arise to avoid such situations in a crisis. Akhigbe & Martin (2006 and 2008) confirm this statement and justify it by the sanctioning by financial markets of the least transparent institutions. Disclosure is not just costly for firms but also for insider shareholders. Disclosure reduces their private profits while taking risk. The information premium compensates for the risk premium of investors reducing *de facto* their remuneration (Hyytinen and Takalo, 2002) due to publicly available information.

Disclosure can be even more complex for emerging economies, the lack of efficient reporting and accounting standards might negate the quality of risk evaluation (Rojas-Suarez, 2001). The difference between local standards and international standards can lead to conformity costs. In most emerging markets, a majority of banks are unlisted and therefore lacking financial market reporting (Rojas-Suarez, 2001). Since disclosure is not just directed to the financial markets but also to national regulators, the only prudential control remains in the hands of regulators with strong objectives. A transparent and independent relationship between banks and external credit evaluation firms is expected. The risk of collusion<sup>7</sup> between bank managers and regulators is more likely in

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<sup>7</sup> This is against the objectives of the Basel Committee (BIS 2004)

situations of poor institutional power and high corruption levels (Rojas-Suarez, 2001). Lastly, the largest banks are usually government or state-controlled banks, backed up by implicit governmental guarantees, negating potential sanctions by the market (Abbassi, 2007, considering Morocco).

The literature presented above relates disclosure to depositors, financial market and regulators. To our knowledge, this article is the first to analyse the effect of disclosure on interbank loan levels as a complement to market discipline. The closest theoretical article is Broll and Eckwert (2006). In their theoretical framework, transparency affects the volume of interbank loans. The result is particularly strong when the cost function of banks is convex. For a quadratic (linear) cost function, interbank loans are not sensitive to transparency. Nonetheless, the case of market discipline on the interbank market has still been little studied. Empirical research confirms the existence of price and quantity market discipline first by Furfine (2001) and then by King (2008) for the U.S. interbank market. Price discipline is traditionally associated with borrowing rates or loan amounts which correlate with bank risk. It has also been investigated in Europe in the Portuguese market (Cocco, Gomes, and Martins, 2009), the Italian interbank market (Angelini, Nobili, and Picillo, 2011) and more recently in the Russian interbank market by Andrievskaya & Semenova (2015).

Concerning the efficiency of market discipline on the interbank market, there have been few contributions to the field. The most notable are Nier and Baumann (2006), Dinger and von Hagen (2009) and Liedorp et al. (2010). Nier and Baumann (2006) test the hypothesis that market discipline gives banks an incentive to limit their risk-taking behaviour. As a result, market discipline is efficient only while governments do not intervene. Government intervention reduces its effect. Dinger and von Hagen (2009) support the idea that increased interbank borrowing is correlated with lower perceived bank risk. Liedorp et al., (2010) shows evidence that increasing borrowing leads to increased bank risk. (Distinguin, Kouassi, and Tarazi, 2013) examine the effectiveness of market discipline on uninsured interbank deposits in Central and Eastern Europe. The authors assess the link between risky behaviour and interbank deposit levels. The results suggest that interbank deposits do not moderate risky behaviour in state-owned banks, presumably due to additional implicit guarantees. Overall, the authors emphasize that regulatory discipline reduces the effectiveness of market discipline.

This article contributes to the literature emphasizing the positive effect of disclosure in term of financial stability and the importance of the intensification of market discipline in a highly dynamic market such as the interbank sector.



## **b. The Russian interbank market**

Interbank lending markets are crucial to the overall banking sector. Assuring the liquidity of banks is one of its main functions. According to CBR, the 30 largest banks accounted for 73% of interbank lending and 76% of borrowing in June 2017 (authors' calculation). The risk profile of market participants is diverse. Credit ratings for the Russian banking sector are the following: most large national banks have a credit rating equivalent to a decent level (BBB+ or BBB) of financial sustainability, while foreign banks usually have higher credit ratings according to Egorov & Kovalenko (2013). Other privately owned national, smaller, banks have lower credit rating (BB-, S&P).

For 2017, interbank operations reached a total of RUR 12.5 trillion (EUR 179 billion<sup>8</sup>). More than half of the operations were done in rubles (52.4%), 45.7% in USD and 1.3% in EUR<sup>9</sup>. Most of the interbank deposit operations in rubles are done by residents; 5.5 trillion RUR and only 1.02 trillion RUR by non-residents. The opposite occurs for operations in USD, with 0.1 trillion RUR of operations in USD by residents and 5.5 trillion RUR by non-residents. In 2017, the clear majority of interbank operations were realized overnight and account for 82% of the total (with 44% of overnight operation in rubles and 36.86% in USD) for both residents and non-residents. CBR also provides data regarding REPO operations. Lastly, for 2017, 69.35% of interbank lending by volume was realized between residents while 30.65% of the interbank lending volume was with foreign banks.

The CBR suggests six interbank interest rates with different maturity from one day to one year: MIBID (Moscow InterBank Bid Rate), MIBOR (Moscow InterBank Offered Rate), MIACR (Moscow InterBank Actual Credit Rate), MIACR-IG10 (Moscow InterBank Actual Credit Rate: Investment grade), MIACR-B11 (Moscow InterBank Actual Credit Rate: B-grade) and RUONIA (Ruble Overnight Index Average). The calculation of monthly interbank rates is realized by averaging daily rates. The different maturities are 1 day, 2–7 days, 8–30 days, up to 3 months, up to 6 months and a maximum maturity of up to 1 year.

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<sup>8</sup> As of February 2018

<sup>9</sup> The data were extracted from the CBR statistic section available at: <https://www.cbr.ru/Eng/statistics/?PrtId=finr>. The data include unsecured operations.

<sup>10</sup> The list of borrowing banks with high credit rating for MIACR-IG is available at [https://www.cbr.ru/Content/Document/File/32911/MIACR-IG\\_e.xls](https://www.cbr.ru/Content/Document/File/32911/MIACR-IG_e.xls) as of January 2018.

<sup>11</sup> The list of borrowing banks with speculative credit rating for MIACR-B is available at [https://www.cbr.ru/Content/Document/File/27807/MIACR-B\\_e.xls](https://www.cbr.ru/Content/Document/File/27807/MIACR-B_e.xls) as of January 2018.

Figure 1 shows the evolution of the most general interest rate, MIACR, over the last two decades, for the 3 most traded maturities (respectively 84%, 8% and 1% of the interbank operation according to CBR for 2017). It is evident that the financial crisis of 2008-2009 influenced the interest rate. The MIACR began to rise in early 2008 to reach a high of 12% at the beginning of 2009. The high demand for liquidity during the crisis explains such an increase. In combination with the high demand for liquidity, a phase of mistrust is noticeable (Bogetic, 2008). According to the author, the two events follow each other, first a liquidity situation between May and March and then a trust crunch in September, forcing CBR to intervene. By the end of the crisis, the interest rate started to fall back to 2-3% by mid-2010. By 2012, the need for liquidity arose again leading to the interest rate climbing to up to 5% until 2013. Following the western sanctions on the Russian Federation, the MIACR rose to 16.96% (intraday maturity) in January 2015 and was still between 7.5 to 10% by the end of 2017.

