Does Banking System Transparency Enhance Bank Competition? Cross-Country Evidence[1]

[PRELIMINARY, DO NOT CITE]

Irina Andrievskaya[2], Maria Semenova[3]

Abstract: There seems to be a consensus among regulators and scholars that in order to improve the functioning of a banking system and to stimulate bank competition, it is necessary to raise the level of banking system transparency. However, empirical studies that examine determinants of competition in a financial sector, the effect of competition on financial stability or the relationship between transparency and bank stability, leave aside the link between transparency and competition. The aim of this paper is to fill the gap in the literature with this respect. To test the hypothesis that greater bank information disclosure is associated with lower market power and lower concentration in the banking system, we use country-level data covering 213 countries all over the world. The period under consideration includes the years 2001, 2005 and 2010, which correspond to the years of the World Bank's Banking Regulation and Supervision Survey rounds. Our findings do not always support the regulators' predictions: higher transparency does not result into reduction of the market power, lowering, however, the concentration level.

Keywords: Banking system, transparency, competition, concentration.

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[2] abcdirina@yandex.ru, PhD, Research Fellow, Center for Institutional Studies, National Research University Higher School of Economics, Moscow, Russia

[3] msemenova@hse.ru, Research Fellow, Associate Professor, Center for Institutional Studies, National Research University Higher School of Economics, Moscow, Russia

1. Introduction

Competition plays an important role for the efficient functioning of a market. It leads to lower prices, better product quality and less moral hazard by market participants, as well as it fosters innovation activity.

Competition is important for a financial system as well. It affects production and quality of financial services and products, influences the level of innovations in the system and etc. However, the consequences of competition in a financial system are not that unambiguous. Some papers confirm the *competition-fragility* hypothesis[4] (cf. [Berger et al., 2009], [OECD, 2010]), while some other empirical studies ([Boyd, De Nicolo, 2005]; [Schaeck et al, 2009]; [Allen et al, 2011]; [Schaeck, Cihak, 2013]) provide evidence in favor of the positive link between competition and financial stability (*competition-stability hypothesis*). Moreover, some theoretical and empirical investigations confirm the importance of competition in a financial sector for the access to the financial services by firms and households (cf. [Petersen, Rajan 1994], [Thakor, 2000])

Therefore, what follows from the research on competition in a financial system is that competition definitely matters – positively or negatively - for the efficient functioning of a financial market and should be examined and regulated as a part of broader set of objectives such as financial stability, efficiency and etc. This follows also from the detailed literature review and discussion with respect to competition and competition policy in a financial system presented in [Claesens, 2009].

Regulators often assume that in order to influence the level of competition greater banking system transparency should be put into practice. This is emphasized, for example, by Mr Randall S Kroszner (member of the Board of Governors of the US Federal Reserve System)[5]: "Better credit-term disclosures permit better-informed credit decisions and lead to more intense competition among creditors. In a nutshell, effective disclosure empowers consumers to choose wisely and enhances competition. … The Federal Reserve is working diligently to best use its authorities to provide both creditors and consumers with rules that strike the right balance between ensuring that consumers receive useful information at an appropriate time ….". Moreover, in some countries' financial regulation strategy the necessity of greater transparency is explicitly assumed as an important factor for improving the competitive environment in a banking sector. As follows from the OECD report, such an idea is present in the Australian banking sector regulation approaches:

[4] The hypothesis states that greater competition leads to instability in a financial market. This could happen due to the fact that in competitive environment banks try to increase their earnings taking more risks, which ultimately could destroy the well-functioning of the whole financial system.

[5] Speech by Governor Randall S. Kroszner at the Federal Reserve Bank of Cleveland Community Development Policy Summit, Cleveland, Ohio, June 11, 2008 http://www.federalreserve.gov/newsevents/speech/kroszner20080611a.htm

"regulation of all markets for goods and services can be categorized according to three broad purposes: (1) to ensure that markets work efficiently and competitively. Regulation for this purpose includes rules designed to promote adequate disclosure, prevent fraud or other unfair practices and prohibit anti-competitive behavior such as collusion or monopolization." [OECD, 1998]

As it is emphasized in [Claessens, 2009], the factors that affect competition in a financial sector should be taken from the industrial organization theory. The industrial organization argumentation indeed suggests the positive link between transparency and competition. First of all, greater transparency can impair competition by revealing some strategic information and, thus, reducing the competitive advantage of the disclosing organization [Darrough, 1993]. Furthermore, Leuz and Wysocki [2008] argue that disclosure costs can impede the functioning of smaller institutions as compared to the larger ones due to economies of scale effect. At the same time mandatory disclosure requirements make it easier for new entrants to operate in the market, which raises the level of competitions.

