

Is it Worth Being Transparent? Market Power and Voluntary Disclosure by Russian banks

Irina Andrievskaya¹, Mikhail Raschupkin²

Abstract: Information disclosure is considered as an important prerequisite for the efficient functioning of a financial system. Costs and benefits of information disclosure - voluntary and mandatory - have been extensively theoretically and empirically investigated. However, the link between voluntary disclosure and market power is still empirically unexplored. Our paper fills this gap in literature. We test the hypothesis that banks tend to under-report information about their financial and operating condition due to the presence of proprietary costs. Our sample consists of 150 largest Russian banks for the period 2004-2013. Preliminary findings show that during crisis bank voluntary disclosure is considered as a positive signal by depositors leading to increased bank market share. The link between transparency and market position, though, depends on bank asset quality. Bank with lower asset quality loses their market share when more information is disclosed. There are also some evidences that higher disclosure corresponds to higher bank market power measured as Lerner index. However, this result is not stable and needs further investigation.

Keywords: banking system, voluntary information disclosure; market power, Lerner index.

¹ PhD, Research Fellow, Center for Institutional Studies, National Research University Higher School of Economics, Russian Federation, iandrievskaya@hse.ru

² Research Assistant, Center for Institutional Studies, National Research University Higher School of Economics, Russian Federation, mraschupkin@hse.ru

1. Introduction

Information disclosure plays an important role for the well functioning of any market. It is no less necessary for efficient performance of a banking system which is prone to information asymmetry. Opacity of financial institutions can foster financial instability (Jones et al., 2012). This is evident in particular during the crisis periods when opaqueness of financial institutions can impede the implementation of timely and efficient policy measures (Rosengren, 1998).

In order to increase transparency of the banking system regulators work out disclosure requirements that can enhance market discipline (see, for example, (BCBS, 2006)). However, before implementing the appropriate disclosure policies it is necessary to understand the banks' incentives to be more transparent (Darrough, 1993). This can help to find out what types of banks are more likely to avoid disclosure strategies and how to regulate them more efficiently (Leuz, Wysocki, 2008).

Costs and benefits of information disclosure for firms have been substantially explored in the literature. Higher transparency is connected with lower cost of capital (Merton, 1987), (Francis et al., 2005), greater trust and confidence of investors (Oliviera et al., 2011), lower firm's competitive advantages and higher reporting costs (Hyytinen, Takalo, 2002), it can also increase firm value (Leuz, Wysocki, 2008).

The effect of and motivation for information disclosure within financial system framework have also been extensively examined. Specifically, greater transparency is associated with lower lending corruption (Barth et al., 2009), lower bank stock volatility (Baumann, Nier, 2004), higher bank efficiency (Refait-Alexandre et al., 2012), higher risk-taking by banks (Moreno, Takalo, 2012) and higher probability of bank runs (Chen, Hasan, 2005). At the same time, banks with lower equity levels tend to under-report their risk information in order to fulfill capital requirements set by the regulator (Begley et al., 2014). Moreover, during crisis periods the effect of information disclosure depends on bank asset quality. Higher transparency can lead to higher losses from bank runs when bank asset quality is low (Baumann, Nier, 2004), otherwise information disclosure is considered as a positive signal and leads to lower losses (Hamid, 2013).

We extend the existing literature by analyzing an additional incentive of banks to under-report information. In particular, we examine the *proprietary cost hypothesis* which means that "firms' decisions to disclose information to investors is influenced by concern that such disclosures can damage their competitive position in product markets." (Healy, Palepu, 2001, p.424). According to this hypothesis, firms do not have incentives to disclose information as it can lower their market power due to revealing of some strategic information (Darrough, 1993), (Hayes, Lundholm, 1996).

However, the interrelation between market power and information disclosure is not unambiguous. According to the game theory ideas, information disclosure can be considered as a part of strategic interaction of a firm with its competitors – both current and potential (Claessens, Laeven, 2004), (Burks et al., 2013). The effect of information disclosure depends on whether information revealed corresponds to the expectations of possible entrants. Disclosure of negative information (a decrease in revenues, for example) can prevent potential competitors from entering the market and, therefore, can add to market power of the existing firms. Nevertheless, investors also monitor the disclosed information. As a result, they can react to such a negative signal by selling out securities of the transparent firms and, therefore, damaging their market position (Scott, 1994). At the same time, revealing positive information adds to investors' trust. Therefore, according to the industrial organization theory, greater transparency can entice investors away from the less transparent organizations and, therefore, can contribute to the rising market power of a more transparent ones (Fishman, Hagerty, 1989). However, positive signals can also increase the probability of new entrance in the market. For a banking system in particular, disclosure of financial information leads to higher asset quality competition and reduce price competition (Cordella, Levy Yeyati, 2002).