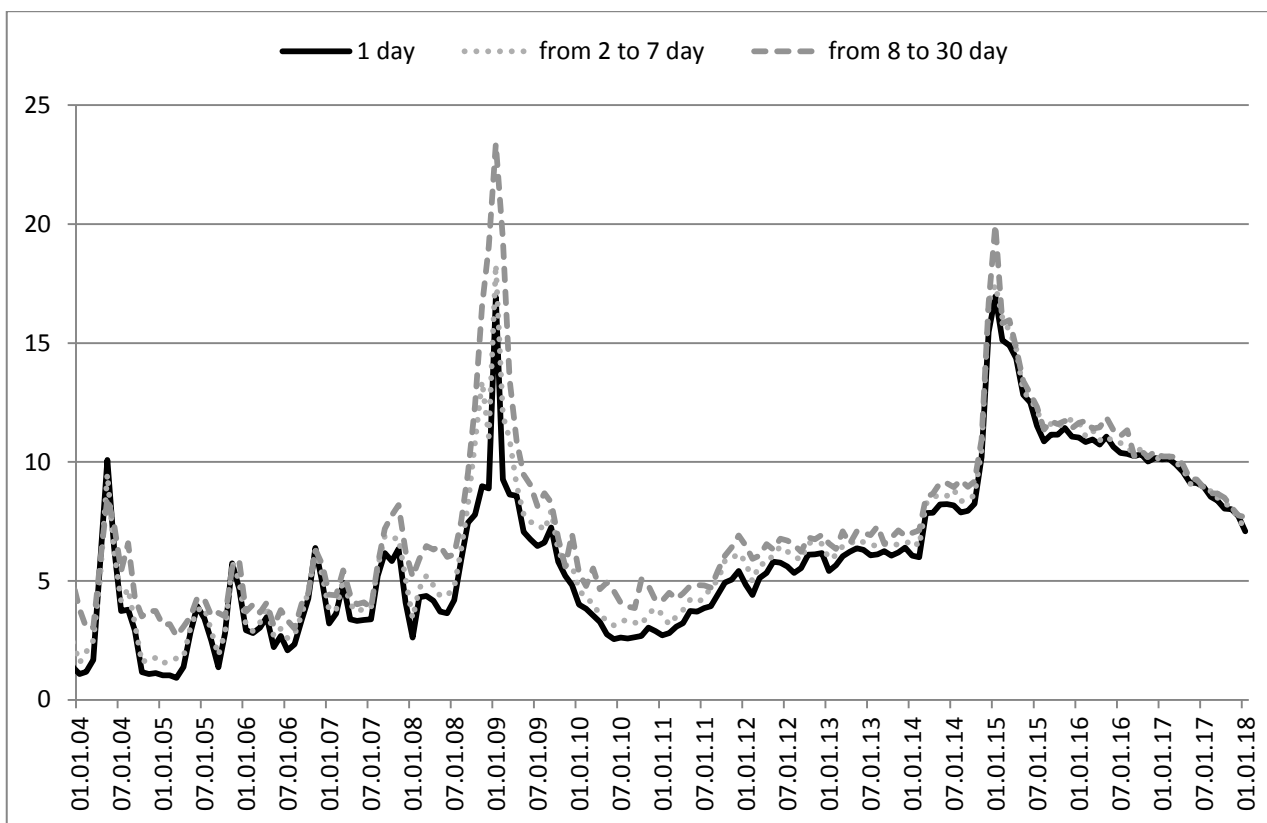


Figure 1 MIACR Evolution, by maturity

Karas et al., (2008) found evidence of low efficiency in the Russian interbank market and the risk of contagion “through indirect liquidity linkages” in early 2004. This was justified later by a lack of transparency and a lack of trust among banks (Fidrmuc and Süß, 2011) on the verge of the

subprime crisis. The authors give evidence that the combination of global slow down and the political instability in Georgia resulted in a “flight to quality” from international investors. The nature of the Russian interbank market and the results observed in the literature have motivated us to pursue a study of the link between transparency and interbank lending.

## **2. Empirical Strategy**

### **a. Data**

For our analysis, we used two types of data. Before going deeper into the description of the transparency variables, it is important to reassess the concept of voluntary disclosure and transparency. Voluntary disclosure is the action of revealing information to the public beyond the mandatory requirements. Increasing the level of disclosure results in an increase of the overall transparency. For the purpose of this article, both notions will be used interchangeably while referring to the concept of voluntary active disclosure.

To measure the degree of bank voluntary disclosure, we compute a set of yearly transparency sub-indexes to cover 6 different aspects: a global index which sums up 5 sub-indices: ownership structures, corporate procedure, financial information, risk management and board information. These criteria are based on the S&P approach. The description of each sub-index is available in Table A in Appendix. The data were collected manually by web scrapping using the questions used in the S&P survey. We selected the criteria which relate to voluntary disclosure and separated them into different sub-indices<sup>12</sup>. If the information was found online, the criterion takes the value 1, and 0 if not. For example, if a bank provides a review of the last shareholder meeting, then the criteria takes the value 1 for section Q24 “*The existence of a review of last shareholders meeting*”. We then add up individual criteria per category. We computed the score of the bank on a 30 scale. The maximum score 30 means that the information of each of the 30 criteria is available. The scores are dynamic for each year. Separating each component refers to the importance of the nature of the information transmitted. In total we have 30 individual items which relate to bank voluntary disclosure. In addition to the general disclosure variable, we added disclosure sub-indices, which reflect more contextual disclosure data. We believe banks are sensitive to the nature of the information and this convince us to conduct specific analyses based on different information.

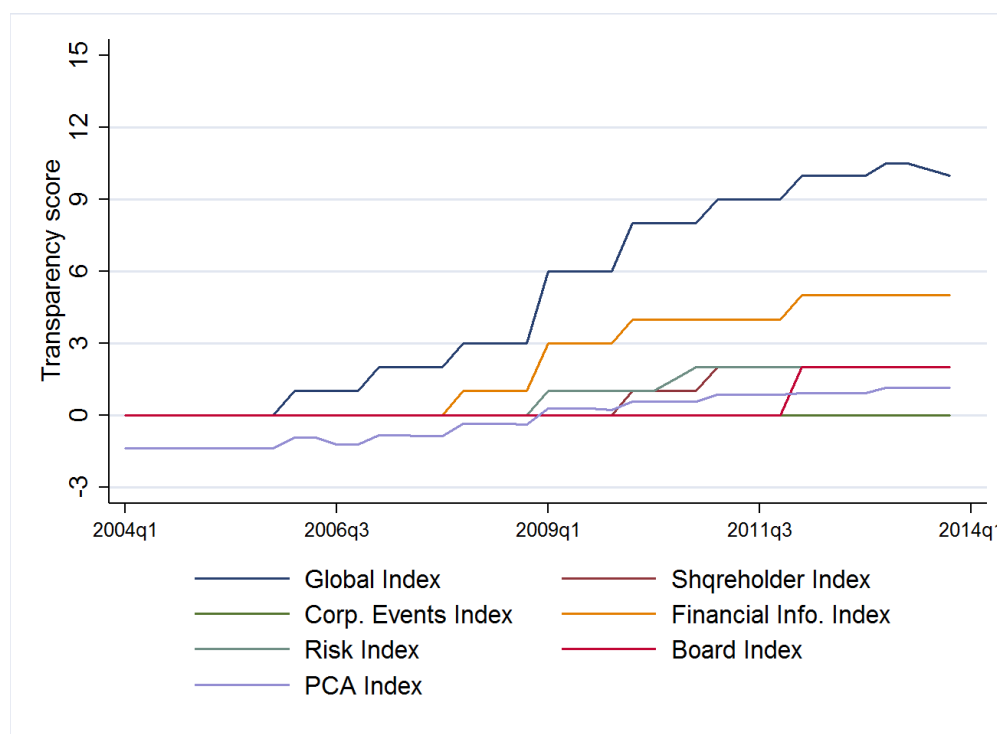
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<sup>12</sup> For more details, see Andrievskaya and Raschupkin, (2015)