However, the specificity of the banking sector (at least compared to the non-financial firms) makes the effect of greater transparency more complicated and ambiguous due to the high degree of information asymmetry impaired into the banking business. Some studies show that greater disclosure of information tightens oligopoly (as opposed to monopoly, cf. [Bikker, Spierdijk, 2009]), improves social welfare and increases market discipline on banks (cf. [Cordella, Yeyati, 2002], [Boot, Schmeits, 2000], [Hyytinen, Takalo, 2003], [Baumann, Nier, 2003]) while enhancing financial stability (cf. [Nier, 2005]) and decreasing the lending corruption (cf. [Barth et al., 2009]).

First of all, the overreaction to potentially noisy public signals can appear in the market (Morris, Shin, 2002), (Cordella, Yeyati, 1998), (Chen, Hasan, 2005). Secondly, as Moreno and Takalo [2012] show, there is an optimal level of transparency after which the total welfare (which is the creditors' ex-ante expected payoffs in their model) starts to decrease. Higher transparency may lower the willingness of creditors to roll over their funds (if they get a negative information signal) and, therefore, banks have to compensate this by raising their risk-taking appetite. In [Landier, Thesmar, 2011], in turn, it is argued that higher transparency reduces social welfare due to the fact that complex financial information could be analyzed mainly by some advanced agents. This leads to the creation of asymmetric information in the market which, as a result, could become illiquid and even collapse. Moreover, financial institutions could manipulate disclosures, therefore, creating inefficiencies in the market. Or some shadow systems (such as shadow banking) could appear in order to avoid excessive disclosure requirements. Furthermore, as it is shown in [Chen, Hasan, 2005], an increase in the level of transparency in the banking system can lead to the higher probability of bank runs. The idea is that depositors tend to extrapolate information about other

banks on their own bank (the spillover effect). The authors demonstrate that under certain assumptions (such as that mangers of banks do not control the time of the information release) in a situation when banks' returns are highly correlated the effect of higher transparency could be the increased probability of bank runs and, thus, the reduction in depositors' welfare. Importantly, this effect could be lowered by introducing a deposit insurance scheme.

Within empirical research there are several studies that examine determinants of competition in the banking system. Claessens and Laeven [2004], for instance, find that competition is affected by bank concentration (positive relationship), activity restrictions (reduce competition) and foreign ownership (increases competition). In [Bikker et al., 2007], in turn, the significant determinants include the real GDP growth rate (negatively affects banking competition), investment climate (expressed by economic freedom indices, better investment climate corresponds to the higher level of competition), banking regulation (expressed by economic freedom regulation index, more extensive regulation leads to the higher level of competition) and the history of the countries' economic systems (in countries with socialist history competition is lower). While Delis [2012] particularly emphasizes the importance of institutional environment as a factor increasing bank competition. Despite the fact that numerous possible determinants of competition have been examined, such an important factor as banking system transparency is still left out of consideration.

The aim of this paper is, therefore, to fill this gap related to the link between bank information disclosure and bank competition and market power. It should be noted, that we consider *mandatory* disclosure (as opposed to the *voluntary* disclosure) for we are interested in the effect of regulation on the bank competition.

The hypothesis we test is that higher transparency is associated with greater competition and lower market power in the banking system, thus, contributing to the strand of the literature that studies the link between competition and concentration.

We use the data covering 213 countries from all over the world. The period under consideration includes the years 2001, 2005 and 2010. The data is taken from the World Bank (WB) databases and the World Bank's Banking Regulation and Supervision Surveys (which limit us to the mentioned years).

Our results confirm the existence of the link between competition and transparency, as well as between concentration and transparency. However, this link is contrary to the expectations. Higher information transparency is associated with higher bank market power (measured by Lerner index) and at the same time with lower bank concentration. This result indirectly confirms the fact that concentration does not reflect the level of competition in a market.

The paper is organized as follows. In the next section we present our methodology and describe data that we use. Section 3 presents the major findings. Section 4 concludes.