Despite the fact that theoretical analysis with this respect already exists in the literature, there is little if any empirical evidence that can confirm or reject the existence of a link between market power and voluntary information disclosure, in a banking system in particular. Therefore, we contribute to the existing literature by studying whether higher bank transparency corresponds to lower bank market share and lower bank market power (*proprietary cost hypothesis*).

We use annual data for the largest 150 Russian banks. Period under consideration is 2004-2013. Our results confirm the existence of the link between bank transparency and bank market share. This link is in line with the proprietary cost hypothesis during normal times, while during crisis transparency is considered as a positive signal for depositors and leads to the improved bank market position. This link also depends on bank asset quality. The results with respect to market power are more ambiguous and need further investigation.

The paper is organized as follows. In section 2 we describe our methodology and data. In section 3 the major findings as well as the robustness check are discussed. Section 4 concludes.

2. Methodology and data

In order to examine the proprietary cost hypothesis within financial system framework, we use the following econometric model:

$$Y_{it} = \alpha_{it} + \beta_{it}VD_{it} + \gamma_{it}NPL_{it} + \delta_{it}VD_{it} * NPL_{it} + \mu_{it}VD_{it} * Crisis + \rho_{it}Z_{it} + \varepsilon_{it} \quad (1)$$

Dependent variables (Y_{it}) include a proxy for bank market share in terms of deposits and total assets, a proxy for bank concentration level and a proxy for overall bank market power.

Bank market share in terms of deposits (assets) MS_DFL_{it} (MS_CA_{it}) is calculated as the ratio of bank deposits (assets) over total bank deposits (assets) of our sample.

Bank market power is expressed using Lerner index ($Lerner_{it}$). The index is calculated as the following (Lerner, 1934):

$$Lerner = \frac{P - MC}{P} \quad (2)$$

where P – price of output of a firm, MC – marginal costs of a firm.

We follow the approach proposed in (Demirgüç-Kunt, Martínez Pería, 2010) in order to estimate Lerner index within financial system framework. In particular, price is calculated as the ratio of operating income over total bank assets. Marginal costs are derived using the translog cost function (see (Demirgüç-Kunt, Martínez Pería, 2010, p. 9-10)). In this function output equals to bank total assets. Costs include price of deposits (calculated as the ratio of interest expenses over total deposits), price of labour (calculated as the ratio of personnel expenses over total assets) and price of fixed capital (calculated as the ratio of other expenses over total assets). Marginal costs are received by multiplying the derivative of the translog cost function with respect to output by the ratio of total costs over total assets.

Lerner index represents a direct measure of market power. Higher values of the index indicate higher levels of market power.

As a proxy for bank concentration in terms of deposits we follow the logic of (Mamonov, 2012, p. 90) and employ an Individual Herfindal-Hirshman Index (HHI_{indit}). It is estimated as the following:

$$HHI_{indit} = j_{it} \times HHI_t = \frac{DFL_{it}}{CA_{it}} \times \sum_{i=1}^n (MS_DFL_{it})^2 \quad (3)$$

where DFL_{it} – deposits of a bank i in time period t , CA_{it} – total assets of a bank i in time period t , MS_DFL_{it} – market share of a bank i in time period t with respect to deposits.

Explanatory variables include a proxy for bank voluntary disclosure of information (VD_{it}) expressed as an information disclosure index measured according to Standard and Poor`s

methodology. This methodology is described in the report "Transparency and Disclosure by Russian Banks 2006" (S&P, 2007). We slightly modify their methodology. Specifically, we reduce the dimensionality of the index since some of the questions included in the S&P index repeat each other. Therefore, our final disclosure index is based on 27 questions on whether a bank discloses certain items from three major blocs:

- "Ownership and group structure" ($VD_{1,it}$) includes a set of questions about the identity of the most important shareholders, affiliating companies and information about prices and total amount of ordinary shares.
- "Financial and operation information" ($VD_{2,it}$) covers the questions about publishing annual and interim financial reports and their content (information about revenues and costs, risks, reserves, etc.), auditors' notes and information about auditor itself.
- "Board and management structure and process" ($VD_{3,it}$) implies comprehensive information about top-management and board personalities and their salaries.