**Table 1 Transparency index score, summary statistics**

| Variable                    | n    | Mean | S.D  | Min   | Q1    | Q2   | Q3   | Max  |
|-----------------------------|------|------|------|-------|-------|------|------|------|
| Global Index                | 7326 | 5.77 | 5.06 | 0     | 0     | 6    | 10   | 19   |
| Shareholder Index           | 7326 | 0.91 | 1.15 | 0     | 0     | 0    | 2    | 4    |
| Corporate Event Index       | 7326 | 0.47 | 0.78 | 0     | 0     | 0    | 1    | 2    |
| Financial Information Index | 7326 | 2.56 | 2.46 | 0     | 0     | 3    | 5    | 8    |
| Risk Index                  | 7326 | 0.91 | 0.95 | 0     | 0     | 0    | 2    | 2    |
| Board Composition Index     | 7326 | 0.92 | 1.27 | 0     | 0     | 0    | 2    | 3    |
| PCA Index                   | 7326 | 0.05 | 1.26 | -1.39 | -1.39 | 0.07 | 1.14 | 3.39 |

For a robustness check, we also use a transparency index based on the principle component analysis over all transparency measures. In total, we use general transparency and 6 specific sub-indexes. Table 1 summarizes the basic statistics of each index of transparency. Overall, the average degree of transparency is low with on average 5.77 out 30 (19.2%) where half of the sample is composed of banks with a low degree of transparency (20%). The top 25% of the most transparent bank have on average a degree of transparency up to 30%, while the most transparent bank is *Sberbank* for the three first quarters of 2012, with a score of 63%. None of the banks in our sample were able to achieve a 100% transparency score. Figure 2 shows the slight increase in the median degree of voluntary transparency over a decade.



**Figure 2 Median transparency score evolution**

We used quarterly financial data for Russian banks for the period 1Q2004-2Q2013. The period of study is limited by the availability of the transparency index we were able to access. The data has been extracted from the “Banks and Finance” Analytical System database (Mobile). The database is composed of the financial statements of individual banks prepared to Russian accounting standards, supplied and compiled by CBR. Originally, the sample was composed of 187 banks, which we checked for potential reporting mistakes<sup>13</sup>. The final sample used for the different regressions is 179 which represents up to 77% of the interbank loan market. We checked the participation of banks which are net borrowers on the interbank market for each individual period. The sample has an unbalanced panel structure.

## **b. Model specification and variables**

For this analysis, we used a two-step regression over dynamic panel data as in Blundell and Bond (1998). The first step concerns disclosure being an indicator of financial health, while the second step concerns our main research question. A bank disclosure level is not entirely exogenous: it depends on the risk profile of the bank. We based the estimation procedure through a fixed effect

<sup>13</sup> We excluded data following the criteria: observations are excluded if the capital adequacy N1<sup>13</sup> is greater than 50, N3 is greater than 500, and non-performing loans ratio of more than 50%.

panel regression by testing the sensitivity of disclosure to a lagged CAMEL-type<sup>14</sup> variable for bank fundamentals. The first step equation is:

$$TR_{i,t} = \beta_i + \alpha.Efficiency_{i,t-1} + \phi.N1_{i,t-1} + \gamma.NPL_{i,t-1} + \delta.DtoAsset_{i,t-1} \quad (1) \\ + \rho.LoanToAsset_{i,t-1} + \lambda.Ownership_{i,t-1} + \theta.Macro_{t-1} + \epsilon_{i,t}$$

The use of a CAMEL-type variable allows us to test the representativeness of transparency regarding the past financial health of a bank. *Efficiency*<sub>*i,t-1*</sub> represents the personnel expenses divided by the size of the asset, providing information relative to the ability of efficient labour cost management. To test the sensitivity of transparency to capital adequacy, we used the variable *N1*. *NI* is the main bank equity capital adequacy ratio. It is established as the ratio of bank equity capital to the overall risk weighted assets minus the sum of loss provisions created for the depreciation of securities and possible losses. We used it to measure how a bank can absorb external shocks. According to market discipline principles, well-capitalized banks are more likely to be able to get interbank loans. The minimum level of *NI* is set depending on the amount of the bank's equity capital and is set to 10%. We also use the non-performing loan (*NPL*) ratio to total asset to measure the asset quality of the bank. The last two financial variables we use are *Deposit to total Asset ratio* and the *Loan to total Asset ratio*. We use a set of ownership variables, controlling for state ownership, *State*, which is 1 for banks with a state<sup>15</sup> share of at least 50%, and 0 otherwise. The largest bank in term of assets in our sample is the state owned bank Sberbank. It accounts for up to 25% of the loan market share and deposit nationwide and sometimes 100% of the market in certain regions. The variable *Foreign* takes the value of 1 if the institution has at 50% foreign ownership, and 0 otherwise. For example, Rosbank is a subsidiary of the French group Société-Générale and therefore for this bank it takes the value of 1. State-owned banks<sup>16</sup> account for 15% of our sample and so do foreign banks.

Lastly, we use a set of macroeconomic predicted principle component analysis variable (*Macro*) composed of GDP growth rate and the interbank interest rates of several maturities. The principle component analysis is available in Appendix. The higher the *Macro* variable, the worse the

<sup>14</sup> CAMEL stands for Capital adequacy, Asset quality, Management quality, Earnings and Liquidity

<sup>19</sup> [https://www.cbr.ru/eng/analytics/standart\\_acts/currency\\_regulations/in\\_1.pdf](https://www.cbr.ru/eng/analytics/standart_acts/currency_regulations/in_1.pdf)

<sup>16</sup> As of Karas and Vernikov (2016): 4 types of shares are possible: federal government, regional government, local government or another entity whose equity is more than 50% owned by the 3 previously mentioned. If the combined share exceeds 50%, the authors refer to them as state controlled by at least 50%.

macroeconomic situation is. Negative GDP growth rates are associated with higher interest rates, leading to a reduction of interbank credit.