2. Data and Methodology

In order to examine the link between the level of competition and concentration and the level of information disclosure in the banking system, we use the following econometric model:

$$Y_{it} = \beta_i + \gamma Transp_{it} + \alpha Z_{it} + \varepsilon_{it}$$

Dependent variables (Y_{it}) include the average banking sector Lerner index as a proxy for the level of *bank competition* in a country and the share of three largest banks' assets in total banking system assets as a proxy for the level of *bank concentration*[6]. We separately estimate the model for each of these banking sector characteristics.

Lerner index is a standard measure of the market power in the banking system (as well as in any other market) [Berger et al., 2008]. The idea behind it is to compare prices of output (P_i) and its marginal costs (C_i) of a bank *i*. The index is expressed as the following [Lerner, 1934]:

$$LernerIndex_i = \frac{P_i - MC_i}{P_i}$$

In application to the banking system, it is calculated following the methodology proposed in [Demirgüç-Kunt, Martínez Pería, 2010] and implemented by the World Bank. The price is expressed as the ratio of total bank revenues to total bank assets, while marginal costs are calculated by taking the derivative from the translog cost function with respect to the output (which is represented, within this framework, by total bank assets). Higher Lerner index reflects higher market power.

It should be noted that this index is calculated separately for each country. Therefore, it takes into account different technologies and other factors in countries [Berger et al., 2008].

The explanatory variable of the largest interest for us is the proxy for the banking system transparency ($Transp_{it}$), constructed following an approach proposed in [Semenova, 2012] (*transparency index*).

The *transparency index* is based on the survey questions related to bank disclosure and transparency:

[6] We use this simple measure of concentration as, according to (Bikker, Haaf, 2002), different concentration indices result in similar rankings of countries. Moreover, rankings of countries based on HHI and the share of the largest 3 banks are the closest (with correlation 0,98).

- *Are off-balance sheet items disclosed to the public?*
- *Must banks disclose their risk management procedures to the public?*
- *Are bank directors legally liable if information disclosed is erroneous or misleading?*
- *Is an outside licensed audit obligatory for a bank?*

A positive answer for each question receives 1 point and a negative one receives 0 points. The maximum level of the index is, therefore, equal to 4 (minimum is 0).

To capture cross-country macroeconomic and banking system differences we introduce a number of control variables (Z_{it}). All these variables could possibly influence the level of bank competition and concentration. Most of them, indeed, are found to be important determinants of competition in other studies (cf. [Claessens, Laeven, 2004], [Bikker et al., 2007]).

First of all, we include a proxy for the institutional environment expressed as the sum of the Worldwide Governance Indicators[7]. Better quality of institutions in a country should stimulate competition in the financial system. The indicators reflect six dimensions of the governance:

- Voice and Accountability
- Political Stability and Absence of Violence/Terrorism
- Government Effectiveness
- Regulatory Quality
- Rule of Law
- Control of Corruption

Each indicator ranges from -2.5 to 2.5. We take their sum as, according to [Langbein, Knack, 2009], "they appear to say the same thing, with different words".

We separately control for the degree of the government control and intervention into the banking markets. We measure it by the Financial freedom index provided by the Heritage foundation[8]. The index covers the following aspects: government regulation of financial services and credit allocation, state intervention in credit institutions through different types of ownership, the level of financial and capital market development and the openness to the competition from abroad. The higher the level of the index, the lower is the government intervention in the banking system.

Using the WB Bank Regulation and Supervision Survey data, we also directly control for the shares of the government and foreign ownership in the banking system, measuring them by the

[7] For the detailed description of the indicators see http://info.worldbank.org/governance/wgi/index.aspx#home
[8] For the detailed description of the index see http://www.heritage.org/index/financial-freedom

ratio of the state-owned banks' assets and the foreign-owned banks' assets over the banking system total assets respectively.

Some studies (cf. [Claessens, Laeven, 2004], [Bikker et al., 2007]) show that competition can be impeded by the higher entry barriers. Therefore, we include a proxy for entry restrictions expressed as the share of bank licenses denied in total number of licenses applied for (the WB Bank Regulation and Supervision Surveys provide these data). This indicator should negatively influence the level of bank competition and at the same time positively affect the level of bank concentration.

We also control for the size of the banking system (using the ratio of total banking system deposits over country's GDP); for the existence of deposit insurance scheme using the corresponding dummy variable; for the degree of the economic development (employing GDP per capita, the growth rate of the real GDP and the inflation rate expressed as the average consumer price index). All the indicators are provided by the World Bank Indicators database.