Each question receives 1 point if the answer for this question is positive (in other words, if the appropriate information is disclosed). Otherwise the question receives 0 points. Maximum score for the first block is 6, for the second one is 16, for the third one is 5. Therefore, the total maximum value of the index is 27.

For the purposes of our estimations, we employ total index as well as its three major blocs separately in order to understand which index dimension is the most important for bank market share and market power.

To test whether bank asset quality affects the link between information disclosure and market power (in other words, whether banks with lower asset quality tend to under-report to a greater extent to retain their market power), we introduce the interaction between the voluntary disclosure index and banks' credit risk ($NPL_{it} * VD_{it}$) measured by the ratio of non-performing loans over loan portfolio (NPL_{it}).

We also examine whether the link between bank market power and their level of information disclosure changes during the crisis time. Therefore, we include the interaction term $VD_{it} * Crisis$. Due to financial instability accompanied by less strict disclosure requirements of the Central bank financial institutions may report less information and even then the reported details may be useless for market discipline as they may not reflect properly all the risks. Crisis period is set to be 2008-2010.

Our control variables (Z_{it}) consist securities listing of banks on Moscow Stock Exchange dummy ($MOEX_{it}$) and International Stock Exchange dummy ($IntL_{it}$), bank size ($size_{it}$, calculated as

natural logarithm of bank total assets) and ownership structure dummies ($government_{it}$ and $foreign_{it}$), we also include year dummies for non-crisis period.

The descriptive statistics of the variables are presented in Table 1 below.

Table 1. Descriptive statistics

	Description	Observations	Mean	Standard deviation	Minimum	Maximum
Dependant variables						
MS_DFL	Market share of a bank in terms of deposits	1,216	0.011	0.068	4.13e-08	1.398
MS_CA	Market share of a bank in terms of total assets	1,216	0.008	0.032	4.54e-06	0.387
Lerner	Lerner index (individual measure of market power of a bank)	1,216	0.555	0.194	0.0121	1.000
HHIind	Individual Herfindal-Hirschman index based on market share in terms of deposits	1,216	0.002	0.028	0	0.812
Explanatory variables						
VD	Total index of information disclosure based on S&P methodology	1,216	8.104	6.650	0	22
VD1	Total index for the first bloc "Ownership and group structure"	1,216	1.206	1.218	0	6
VD2	Total index for the second bloc "Financial and operation information"	1,216	6.375	5.424	0	16
VD3	Total index for the third bloc "Board and management structure and process"	1,216	0.523	0.746	0	4
NPL	Ratio of nonperforming loans over total loan portfolio	1,161	0.0366	0.0454	3.44e-07	0.493
CRISIS	Dummy-variable for crisis periods (2008-2010)	1,216	0.297	0.457	0	1
IntL	Dummy-variable for international listing	1,216	0.0173	0.130	0	1
MOEX	Dummy-variable for listing on Moscow Exchange	1,216	0.113	0.317	0	1
government	Dummy-variable for government owned banks	1,216	0.0822	0.275	0	1
foreign	Dummy-variable for foreign owned banks	1,216	0.206	0.405	0	1
size	Natural logarithm of bank's total assets	1,216	17.43	1.743	10.20	23.52

As it was described above, we consider *proprietary cost hypothesis* which means that voluntary information disclosure is negatively connected with market power of banks. In terms of our model, it means that voluntary disclosure variables are expected to have a significant negative impact on measures of market share and market power.

On the other hand, during crisis periods information disclosure is considered to be a positive signal for investors and depositors. Therefore during hard time we can expect the positive link between bank market share and market power and information disclosure.

We also expect that an asset quality measure (NPL) multiplied by voluntary disclosure index will be negatively linked to bank market share and market power as banks with lower asset quality tend to under-report to a greater extent.