To determine the impact of transparency and the ability of banks to attract interbank loans, we follow an standard approach, widely used in the empirical literature related to disclosure. The first step is to estimate the sensitivity of the attracted funds to bank transparency; we use the following econometric model for each transparency component:

$$IBL_{i,t} = \beta_i + \alpha \cdot IBL_{i,t-1} + \gamma \cdot TRp_{i,t} + \rho \cdot BF_{i,t} + \lambda \cdot C_{i,t} + \phi \cdot MACRO_t + \zeta \cdot Quarter_t \quad (2) \\ + \delta \cdot Year_t + \epsilon_{i,t}$$

$IBL_{i,t}$  is composed of the sum of interbank loans and deposits attracted by bank  $i$ , no matter the maturity, divided by the total liabilities, to account for the bank size. It captures the overall level of interbank funds a bank is able to attract. We consider only the quantitative aspect of market discipline as the change of credit limits is a quick instrument which is widely used by banks in the interbank market, and the price can be quite sticky. Our explanatory variables include a set of predicted transparency indicators, one per regression, coming from the first step, bank fundamentals, and a set of control variables.

The vector of bank fundamentals  $BF_{i,t-1}$  consists of CAMEL-type variables. The capital adequacy variable of the CAMEL method is the capital over asset ratio ( $CA$ ). The higher the ratio, the more likely the bank is to sustain drops in assets. The liquidity component is  $N3$  which is the current liquidity ratio. It is the ratio of the sum of the bank's liquid assets to the sum of the bank's liabilities on demand accounts and accounts up to 30 days according to CBR guidelines. The minimum value of the  $N3$  is set at 50%. In combination, we used the lagged loans to asset ratio to monitor the bank's previous period liquidity and risk. We also use lagged loan loss provisions ( $Reserve\_Ratio$ ) variable to control for the credit risk of an institution. Banks disclose past information in their communication, not the current.

Bank earnings are also taken into account in the regression with the use of return on assets ( $ROA$ ). The interbank literature suggests the variable will impact positively the amount of interbank loan a bank is likely to get, due to its efficiency. The  $ROA$  variable we use is the ratio of the net profit over total assets. We also control for bank size; we use the natural logarithm of the bank's total assets to mitigate the impact of largely systemic banks. We believe larger firms are more likely to borrow on

the interbank market than smaller bank because they can benefit from implicit government guarantees being considered “*too big to fail*”. We also control for the ability of the bank to borrow more through the use of a lagged deposit to liabilities ratio and by using a loan to tall asset ratio. We controlled for the possible effect of past interbank activity (and eventually mitigate reputation effect) on current interbank behaviour.

The vector of controls  $C_{i,t}$  is composed of 3 dummy variables to consider the ownership structure and the systemic characteristics of the bank. The nationality and state ownership variable is also used for the second regression. The systemically important characteristic of a financial institution (*SyFI*) is also controlled for: it takes the value 1 if a bank is listed in CBR guidelines, and 0 otherwise. The list of systematically important institution is available on CBR website<sup>17</sup>. Lastly, we used a principle component analysis predicted variable based on GDP growth and Moscow interbank interest rate for multiple maturities (*Macro*).

The use of the Blundell-Bond model allows correcting and controlling for the risk of endogeneity and collinearity. This risk is particularly important due to the use of the past lagged variable of the endogenous variable. We also included quarter and year dummies to control for potential time fixed effects. The appropriate tests include the standard Hansen test (for instrument over identification) and Arellano-Bond test for AR(1) and AR(2). Finally to test the robustness of our result, we swapped the interbank loans variable with the net interbank loans. The list of variables used for the regression is in Table 1.

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<sup>17</sup> The list is available at: [https://www.cbr.ru/eng/press/PR/?file=14092017\\_142710eng2017-09-14T14\\_26\\_24.htm](https://www.cbr.ru/eng/press/PR/?file=14092017_142710eng2017-09-14T14_26_24.htm)



**Table 2 Variable list and Descriptive Statistics**

| Variable           | Variable Description  | Obs  | Mean   | Std. Dev. | Min    | Max     |
|--------------------|---|------|--------|-----------|--------|---------|
| IBL <sub>t-1</sub> | Lagged interbank funds (both loans and deposits) attracted(average over quarter, ratio by total asset)                        | 4707 | 0.083  | 0.1       | 0..000 | 0..726  |
| NMO <sub>t-1</sub> | Net monetary operation ratio to total asset, includes interbank deposit and repo  | 5102 | -0.004 | 0.108     | -0.811 | 0.672   |
| Reserve Ratio      | Reserve to total loans ratio  | 5380 | 0.1    | 0.1       | 0.000  | 0.938   |
| ROA                | Return over Asset   | 5380 | 0.0    | 0.0       | -0.163 | 0.388   |
| N1                 | Capital adequacy  | 5380 | 16.42  | 0.001     | 3.00   | 49.6    |
| N3                 | N3 liquidity ratio of the sum of the bank's liquid assets to bank's liabilities on demand accounts and accounts up to 30 days | 5380 | 90.3   | 0.001     | 43.3   | 468.667 |
| NPL                | Non-performing loan to total asset ratio  | 5380 | 38.7   | 0.001     | 0      | 32.00   |
| Asset              | Natural Logarithm of total asset  | 5380 | 17.415 | 1.841     | 10.92  | 24.466  |
| Deposit/Asset      | Deposits to assets  | 5380 | 0.501  | 0.210     | 0.002  | 0.971   |
| Loans/Asset        | Loans over assets   | 5380 | 0.411  | 0.153     | 0.003  | 0.906   |
| State              | State owned bank for at least 50% of the shares as of Karas and Vernikov (2016)   | 5380 | 0.151  | 0.358     | 0.000  | 1.000   |
| Foreign            | Foreign owned bank for at least 50% of the shares, as of Karas and Vernikov (2016)  | 5380 | 0.151  | 0.358     | 0.000  | 1.000   |
| SyFi               | Systemically important Financial Institutions   | 5380 | 0.072  | 0.259     | 0.000  | 1.000   |
| TR                 | Transparency index, global  | 4840 | 6.529  | 4.365     | -9.495 | 23.018  |
| TR_S               | Transparency index, shareholder component   | 4840 | 1.042  | 0.680     | -1.798 | 3.590   |
| TR_C               | Transparency index, corporate event component   | 4840 | 0.582  | 0.355     | -0.621 | 1.936   |
| TR_F               | Transparency index, financial information component   | 4840 | 2.861  | 2.059     | -4.450 | 10.534  |
| TR_R               | Transparency index, risk component  | 4840 | 0.998  | 0.639     | -1.402 | 3.236   |
| TR_B               | Transparency index, board members component   | 4840 | 1.046  | 0.669     | -1.225 | 3.721   |
| TR_M               | Transparency index, principal component analysis  | 4840 | 0.255  | 1.070     | -3.676 | 4.298   |

### 3. Results

#### a. Transparency level and sensitivity to bank fundamentals

Before analysing the effect of transparency on the interbank activity of banks, we needed to confirm transparency is a vector of bank fundamentals. The results of the first step of our participation equation are in Table 2.

According to the literature, two reasons may prevent the banks from disclosure. The main intuition is the idea a bank might want to hide some difficult financial circumstances and prefer partial

disclosure (Suijs, 2007). The result is reinforced by the natural externalities where disclosure is harmful for the seller due to its competitive disadvantage (Fishman and Hagerty, 2003).