We separately carry out estimations taking into account the level of countries' economic development. In better developed countries agents could be more financially educated and could analyse information more efficiently. Therefore, information disclosure would be more useful for the purpose of regulation and indeed would lead to lower concentration and higher competition. According to the World Bank,[9] developing countries comprise low and middle income economies, while developed countries consist of high income economies. We include dummy for the countries' economic development multiplied by the transparency index.

The Bank Regulation and Supervision Survey covers only the years 2001, 2005 and 2010. Therefore, we limit our period by these years. Countries under consideration include 213 developed and developing economies all over the world. The panel is unbalanced.

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

Table 1. Descriptive statistics

Variable	Variable description	Observations	Mean	Std. Dev.	Min	Max
bc3	The share of the largest 3 banks' assets in system total assets	436	71.188	20.235	23.062	100.000
ler	Lerner Index	351	0.262	0.112	0.019	0.695
transparency	Transparency Index	421	3.173	0.831	1.000	4.000
p_monitoring	Private monitoring index	421	2.815	0.951	1.000	5.000
disclosure	Disclosure index	425	5.555	1.329	1.000	9.000
bd	The share of banking system total deposits in GDP	492	49.624	46.214	2.791	333.857
gdpc	Real GDP per capita	573	10740.29	17805.94	92.015	151128.1
ln_gdpc	Ln(Real GDP per capita)	569	4.205	5.009	-14.790	63.380

[9] http://data.worldbank.org/about/country-classifications/a-short-history

ccp	Average consumer price index (annual percentage change)	517	7.508	23.482	-40.078	359.937
iq	Composite index of institutional quality	577	-0.216	5.607	-13.990	11.630
ent_int	Entry barriers (the share of bank licenses that were denied in the total number of licenses that have been applied for)	269	18.128	31.868	0.000	100.000
dep	Dummy variable for deposit insurance scheme (1 corresponds to the existence of the scheme, o – otherwise)	421	0.575	0.495	0.000	1.000
st_int	The share of state-owned banks' assets in system total assets	366	14.728	19.987	0.000	96.000
for_int	The share of foreign-owned banks' assets in system total assets	357	43.797	33.752	0.000	100.000
ff	Financial freedom index	463	50.130	20.502	10.000	90.000
developed	Dummy variable (1 for developed countries, 0 otherwise)	619	0.333	0.472	0.000	1.000

We estimate the model using the panel data random effect model. The choice among pooled OLS, fixed effect and random effect models is based on a set of appropriate tests (the Hausman test, the Breusch-Pagan test and the test for differing group intercepts).

3. Results

The results of the estimations for concentration and competition are presented in Tables 2 and 3 respectively. Our findings contradict the common view of policy-makers that greater information disclosure is undoubtedly necessary for better functioning of the financial system in terms of competition. The results rather support some theoretical illustrations that excess information disclosure could even deteriorate the social welfare.

The higher level of banking system transparency is associated with the lower level of bank competition and, at the same time, with the lower level of bank concentration. This is evidenced by the significant positive effect of the transparency variable on the Lerner index – meaning higher market power - and by the negative effect of this variable on the bank concentration indicator, respectively. These results are stable for different model specifications (see Tables 2 and 3).

Interestingly, the level of economic development indeed influences the efficiency of information disclosure. Panel B in Table 2 shows that greater transparency in developed countries is associated with lower decrease in bank concentration (though, this results is not stable and depends on the model specification). The increased transparency works well only if the markets are initially less developed and transparent. There is no difference between the effects for developed and developing countries in terms of market power, though (see Panel B, Table 3).

As expected, the higher quality of institutions has the opposite (positive) relation with bank competition. However, it also corresponds to the greater share of the largest 3 banks' assets in total system assets.

Countries where the deposit insurance scheme has been introduced are characterised by lower levels of bank concentration. Moreover, in countries with worse macroeconomic environment the degree of bank concentration is higher. This is confirmed by the fact that inflation is positively linked with the share of the largest 3 banks' assets in total system assets.