For the purpose of our analysis, we manually collected data on bank disclosure by surfing the webpages of the banks where they disclose all the relevant data. The bank-specific financial indicators (total assets, non-performing loans and etc.) are taken from the “Mobile” database. Our sample includes 150 largest banks in terms of assets. These banks represent 75 % of the system in terms of assets as on the 1st of December, 2014. The period under consideration is 2004-2013. The total number of observations ranges from 1500 to 1210 due to missing data.

We estimate fixed-effect panel data model. The choice (among fixed effects, random effects and OLS models) is done based on the results of the appropriate tests.

3. Results

As it can be seen from Table 2 below, some results indicate in favor of the proprietary cost hypothesis: higher transparency corresponds to lower market share. However, during crisis periods voluntary disclosure seems to be a positive signal for depositors and investors. There is a positive statistically significant link between information disclosure and bank market share in terms of deposits and total assets. These result holds when we consider overall transparency index as well as separate disclosure blocs.

Table 2. Effect of information disclosure on bank market share (robust standard errors in parentheses)

Variables	MS_DFL	MS_DFL	MS_DFL	MS_DFL	MS_CA	MS_CA	MS_CA	MS_CA
VD	-0.000 (0.000)				-0.000* (0.000)			
VD1		-0.001** (0.001)				-0.000 (0.000)		
VD2			-0.000 (0.000)				-0.000 (0.000)	
VD3				-0.001 (0.001)				-0.000 (0.000)
NPL	-0.017 (0.013)	-0.021* (0.012)	-0.018 (0.012)	-0.028*** (0.011)	0.004 (0.002)	0.003 (0.002)	0.003 (0.002)	0.004* (0.002)
NPL_VD	-0.002* (0.001)				-0.000 (0.000)			
NPL_VD1		-0.010 (0.006)				-0.002 (0.001)		
NPL_VD2			-0.002* (0.001)				-0.000 (0.000)	
NPL_VD3				-0.014 (0.011)				-0.005*** (0.002)
Crisis	0.004** (0.002)	0.004** (0.002)	0.005*** (0.002)	0.004*** (0.002)	-0.004*** (0.000)	-0.003*** (0.000)	-0.004*** (0.000)	-0.003*** (0.000)

Crisis_VD	0.000				0.000**			
	(0.000)				(0.000)			
Crisis_VD1		0.002***				0.000*		
		(0.001)				(0.000)		
Crisis_VD2			0.000				0.000**	
			(0.000)				(0.000)	
Crisis_VD3				0.003***				0.000**
				(0.001)				(0.000)
MOEX	0.000	0.000	-0.000	-0.000	0.000	0.000	0.000	0.000*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
IntL	0.001	0.000	0.001	0.001	-0.000	-0.000	-0.000	-0.000
	(0.006)	(0.006)	(0.006)	(0.006)	(0.001)	(0.001)	(0.001)	(0.001)
government	0.004	0.003	0.003	0.003	0.001	0.001	0.001	0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)
foreign	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
size	0.001**	0.001**	0.001**	0.001*	0.002***	0.002***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
y2005	0.000	0.000	-0.000	-0.000	-0.001**	-0.001**	-0.001**	-0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
y2006	-0.000	-0.000	-0.000	-0.000	-0.001***	-0.001***	-0.001***	-0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
y2007	-0.000	0.000	-0.001	-0.000	-0.002***	-0.002***	-0.002***	-0.002***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
y2011	0.001	0.001	0.000	0.000	-0.004***	-0.004***	-0.004***	-0.004***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
y2012	0.001	0.001	-0.000	0.000	-0.004***	-0.005***	-0.005***	-0.005***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
y2013	0.001	0.001	-0.000	0.000	-0.005***	-0.005***	-0.005***	-0.005***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.019*	-0.019*	-0.020*	-0.017*	-0.028***	-0.029***	-0.028***	-0.028***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	1,128	1,128	1,128	1,128	1,128	1,128	1,128	1,128
R-squared	0.087	0.095	0.085	0.092	0.247	0.246	0.245	0.253

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

As expected, the effect of information disclosure depends on bank asset quality. For banks with higher levels of non-performing loans higher disclosure of “Financial and operation information” is associated with lower bank market share in terms of deposits and higher disclosure of “Board and management structure and process” corresponds to lower bank market share in terms of total assets.