The literature about disclosure and transparency also emphasizes the fact that banks are better off disclosing information when in a transparent competitive environment. If the information conveys a negative signal associated with poor bank performance, a bank is better off disclosing than remaining opaque. The decision to disclose reduces the value of the stakeholder information premium. Spargoli (2012) shows this result is particularly appropriate for unstable financial environments. Van Tassel (2011) emphasize a similar result while showing a positive correlation with the number of other banks that disclose information.

Table 2 First step equation results

|   | (1)                | (2)               | (3)               | (4)                | (5)               | (6)               | (7)               |
|---|--------------------|-------------------|-------------------|--------------------|-------------------|-------------------|-------------------|
|   | TR                 | TR_shareholder    | TR_corp.e         | TR_fininfo         | TR_risk           | TR_board          | TR_macro          |
| <b>Efficiency<sub>t-1</sub></b>         | <b>-32.6177***</b> | <b>-8.6043***</b> | <b>-1.2661</b>    | <b>-13.0834**</b>  | <b>-5.4529**</b>  | <b>-4.2110</b>    | <b>-7.9045***</b> |
|   | (11.5278)          | (2.5522)          | (1.7068)          | (6.0947)           | (2.2764)          | (2.8649)          | (2.7367)          |
| <b>NI<sub>t-1</sub></b>                 | <b>0.0330</b>      | <b>0.0064</b>     | <b>0.0016</b>     | <b>0.0147</b>      | <b>0.0024</b>     | <b>0.0080</b>     | <b>0.0077</b>     |
|   | (0.0225)           | (0.0049)          | (0.0031)          | (0.0115)           | (0.0046)          | (0.0057)          | (0.0053)          |
| <b>NPL<sub>t-1</sub></b>                | <b>8.3750**</b>    | <b>1.0522</b>     | <b>0.7229</b>     | <b>3.4242*</b>     | <b>1.5191**</b>   | <b>1.6565*</b>    | <b>2.1600**</b>   |
|   | (3.7961)           | (0.7954)          | (0.7244)          | (2.0384)           | (0.6990)          | (0.9227)          | (0.9146)          |
| <b>Deposits to Assets<sub>t-1</sub></b> | <b>2.9525***</b>   | <b>0.6965***</b>  | <b>0.1667</b>     | <b>1.1070*</b>     | <b>0.3848*</b>    | <b>0.5976**</b>   | <b>0.7290***</b>  |
|   | (1.0803)           | (0.2531)          | (0.2166)          | (0.5783)           | (0.2307)          | (0.2511)          | (0.2632)          |
| <b>Loans to Assets<sub>t-1</sub></b>    | <b>1.9783***</b>   | <b>0.3102***</b>  | <b>0.1695***</b>  | <b>0.9281***</b>   | <b>0.2843***</b>  | <b>0.2862***</b>  | <b>0.4873***</b>  |
|   | (0.1682)           | (0.0385)          | (0.0316)          | (0.0904)           | (0.0404)          | (0.0407)          | (0.0401)          |
| <b>State Owned</b>                      | <b>2.7955***</b>   | <b>0.2936</b>     | <b>0.1934</b>     | <b>1.3761**</b>    | <b>0.2637</b>     | <b>0.6688**</b>   | <b>0.6607***</b>  |
|   | (1.0257)           | (0.3375)          | (0.2337)          | (0.5857)           | (0.2279)          | (0.2930)          | (0.1997)          |
| <b>Foreign Owned</b>                    | <b>1.6389</b>      | <b>0.2362</b>     | <b>0.0840</b>     | <b>1.0111*</b>     | <b>0.3912*</b>    | <b>-0.0836</b>    | <b>0.3770</b>     |
|   | (1.1566)           | (0.2624)          | (0.1851)          | (0.6020)           | (0.2181)          | (0.2108)          | (0.2793)          |
| <b>Macro</b>                            | <b>-0.0616**</b>   | <b>-0.0162**</b>  | <b>-0.0033</b>    | <b>-0.0287**</b>   | <b>-0.0012</b>    | <b>-0.0122*</b>   | <b>-0.0138**</b>  |
|   | (0.0259)           | (0.0063)          | (0.0043)          | (0.0136)           | (0.0060)          | (0.0072)          | (0.0062)          |
| <b>Constant</b>                         | <b>-30.5264***</b> | <b>-4.8346***</b> | <b>-2.5294***</b> | <b>-14.4211***</b> | <b>-4.2740***</b> | <b>-4.4672***</b> | <b>-8.8619***</b> |
|   | (2.8560)           | (0.6442)          | (0.5223)          | (1.5335)           | (0.6857)          | (0.7004)          | (0.6767)          |
| <b>Observations</b>                     | 4,840              | 4,840             | 4,840             | 4,840              | 4,840             | 4,840             | 4,840             |
| <b>R-squared</b>                        | 0.4491             | 0.2803            | 0.1933            | 0.3873             | 0.2778            | 0.2245            | 0.4660            |
| <b>Number of banks</b>                  | 179                | 179               | 179               | 179                | 179               | 179               | 179               |
| <b>p</b>                                | 0                  | 0                 | 1.84e-09          | 0                  | 0                 | 0                 | 0                 |

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 Robust standard errors in parentheses

The first step estimation result suggests the second interpretation is valid, where riskier banking institutions tend to be more transparent. The degree of transparency of those institutions is positively correlated with the lagged ratio of non-performing loans. In addition, it appears the lagged liquidity of the bank is negatively associated with transparency. Those two results are important and reinforce the idea that banks in distress chose to be transparent to ensure participation in the interbank market. For those institutions, participation is important to fulfil capital requirements or to forestall unexpected events. The first step estimation confirms the idea that a competitive banking sector tends to force banks, even with poor fundamentals, to disclose instead of remaining opaque.

The ownership structure also appears to actively influence the disclosure decision. First, larger banks in terms of assets tend to disclose more information to the public. The result is seconded by the positive correlation with the fact that state-owned banks appear more transparent. The market shares the Russian banking sector explains the nature of this relationship – six government owned bank are among the top 10 largest banks in terms of assets. The financial information and the board information sub-indexes are particularly correlated to the state interest. Being a foreign bank is positively correlated with the financial information and risk sub-indexes. The non-sensitiveness to the shareholder component or corporate events may finds its origin in the fact that most of those banks are subsidiaries of larger holding companies which already share this kind of information with other investors. It is particularly valid for listed public banks such as JSC Unicredit or Rosbank, a subsidiary of Société Générale Group.

### **b. Interbank credit and sensitivity to disclosure**

Table 3 shows the results obtained for our main research question. We test the transparency impact hypothesis on interbank attractiveness. The first result confirms the effect of the previous period's interbank activity on current interbank activity. Such a result translates into a reputation effect which was already highlighted in Andrievskaya & Semenova (2015) and Egorov & Kovalenko (2013). The reputation effect of active banks on the interbank market is positively and significantly correlated with the transparency variable. This result is stable regardless of the specifications of the transparency variable.

The core result of the article concerns the impact of a set of predicted transparency indicators on interbank loans. The results show the most transparent banks are more involved in the interbank

market. This effect is observed for the global transparency index. If we take into consideration the individual components of the transparency index, we observe the strength of the result whichever the component is considered. The largest effect of specific disclosure on interbank loans concerns corporate procedure. An increase of 1%, of the transparency score regarding corporate procedures, results into an increase of 19.5% of attracted funds. It also appears that risk disclosure and board member information have significantly positive effects on the ability of a bank to attract funds on the interbank market. Respectively, a 1% increase in the disclosure score generates a 9.5% increase in the ability of bank to pull interbank funds.