Table 2. Transparency Index and Concentration (robust s.e. in brackets)

VARIABLE	Panel A: Without dummy for developed countries				Panel B: With dummy for developed countries			
transparency	-3.824*	-4.185**	-4.168**	-4.328**	-4.239*	-4.801**	-4.815**	-5.344***
	(2.095)	(2.065)	(1.946)	(1.921)	(2.168)	(2.127)	(2.076)	(2.051)
transparency *developed					2.130	3.279*	2.471	3.764**
					(1.951)	(1.829)	(1.793)	(1.654)
bd	-0.070	-0.032	-0.074	-0.044	-0.071	-0.043	-0.072	-0.052
	(0.063)	(0.059)	(0.052)	(0.051)	(0.060)	(0.056)	(0.048)	(0.047)
iq	0.884*	1.879***	1.021**	1.762***	0.516	1.352*	0.657	1.256**
	(0.501)	(0.638)	(0.448)	(0.520)	(0.581)	(0.694)	(0.508)	(0.555)
ent_int	0.014	0.023	0.023	0.024	0.012	0.021	0.024	0.026
	(0.040)	(0.042)	(0.036)	(0.037)	(0.041)	(0.042)	(0.037)	(0.037)
dep	-8.628**	-5.978	-7.403**	-6.192*	-9.131***	-6.332*	-7.813**	-6.079*
	(3.448)	(3.777)	(3.046)	(3.176)	(3.463)	(3.746)	(3.051)	(3.142)
st_int	-0.089	-0.077			-0.092	-0.079		
	(0.082)	(0.084)			(0.082)	(0.083)		
for_int	0.022	-0.006			0.026	-0.000		
	(0.056)	(0.057)			(0.055)	(0.056)		
ff			-0.017	0.002			-0.020	0.001
			(0.088)	(0.086)			(0.087)	(0.084)
gdpc	0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
ln_gdpc		-4.021*		-2.882		-5.068**		-4.535**
		(2.352)		(1.843)		(2.407)		(1.961)
ccp	0.264***	0.269***	0.303**	0.305**	0.262***	0.254***	0.306**	0.290**
	(0.088)	(0.086)	(0.120)	(0.124)	(0.088)	(0.084)	(0.120)	(0.120)
year=2005	2.998	5.168**	2.658	4.220*	3.221	5.509**	3.052	4.806**
	(2.510)	(2.625)	(2.217)	(2.235)	(2.552)	(2.616)	(2.282)	(2.235)
year=2010	-0.657	3.428	0.485	3.344	-0.329	4.121	1.117	4.516*
	(3.312)	(3.511)	(2.684)	(2.675)	(3.352)	(3.521)	(2.786)	(2.743)
Constant	88.595***	118.435***	89.042***	109.547***	88.564***	125.971***	89.419***	122.198***
	(7.602)	(18.868)	(7.681)	(15.625)	(7.573)	(19.186)	(7.603)	(16.376)
N	183	183	201	201	183	183	201	201
chi2	36.74	39.88	29.13	32.08	37.35	43.13	30.07	36.80
r2_w	0.169	0.196	0.121	0.128	0.179	0.222	0.134	0.165

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

Table 3. Transparency Index and Competition (robust s.e. in brackets)

VARIABLE	Panel A: Without dummy for developed countries				Panel B: With dummy for developed countries			
transparency	0.030**	0.029**	0.033***	0.033**	0.033**	0.032**	0.033**	0.033**
	(0.014)	(0.014)	(0.013)	(0.013)	(0.014)	(0.015)	(0.014)	(0.014)
transparency *developed					-0.010	-0.008	-0.001	-0.000
					(0.007)	(0.008)	(0.008)	(0.008)
bd	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
iq	-0.005*	-0.004	-0.006**	-0.006**	-0.003	-0.002	-0.006**	-0.006*

	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ent_int	-0.000**	-0.000**	-0.000***	-0.000***	-0.000**	-0.000**	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
dep	0.001	0.005	-0.013	-0.017	0.004	0.006	-0.013	-0.017
	(0.023)	(0.023)	(0.022)	(0.023)	(0.024)	(0.023)	(0.022)	(0.023)
st_int	0.000	0.001			0.001	0.001		
	(0.001)	(0.001)			(0.001)	(0.001)		
for_int	0.000	0.000			0.000	0.000		
	(0.000)	(0.000)			(0.000)	(0.000)		
ff			-0.000	-0.000			-0.000	-0.000
			(0.000)	(0.000)			(0.000)	(0.000)
gdpc	-0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
ln_gdpc		-0.008		0.010		-0.004		0.010
		(0.011)		(0.011)		(0.012)		(0.011)
ccp	-0.000	-0.001	-0.001	-0.000	-0.001	-0.001	-0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Year=2005	0.066***	0.068***	0.070***	0.072***	0.064***	0.066***	0.070***	0.072***
	(0.015)	(0.014)	(0.014)	(0.013)	(0.015)	(0.014)	(0.014)	(0.013)
Year=2010	0.030*	0.036**	0.029**	0.029*	0.028	0.033*	0.029**	0.029*
	(0.017)	(0.017)	(0.014)	(0.015)	(0.018)	(0.018)	(0.015)	(0.016)
Constant	0.102**	0.168*	0.152***	0.080	0.100*	0.135	0.152***	0.079
	(0.051)	(0.102)	(0.046)	(0.097)	(0.052)	(0.109)	(0.047)	(0.098)
N	158	158	173	173	158	158	173	173
chi2	45.07	50.34	62.28	63.42	45.75	50.65	61.93	63.79
r2_w	0.297	0.301	0.319	0.318	0.295	0.297	0.319	0.318