Results for the Lerner index (see Table 3 below) do not confirm the proprietary cost hypothesis. On the contrary, there are some evidences that higher transparency of banks corresponds to their higher market power during crisis period. In particular, disclosure of the third bloc “Board and management structure and process” is associated with higher Lerner index during crisis periods. Similar results appear for the bank concentration levels during the crisis period. Specifically, disclosure of items from the first and the third blocs corresponds to higher individual concentration levels.

Table 3. Effect of information disclosure on bank market power and bank concentration level (robust standard errors in parentheses)

Variables	Lerner	Lerner	Lerner	Lerner	HHIind	HHIind	HHIind	HHIind
VD	-0.001 (0.001)				-0.000 (0.000)			
VD1		0.009 (0.008)				-0.000 (0.000)		
VD2			-0.001 (0.002)				-0.000 (0.000)	
VD3				-0.007 (0.011)				-0.000 (0.000)
NPL	0.472*** (0.171)	0.521*** (0.164)	0.471*** (0.169)	0.391*** (0.148)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
NPL_VD	-0.003 (0.016)				-0.000 (0.000)			
NPL_VD1		-0.078 (0.090)				-0.000 (0.000)		
NPL_VD2			-0.004 (0.020)				-0.000 (0.000)	
NPL_VD3				0.055 (0.145)				-0.000 (0.000)
Crisis	-0.109*** (0.024)	-0.112*** (0.023)	-0.104*** (0.024)	-0.114*** (0.022)	0.000 (0.000)	0.000 (0.000)	0.000* (0.000)	0.000 (0.000)
Crisis_VD	0.002 (0.002)				0.000 (0.000)			
Crisis_VD1		0.009 (0.008)				0.000*** (0.000)		
Crisis_VD2			0.002 (0.002)				0.000 (0.000)	
Crisis_VD3				0.041*** (0.013)				0.000*** (0.000)
MOEX	0.002 (0.020)	-0.001 (0.020)	0.002 (0.020)	-0.001 (0.020)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
IntL	-0.179** (0.081)	-0.174** (0.081)	-0.179** (0.081)	-0.181** (0.080)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
government	-0.057 (0.059)	-0.050 (0.059)	-0.058 (0.059)	-0.062 (0.058)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
foreign	0.038 (0.031)	0.039 (0.031)	0.038 (0.031)	0.037 (0.031)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
size	-0.012 (0.009)	-0.014 (0.009)	-0.012 (0.009)	-0.013 (0.008)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
y2005	0.006 (0.019)	0.003 (0.019)	0.006 (0.019)	0.005 (0.018)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
y2006	0.023 (0.020)	0.019 (0.019)	0.022 (0.020)	0.023 (0.019)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
y2007	0.024 (0.021)	0.018 (0.021)	0.024 (0.021)	0.023 (0.021)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
y2011	-0.095*** (0.028)	-0.109*** (0.027)	-0.095*** (0.028)	-0.098*** (0.026)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
y2012	-0.097***	-0.113***	-0.097***	-0.101***	0.000	0.000	0.000	0.000

	(0.030)	(0.028)	(0.030)	(0.028)	(0.000)	(0.000)	(0.000)	(0.000)
y2013	-0.125***	-0.140***	-0.125***	-0.128***	0.000	0.000	0.000	0.000
	(0.031)	(0.029)	(0.031)	(0.029)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.802***	0.814***	0.797***	0.820***	-0.000	-0.000	-0.000	-0.000
	(0.136)	(0.136)	(0.136)	(0.135)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	1,111	1,111	1,111	1,111	1,128	1,128	1,128	1,128
R-squared	0.217	0.218	0.216	0.224	0.033	0.039	0.031	0.039

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

For the robustness check we remove subsidiary banks that are under control of banking groups head organizations and top-5 banks that control more than 40% of the market and, hence, may not be taken under strict control of market discipline. The descriptive statistics are presented in Table 4 below.