Monitoring by other interbank participants, throughout the channel of transparency, appears evident in the regression. Interbank borrowers have to appear more transparent to satisfy capital requirements, which is the main reason for smaller banks to participate in the interbank market. The result is important when combined with the result obtained in the first step regression.

This combination is explained by the profit maximization problem of banks: to satisfy capital requirements, at the lowest cost<sup>18</sup>, bank managers disclose information to reassure market participants. In our case other banks, participating in the interbank market, value such information by granting a higher volume of interbank loans to the more transparent institutions.

The result concerning transparency is also confirmed by the reserve ratio variable. Banks with higher loan loss provisions have to participate less in the interbank market, as they demonstrate higher credit risks. The counterparties are not willing to grant additional loans to the banks which claim higher riskiness of their loan portfolio as measured by the loan loss provisions they have to assign. This result is stable for each transparency component, except for the regression involving the corporate event transparency component. The results obtained confirm the lower borrowing positions of larger banks in terms of assets. Such institutions are likely to be more engaged in other types of funding but the systemic financial institution status does not appear to significantly affect interbank positions. We expected the same results for foreign-owned banks, but it also appears non-significant. Lastly, it appears that none of the time fixed effects are stable over the various regressions.

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<sup>18</sup> Made possible by the reduction of the information premium, possible with the higher disclosure rate as shown in Spargoli, (2012) or van Tassel (2011).

Banks which capture the highest level of deposits are more likely to be more active in the interbank market. For such banks, it is simpler to satisfy capital requirements because of the size of their deposits.

#### **4. Robustness check**

To assure the robustness of our results, we carry out a second set of regressions where we test the impact of the transparency variables on the bank's net interbank position (*NMO*). The use of such variables allows us to capture all of the active interbank operations of each bank for each individual period and consider the net borrowing position in the market. We maintained the constraint used before and presented in section 3.a, footnote 13.

The results of our second regression set are in Table 4. Overall, the findings are similar to the original specification. The results also confirm the active role of transparency in monetary operations. The transparency variables, either the individual component or the global indicator, significantly and positively impact the net interbank position. The reputation effect is still visible. Banks which are active on the interbank market during the previous period are going to be significantly active during the current period. The results are also qualitatively similar for the risk profile and liquidity.

On the other hand, a few changes are visible. The ownership structure variables, in some specifications, significantly negatively impact the volume of net monetary operations. Both foreign-owned and state-owned banks have significantly lower level of net monetary operations once we control the transparency indicators for financial information. This is explained by the fact that foreign banks can have easier access to external funds (from headquarters and other sources). A similar explanation is possible for state-owned banks. Most state-owned banks are large, allowing them to attract funds from different sources.

Table 3 Second step regression: Interbank loans and transparency components

| Predicted Transparency | (1)  | (2)                           | (3)                           | (4)                           | (5)                           | (6)                           | (7)                           |
|------------------------|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                        | <b>Independent Variable: Interbank Loans</b> |                               |                               |                               |                               |                               |                               |
| Global Transparency    | <b>0.0163***</b><br>(0.0043)                 |                               |                               |                               |                               |                               |                               |
| Shareholder Transp.    |  | <b>0.0948***</b><br>(0.0225)  |                               |                               |                               |                               |                               |
| Corp. Events Transp.   |  |                               | <b>0.1945***</b><br>(0.0498)  |                               |                               |                               |                               |
| Fin.Info. Transparency |  |                               |                               | <b>0.0350***</b><br>(0.0093)  |                               |                               |                               |
| Risk Transparency      |  |                               |                               |                               | <b>0.1000***</b><br>(0.0272)  |                               |                               |
| Board Transparency     |  |                               |                               |                               |                               | <b>0.1018***</b><br>(0.0236)  |                               |
| PCA Transparency       |  |                               |                               |                               |                               |                               | <b>0.0645***</b><br>(0.0167)  |
| IBL <sub>t-1</sub>     | <b>0.7447***</b><br>(0.0362)                 | <b>0.7463***</b><br>(0.0383)  | <b>0.7322***</b><br>(0.0368)  | <b>0.7411***</b><br>(0.0371)  | <b>0.7361***</b><br>(0.0371)  | <b>0.7461***</b><br>(0.0366)  | <b>0.7450***</b><br>(0.0374)  |
| Capital Adequacy       | <b>-0.1257</b><br>(0.1128)                   | <b>-0.1015</b><br>(0.1015)    | <b>-0.0619</b><br>(0.1051)    | <b>-0.1086</b><br>(0.1082)    | <b>-0.0911</b><br>(0.1119)    | <b>-0.1107</b><br>(0.1111)    | <b>-0.1309</b><br>(0.1087)    |
| Reserve Ratio          | <b>-0.0661</b><br>(0.0509)                   | <b>-0.0498</b><br>(0.0427)    | <b>-0.0895**</b><br>(0.0435)  | <b>-0.0659</b><br>(0.0516)    | <b>-0.0717</b><br>(0.0465)    | <b>-0.0954*</b><br>(0.0512)   | <b>-0.0550</b><br>(0.0469)    |
| ROA                    | <b>0.0392</b><br>(0.1391)                    | <b>0.0830</b><br>(0.1429)     | <b>0.0216</b><br>(0.1274)     | <b>0.0076</b><br>(0.1432)     | <b>0.0136</b><br>(0.1510)     | <b>0.0478</b><br>(0.1409)     | <b>-0.0047</b><br>(0.1455)    |
| Liquidity Ratio        | <b>0.0001</b><br>(0.0000)                    | <b>0.0001</b><br>(0.0000)     | <b>0.0001</b><br>(0.0000)     | <b>0.0001</b><br>(0.0000)     | <b>0.0001</b><br>(0.0000)     | <b>0.0001</b><br>(0.0000)     | <b>0.0000</b><br>(0.0000)     |
| Total Assets           | <b>-0.0418***</b><br>(0.0094)                | <b>-0.0391***</b><br>(0.0076) | <b>-0.0400***</b><br>(0.0097) | <b>-0.0417***</b><br>(0.0089) | <b>-0.0384***</b><br>(0.0088) | <b>-0.0380***</b><br>(0.0077) | <b>-0.0417***</b><br>(0.0092) |
| Deposits to Assets     | <b>-0.1762***</b><br>(0.0307)                | <b>-0.1916***</b><br>(0.0296) | <b>-0.1647***</b><br>(0.0297) | <b>-0.1685***</b><br>(0.0291) | <b>-0.1719***</b><br>(0.0295) | <b>-0.1833***</b><br>(0.0312) | <b>-0.1785***</b><br>(0.0294) |
| Loans To Assets        | <b>0.1227***</b><br>(0.0363)                 | <b>0.1232***</b><br>(0.0354)  | <b>0.1152***</b><br>(0.0358)  | <b>0.1236***</b><br>(0.0369)  | <b>0.1208***</b><br>(0.0359)  | <b>0.1219***</b><br>(0.0363)  | <b>0.1233***</b><br>(0.0350)  |
| State Owned            | <b>0.0167</b><br>(0.0328)                    | <b>0.0408</b><br>(0.0332)     | <b>0.0261</b><br>(0.0328)     | <b>0.0185</b><br>(0.0342)     | <b>0.0365</b><br>(0.0311)     | <b>-0.0094</b><br>(0.0369)    | <b>0.0234</b><br>(0.0352)     |
| Foreign Owned          | <b>-0.0029</b><br>(0.0168)                   | <b>0.0020</b><br>(0.0151)     | <b>0.0050</b><br>(0.0148)     | <b>-0.0119</b><br>(0.0169)    | <b>-0.0157</b><br>(0.0180)    | <b>0.0294**</b><br>(0.0139)   | <b>-0.0005</b><br>(0.0159)    |
| Systemic               | <b>-0.0000</b><br>(0.0285)                   | <b>-0.0015</b><br>(0.0306)    | <b>-0.0077</b><br>(0.0323)    | <b>0.0004</b><br>(0.0316)     | <b>0.0067</b><br>(0.0322)     | <b>0.0041</b><br>(0.0291)     | <b>0.0042</b><br>(0.0273)     |
| Macro                  | <b>0.0027***</b><br>(0.0007)                 | <b>0.0033***</b><br>(0.0007)  | <b>0.0023***</b><br>(0.0006)  | <b>0.0027***</b><br>(0.0007)  | <b>0.0019***</b><br>(0.0006)  | <b>0.0031***</b><br>(0.0007)  | <b>0.0027***</b><br>(0.0007)  |
| Constant               | <b>0.6767***</b><br>(0.1498)                 | <b>0.6303***</b><br>(0.1212)  | <b>0.6325***</b><br>(0.1490)  | <b>0.6754***</b><br>(0.1429)  | <b>0.6156***</b><br>(0.1379)  | <b>0.6138***</b><br>(0.1242)  | <b>0.7623***</b><br>(0.1672)  |
| Quarter FE             |  |                               |                               | yes                           |                               |                               |                               |
| Year FE                |  |                               |                               | yes                           |                               |                               |                               |
| Observations           | 4,235  | 4,235                         | 4,235                         | 4,235                         | 4,235                         | 4,235                         | 4,235                         |
| Number of bankID       | 176  | 176                           | 176                           | 176                           | 176                           | 176                           | 176                           |
| chi2                   | 4105   | 3107                          | 3669                          | 3425                          | 3950                          | 3675                          | 3568                          |
| chi2p                  | 0  | 0                             | 0                             | 0                             | 0                             | 0                             | 0                             |
| sarganp                | 0  | 0                             | 0                             | 0                             | 0                             | 0                             | 0                             |
| hansenp                | 1  | 1                             | 1                             | 1                             | 1                             | 1                             | 1                             |
| ar1p                   | 3.69e-10                                     | 3.43e-10                      | 5.56e-10                      | 4.61e-10                      | 3.64e-10                      | 2.72e-10                      | 4.79e-10                      |
| ar2p                   | 0.276  | 0.232                         | 0.275                         | 0.287                         | 0.285                         | 0.232                         | 0.271                         |
| j                      | 741  | 741                           | 741                           | 741                           | 741                           | 741                           | 741                           |