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

4. Robustness Check: Alternative Measures of Transparency

To check the robustness of our results we use two alternative measures for banking system transparency, also mentioned in the literature, but less directly measuring the disclosure itself. The first one is introduced in [Barth et al., 2002] (*private monitoring index*), the second one is calculated according to the approach of the World Bank (*disclosure index*).

The *private monitoring index* is based on the same survey questions. It is less focused on the disclosure practices and does not take into account the directors' liability – and that's why we use it for the robustness check. It includes the following aspects:

- *The need of an outside licensed audit*
- *Percent of 10 biggest banks rated by international rating agencies (1 – if 100%, 0 – if less than 100%)*
- *Requirement to prepare consolidated accounts for accounting purposes*
- *No explicit deposit insurance scheme*
- *Requirement to include accrued or unpaid interest or principal on nonperforming loans into financial statements and to produce consolidated financial statements.*

The *disclosure index* – employed for the robustness check as well - is constructed using 9 questions from the World Bank Banking Regulation and Supervision Survey. These questions constitute the major part of the "Public disclosure standards" section in the survey and are

considered by the World Bank as important characteristics of information disclosure. They include 4 questions from the transparency index plus the following:

- *Does income statement contain accrued but unpaid interest/principal while loan is performing?*
- *Are consolidated accounts covering bank and any non-bank financial subsidiaries required?*
- *Are off-balance sheet items disclosed to supervisors?*
- *Do regulations require credit ratings for commercial banks?*
- *What percentage of top ten banks is rated by international credit rating agencies?*

Both indices are constructed using the data from the World Bank Banking Regulation and Supervision Survey.

The robustness check (see Tables 4-7) confirms our findings with regard to the positive link between bank concentration and information disclosure. The relation between bank competition and the alternative transparency indices is unclear. This is probably due to the fact that bank concentration is a formal indicator and could be rather easily affected by the regulators. Bank competition, in turn, depends on market participants, which could adjust their behaviour so that to fulfil all formal requirements and at the same time retain their market power.

Our results also indirectly demonstrate that competition and concentration are two different characteristics of the market. The market could be highly concentrated and yet remain rather competitive.

Table 4. Private Monitoring Index and Concentration, robustness check (robust s.e. in brackets)

VARIABLE	Panel A: Without dummy for developed countries				Panel B: With dummy for developed countries			
p_monitoring	-3.725**	-3.587**	-3.638**	-3.428**	-3.888**	-3.895**	-4.031**	-3.993**
	(1.769)	(1.648)	(1.625)	(1.555)	(1.869)	(1.675)	(1.715)	(1.561)
p_monitoring *developed					0.616	1.430	1.298	2.221
					(1.778)	(1.634)	(1.835)	(1.707)
bd	-0.081	-0.046	-0.078	-0.051	-0.081	-0.048	-0.078	-0.055
	(0.061)	(0.058)	(0.050)	(0.050)	(0.060)	(0.057)	(0.049)	(0.049)
iq	1.061*	1.924***	1.135**	1.735***	0.949	1.671**	0.915	1.365**
	(0.551)	(0.623)	(0.464)	(0.498)	(0.615)	(0.709)	(0.564)	(0.608)
ent_int	0.014	0.020	0.022	0.022	0.012	0.017	0.020	0.018
	(0.039)	(0.041)	(0.035)	(0.036)	(0.039)	(0.041)	(0.036)	(0.036)
dep	-4.524	-2.292	-3.055	-2.247	-4.592	-2.383	-3.175	-2.278
	(4.012)	(4.106)	(3.449)	(3.495)	(4.051)	(4.157)	(3.497)	(3.526)
st_int	-0.049	-0.034			-0.049	-0.034		
	(0.086)	(0.089)			(0.086)	(0.088)		