Table 4. "Pure" dataset descriptive statistics

	Description	Observations	Mean	Standard deviation	Minimum	Maximum
Dependant variables						
MS_DFL	Market share of a bank in terms of deposits	1,097	0.0100	0.0682	4.13e-08	1.398
MS_CA	Market share of a bank in terms of total assets	1,097	0.00660	0.0321	4.54e-06	0.387
Lerner	Lerner index (individual measure of market power of a bank)	1,097	0.554	0.196	0.0121	1.000
HHIind	Individual Herfindal-Hirschman index based on market share in terms of deposits	1,097	0.00223	0.0298	0	0.812
Explanatory variables						
VD	Total index of information disclosure based on S&P methodology	1,097	7.849	6.485	0	22
VD1	Total index for the first bloc "Ownership and group structure"	1,097	1.147	1.177	0	6
VD2	Total index for the second bloc "Financial and operation information"	1,097	6.194	5.322	0	15
VD3	Total index for the third bloc "Board and management structure and process"	1,097	0.508	0.751	0	4
NPL	Ratio of nonperforming loans over total loan portfolio	1,042	0.0364	0.0445	3.44e-07	0.493
CRISIS	Dummy-variable for crisis periods (2008-2010)	1,097	0.299	0.458	0	1

IntL	Dummy-variable for international listing	1,097	0.0119	0.108	0	1
MOEX	Dummy-variable for listing on Moscow Exchange	1,097	0.102	0.303	0	1
government	Dummy-variable for government owned banks	1,097	0.0483	0.215	0	1
foreign	Dummy-variable for foreign owned banks	1,097	0.207	0.405	0	1
size	Natural logarithm of bank's total assets	1,097	17.29	1.670	44105	23.52

According to the results (see Table 5 and 6 below), information disclosure is again considered as a positive signal during crisis times: higher transparency corresponds to market share in terms of deposits. However, the results are opposite for the market share in terms of total assets rather indicating in favor of proprietary cost hypothesis. The results for Lerner and Herfindal-Hirschman index are similar to the findings for the whole sample.

Table 5. Effect of information disclosure on bank market share, reduced sample (robust standard errors in parentheses)

Variables	MS_DFL	MS_DFL	MS_DFL	MS_DFL	MS_CA	MS_CA	MS_CA	MS_CA
VD	-0.000 (0.000)				0.000 (0.000)			
VD1		-0.004*** (0.002)				-0.000 (0.000)		
VD2			-0.000 (0.000)				0.000 (0.000)	
VD3				-0.001 (0.002)				-0.000 (0.000)
NPL	-0.014 (0.036)	-0.034 (0.034)	-0.012 (0.035)	-0.039 (0.030)	0.003 (0.004)	0.004 (0.004)	0.003 (0.004)	0.005 (0.003)
NPL_VD	-0.005 (0.003)				0.000 (0.000)			
NPL_VD1		-0.012 (0.019)				-0.000 (0.002)		
NPL_VD2			-0.006 (0.004)				0.000 (0.000)	
NPL_VD3				-0.026 (0.031)				-0.003 (0.003)
CRISIS	0.003 (0.005)	0.005 (0.005)	0.003 (0.005)	0.005 (0.005)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)
CRISIS_VD	0.001** (0.000)				-0.000* (0.000)			
CRISIS_VD1		0.003** (0.002)				-0.000 (0.000)		
CRISIS_VD2			0.001** (0.000)				-0.000** (0.000)	
CRISIS_VD3				0.004				-0.000

				(0.003)				(0.000)
MOEX	0.005	0.006	0.005	0.005	-0.001***	-0.001**	-0.001***	-0.001**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.000)	(0.000)	(0.000)	(0.000)
IntL	-0.116***	-0.110***	-0.116***	-0.116***	-0.008***	-0.008***	-0.008***	-0.008***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.002)	(0.002)	(0.002)	(0.002)
government	0.009	0.005	0.009	0.007	0.000	0.000	0.000	0.001
	(0.014)	(0.014)	(0.014)	(0.014)	(0.002)	(0.002)	(0.002)	(0.002)
foreign	0.000	0.001	0.000	0.000	0.001	0.001	0.001	0.001
	(0.007)	(0.007)	(0.007)	(0.007)	(0.001)	(0.001)	(0.001)	(0.001)
size	0.002	0.002	0.002	0.002	0.002***	0.002***	0.002***	0.002***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.019	-0.025	-0.020	-0.019	-0.027***	-0.027***	-0.027***	-0.027***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.003)	(0.003)	(0.003)	(0.003)
Observations	1,053	1,053	1,053	1,053	1,053	1,053	1,053	1,053
R-squared	0.097	0.102	0.096	0.094	0.140	0.137	0.141	0.139