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  ; robust standard errors in parenthesis.

Table 4 Robustness check, Blundell-Bond regression, net interbank loans

| Predicted Transparency                               | (8)                           | (9)                           | (10)                          | (11)                          | (12)                          | (13)                          | (14)                          |
|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| <b>Independent Variable: Net Monetary Operations</b> |                               |                               |                               |                               |                               |                               |                               |
| Global Transparency                                  | <b>0.0215***</b><br>(0.0074)  |                               |                               |                               |                               |                               |                               |
| Shareholder Transp.                                  |                               | <b>0.1342***</b><br>(0.0377)  |                               |                               |                               |                               |                               |
| Corp. Events Transp.                                 |                               |                               | <b>0.2252***</b><br>(0.0799)  |                               |                               |                               |                               |
| Fin.Info. Transparency.                              |                               |                               |                               | <b>0.0438***</b><br>(0.0143)  |                               |                               |                               |
| Risk Transparency                                    |                               |                               |                               |                               | <b>0.1382***</b><br>(0.0461)  |                               |                               |
| Board Transparency                                   |                               |                               |                               |                               |                               | <b>0.1436***</b><br>(0.0420)  |                               |
| PCA Transparency                                     |                               |                               |                               |                               |                               |                               | <b>0.0826***</b><br>(0.0280)  |
| NMO <sub>t-1</sub>                                   | <b>0.5670***</b><br>(0.0454)  | <b>0.5633***</b><br>(0.0417)  | <b>0.5528***</b><br>(0.0453)  | <b>0.5536***</b><br>(0.0461)  | <b>0.5567***</b><br>(0.0451)  | <b>0.5771***</b><br>(0.0461)  | <b>0.5628***</b><br>(0.0449)  |
| Capital  | <b>-0.2517</b><br>(0.1949)    | <b>-0.2715</b><br>(0.1939)    | <b>-0.2301</b><br>(0.1990)    | <b>-0.2525</b><br>(0.2002)    | <b>-0.2124</b><br>(0.2015)    | <b>-0.2842</b><br>(0.1976)    | <b>-0.2533</b><br>(0.1935)    |
| Reserve Ratio  | <b>-0.2017**</b><br>(0.0918)  | <b>-0.2014**</b><br>(0.0810)  | <b>-0.1875**</b><br>(0.0907)  | <b>-0.2079**</b><br>(0.0843)  | <b>-0.2181**</b><br>(0.0918)  | <b>-0.2180***</b><br>(0.0843) | <b>-0.1993**</b><br>(0.0845)  |
| ROA  | <b>-0.0574</b><br>(0.2266)    | <b>-0.0508</b><br>(0.2167)    | <b>-0.1114</b><br>(0.2158)    | <b>-0.0672</b><br>(0.2427)    | <b>-0.0666</b><br>(0.2409)    | <b>-0.0203</b><br>(0.2234)    | <b>-0.0609</b><br>(0.2018)    |
| Liquidity Ratio                                      | <b>-0.0000</b><br>(0.0001)    | <b>-0.0000</b><br>(0.0001)    | <b>-0.0000</b><br>(0.0001)    | <b>-0.0000</b><br>(0.0001)    | <b>-0.0000</b><br>(0.0001)    | <b>-0.0000</b><br>(0.0001)    | <b>-0.0000</b><br>(0.0001)    |
| Log Total Assets                                     | <b>-0.0576***</b><br>(0.0192) | <b>-0.0575***</b><br>(0.0160) | <b>-0.0530***</b><br>(0.0178) | <b>-0.0553***</b><br>(0.0170) | <b>-0.0544***</b><br>(0.0177) | <b>-0.0542***</b><br>(0.0160) | <b>-0.0541***</b><br>(0.0169) |
| Deposits to Assets                                   | <b>-0.2505***</b><br>(0.0453) | <b>-0.2744***</b><br>(0.0422) | <b>-0.2389***</b><br>(0.0405) | <b>-0.2498***</b><br>(0.0454) | <b>-0.2441***</b><br>(0.0449) | <b>-0.2658***</b><br>(0.0426) | <b>-0.2544***</b><br>(0.0420) |
| Loans To Assets                                      | <b>0.1696***</b><br>(0.0395)  | <b>0.1818***</b><br>(0.0441)  | <b>0.1693***</b><br>(0.0420)  | <b>0.1671***</b><br>(0.0401)  | <b>0.1696***</b><br>(0.0432)  | <b>0.1755***</b><br>(0.0422)  | <b>0.1763***</b><br>(0.0409)  |
| State Owned  | <b>-0.0307</b><br>(0.0439)    | <b>-0.0079</b><br>(0.0400)    | <b>-0.0190</b><br>(0.0399)    | <b>-0.0375</b><br>(0.0400)    | <b>-0.0099</b><br>(0.0410)    | <b>-0.0724</b><br>(0.0483)    | <b>-0.0332</b><br>(0.0431)    |
| Foreign Owned  | <b>-0.0404</b><br>(0.0300)    | <b>-0.0341</b><br>(0.0229)    | <b>-0.0269</b><br>(0.0259)    | <b>-0.0532*</b><br>(0.0303)   | <b>-0.0561</b><br>(0.0365)    | <b>0.0063</b><br>(0.0200)     | <b>-0.0391</b><br>(0.0248)    |
| Systemic   | <b>-0.0211</b><br>(0.0540)    | <b>-0.0120</b><br>(0.0519)    | <b>-0.0242</b><br>(0.0631)    | <b>-0.0126</b><br>(0.0471)    | <b>-0.0169</b><br>(0.0523)    | <b>-0.0164</b><br>(0.0562)    | <b>-0.0096</b><br>(0.0548)    |
| PCA  | <b>0.0055***</b><br>(0.0008)  | <b>0.0062***</b><br>(0.0009)  | <b>0.0049***</b><br>(0.0008)  | <b>0.0053***</b><br>(0.0008)  | <b>0.0044***</b><br>(0.0009)  | <b>0.0060***</b><br>(0.0008)  | <b>0.0053***</b><br>(0.0009)  |
| Constant   | <b>1.0071***</b><br>(0.3286)  | <b>1.0101***</b><br>(0.2745)  | <b>0.9252***</b><br>(0.3013)  | <b>0.9877***</b><br>(0.2941)  | <b>0.9485***</b><br>(0.3039)  | <b>0.9505***</b><br>(0.2748)  | <b>1.0667***</b><br>(0.3177)  |
| Quarter FE   |                               |                               |                               | yes                           |                               |                               |                               |
| Year FE  |                               |                               |                               | yes                           |                               |                               |                               |
| Observations   | 1,943                         | 1,943                         | 1,943                         | 1,943                         | 1,943                         | 1,943                         | 1,943                         |
| Number of bankID                                     | 151                           | 151                           | 151                           | 151                           | 151                           | 151                           | 151                           |
| chi2   | 1414                          | 1369                          | 1664                          | 1532                          | 1694                          | 1515                          | 1387                          |
| chi2p  | 0                             | 0                             | 0                             | 0                             | 0                             | 0                             | 0                             |
| sarganp  | 0                             | 0                             | 0                             | 0                             | 0                             | 0                             | 0                             |
| hansenp  | 1                             | 1                             | 1                             | 1                             | 1                             | 1                             | 1                             |
| ar1p   | 1.61e-08                      | 6.54e-09                      | 2.83e-08                      | 2.83e-08                      | 2.04e-08                      | 1.90e-08                      | 1.54e-08                      |
| ar2p   | 0.360                         | 0.451                         | 0.312                         | 0.377                         | 0.414                         | 0.293                         | 0.369                         |
| j  | 666                           | 666                           | 666                           | 666                           | 666                           | 666                           | 666                           |

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; robust standard errors in parenthesis.

## **5. Conclusion**

The results of this paper confirm the need for voluntary transparency to allow riskier financial institutions to obtain funds on the interbank market, the main supplier of liquid funds for Russian banks. Riskier banks choose to be more transparent, since transparency levels are positively correlated to bank fundamentals in terms of capital, liquidity and risk. This allows them to be able to attract a larger volume of interbank loans. The interbank sector makes important contributions to the banking sector, and enhancing its functioning is crucial to the functioning of the whole banking sector. For this, it must provide sufficient liquidity for banks to operate and to be sound and to continue operating. It also exacerbates the risk of contagion during financial troubles. Therefore, it reinforces the need for transparency and the disclosure of information as a vector of market discipline.

The findings of this study are consistent with the empirical and theoretical literature which advocate for higher levels of disclosure and the literature emphasizing market discipline. This paper also provides some of the first evidence of the peer monitoring effect through the vector of information disclosure.



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# Appendix

Table A Transparency index composition

| <b>Component 1</b> | <b>Ownership and Group Structure</b>  |
|--------------------|---|
| Q4                 | The identity of the largest shareholder   |
| Q5                 | The number and identity of all shareholders holding more than 10%   |
| Q11                | Shareholding in the bank by individual senior managers  |
| Q12                | Shareholding in the bank by individual directors  |
| <b>Component 2</b> | <b>Corporate procedures</b>   |
| Q24                | The existence of a review of last shareholders meeting (e.g., general presentation of voting results)                     |
| Q25                | Detailed press releases covering last corporate events  |
| <b>Component 3</b> | <b>Financial information</b>  |
| Q27                | The bank`s accounting policy  |
| Q31                | Annual financial statements according to an internationally recognized accounting standard (IFRS/U.S. GAAP) without notes |
| Q32                | Notes to annual financial statements according to IFRS/U.S. GAAP  |
| Q33                | An independent auditors` report with regard to annual financial statements according to IFRS/U.S. GAAP                    |
| Q36                | Disclosure of related-party transactions (RPTs): sales to/purchases from, payables to/receivables from related parties    |
| Q37                | Transactions with the companies with the same group   |
| Q40                | Interim financial statements according to an internationally recognized accounting standard (IFRS/U.S. GAAP)              |
| Q41                | Notes to such financial statements  |
| Q42                | Whether these financial statements are audited or at least reviewed   |
| Q49                | Whether the audit firm is a top-tier auditor  |
| Q61                | Indicators of concentration (industry, client/shareholder, insider, and so on)  |
| <b>Component 4</b> | <b>Operational information</b>  |

|                    |  |
|--------------------|--|
| Q66                | Analysis of the bank`s risks (list of risks, their description, and the way they may affect the bank)      |
| Q67                | Risk management policy   |
| <b>Component 5</b> | <b>Board and Management Information</b>  |
| Q82                | The list of board members (names/titles)   |
| Q96                | The list of senior managers not on the board of directors  |
| Q97                | The background of senior managers  |
| <b>Component 6</b> | <b>Board and committee structures and procedures</b>   |
| Q149               | Majority of board is external  |
| Q151               | Board chairman is external   |
| Q152               | Board includes external members with relevant industry experience  |
| Q153               | Board includes external members with expertise in finance/audit  |
| Q154               | Board includes external members, except for executives of the bank, with expertise in strategic management |
| Q155               | At least half of the board members possess expertise in these spheres                                      |
| Q156               | Existence of audit committee   |

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