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

Table 6 Effect of information disclosure on bank market power and bank concentration level, reduced sample (robust standard errors in parentheses)

Variables	Lerner	Lerner	Lerner	Lerner	HHIind	HHIind	HHIind	HHIind
VD	-0.001				-0.000			
	(0.001)				(0.000)			
VD1		0.009				-0.002**		
		(0.008)				(0.001)		
VD2			-0.002				-0.000	
			(0.002)				(0.000)	
VD3				-0.005				0.000
				(0.011)				(0.002)
NPL	0.544***	0.602***	0.538***	0.426***	0.001	-0.011	0.003	-0.012
	(0.168)	(0.161)	(0.166)	(0.146)	(0.026)	(0.025)	(0.026)	(0.022)
NPL_VD	-0.013				-0.002			
	(0.016)				(0.002)			
NPL_VD1		-0.142				-0.003		
		(0.091)				(0.014)		
NPL_VD2			-0.015				-0.003	
			(0.020)				(0.003)	
NPL_VD3				0.009				-0.010
				(0.145)				(0.023)
CRISIS	-	-	-	-	-0.001	0.001	-0.002	0.001
	(0.024)	(0.023)	(0.024)	(0.022)	(0.004)	(0.004)	(0.004)	(0.003)
CRISIS_VD	0.002				0.000*			
	(0.002)				(0.000)			
CRISIS_VD1		0.009				0.001		
		(0.008)				(0.001)		
CRISIS_VD2			0.001				0.001**	
			(0.002)				(0.000)	
CRISIS_VD3				0.041***				0.001
				(0.013)				(0.002)
MOEX	0.012	0.009	0.012	0.006	0.004	0.004	0.004	0.003

	(0.020)	(0.020)	(0.020)	(0.020)	(0.003)	(0.003)	(0.003)	(0.003)
IntL	-0.006	-0.008	-0.010	-0.002	0.094***	0.092***	0.094***	0.095***
	(0.065)	(0.065)	(0.065)	(0.065)	(0.010)	(0.010)	(0.010)	(0.010)
government	0.058	0.065	0.057	0.038	0.004	0.001	0.003	0.002
	(0.068)	(0.067)	(0.067)	(0.067)	(0.011)	(0.011)	(0.011)	(0.011)
foreign	-0.024	-0.023	-0.024	-0.021	-0.000	0.001	-0.000	0.000
	(0.035)	(0.035)	(0.035)	(0.034)	(0.005)	(0.005)	(0.005)	(0.005)
size	-0.006	-0.008	-0.006	-0.008	0.000	0.001	0.000	0.000
	(0.009)	(0.009)	(0.009)	(0.008)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.704***	0.721***	0.700***	0.733***	-0.003	-0.008	-0.003	-0.005
	(0.136)	(0.136)	(0.136)	(0.135)	(0.021)	(0.021)	(0.021)	(0.021)
Observations	1,042	1,042	1,042	1,042	1,053	1,053	1,053	1,053
R-squared	0.255	0.256	0.255	0.261	0.094	0.095	0.094	0.090

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

4. Conclusion

Information disclosure plays an important role in dealing with market failures due to information asymmetry in a financial system. However, the effect of higher transparency is not unambiguous and before imposing the appropriate regulation policies it is necessary to understand the effects of and motivation for voluntary reporting of information by financial institutions.

In this paper we examine an additional incentive of banks to report or underreport their financial and operating information. In particular, we study whether there is a link between bank transparency and bank market power. Revealing more information can attract more depositors and investors, thus, improving the market position of a bank. On the other hand, revealed information can attract new entrants due to positive signaling, thus, impeding the market power of the existing banks.

Our results indicate that information disclosure is considered as a positive signal during the crisis period. More transparent banks have larger market share in terms of deposits and total assets during the crisis times. This link, however, depends on bank asset quality. Banks with higher levels of non-performing loans have lower bank market share when more information is disclosed. The findings with respect to market power measured as Lerner index is rather ambiguous and need further investigation.

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