for_int	0.022	-0.003			0.022	-0.002		
	(0.057)	(0.057)			(0.057)	(0.057)		
ff			-0.066	-0.051			-0.064	-0.047
			(0.097)	(0.096)			(0.097)	(0.096)
gdpc	0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
ln_gdpc		-3.517		-2.386		-3.915		-3.055
		(2.430)		(1.866)		(2.439)		(1.902)
ccp	0.251***	0.257***	0.273***	0.273***	0.251***	0.251***	0.276***	0.269***
	(0.082)	(0.078)	(0.105)	(0.106)	(0.083)	(0.078)	(0.104)	(0.102)
year=2005	2.390	4.224	2.216	3.472	2.490	4.444*	2.462	3.860*
	(2.562)	(2.600)	(2.270)	(2.226)	(2.646)	(2.652)	(2.360)	(2.281)
year=2010	-0.930	2.440	-0.391	1.836	-0.830	2.704	-0.091	2.363
	(3.861)	(3.710)	(3.053)	(2.808)	(3.940)	(3.713)	(3.158)	(2.833)
Constant	84.130***	108.868***	86.592***	102.809***	84.147***	111.719***	86.612***	107.494***
	(5.801)	(17.638)	(6.164)	(14.999)	(5.828)	(17.766)	(6.190)	(14.949)
N	183	183	201	201	183	183	201	201
chi2	50.19	55.40	36.86	37.39	49.78	55.58	36.93	40.37
r2_w	0.125	0.150	0.0859	0.0933	0.125	0.153	0.0853	0.0989

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

Table 5. Private Monitoring Index and Competition, robustness check (robust s.e. in brackets)

VARIABLE	Panel A: Without dummy for developed countries				Panel B: With dummy for developed countries			
p_monitoring	0.004	0.005	-0.001	-0.002	0.006	0.007	0.002	-0.000
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
p_monitoring *developed					-0.010	-0.009	-0.008	-0.007
					(0.008)	(0.008)	(0.009)	(0.009)
bd	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
iq	-0.004	-0.002	-0.005	-0.004	-0.002	-0.000	-0.003	-0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)
ent_int	-0.000*	-0.000	-0.000**	-0.000**	-0.000	-0.000	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
dep	-0.002	0.002	-0.014	-0.016	0.000	0.004	-0.013	-0.015
	(0.031)	(0.029)	(0.028)	(0.028)	(0.031)	(0.030)	(0.028)	(0.029)
st_int	0.000	0.000			0.000	0.000		
	(0.001)	(0.001)			(0.001)	(0.001)		
for_int	0.000	0.000			0.000	0.000		
	(0.000)	(0.000)			(0.000)	(0.000)		
ff			-0.000	-0.000			-0.000	-0.000
			(0.000)	(0.001)			(0.001)	(0.001)
gdpc	-0.000		0.000		-0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
ln_gdpc		-0.014		0.007		-0.011		0.010
		(0.012)		(0.013)		(0.012)		(0.013)
ccp	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
year=2005	0.072***	0.075***	0.076***	0.078***	0.070***	0.073***	0.074***	0.076***
	(0.016)	(0.016)	(0.014)	(0.014)	(0.016)	(0.016)	(0.015)	(0.014)
year=2010	0.047***	0.055***	0.049***	0.051***	0.045**	0.052***	0.047***	0.048***
	(0.017)	(0.016)	(0.013)	(0.013)	(0.018)	(0.016)	(0.014)	(0.014)
Constant	0.190***	0.293***	0.242***	0.195**	0.190***	0.269***	0.244***	0.176*
	(0.031)	(0.091)	(0.047)	(0.093)	(0.032)	(0.090)	(0.047)	(0.091)
N	158	158	173	173	158	158	173	173
chi2	49.25	51.67	61.23	61.67	50.58	53.12	63.57	63.91
r2_w	0.273	0.279	0.313	0.313	0.278	0.282	0.318	0.316

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

Table 6. Disclosure Index and Concentration, robustness check (robust s.e. in brackets)

VARIABLE	Panel A: Without dummy for developed countries	Panel B: With dummy for developed countries

disclosure	-3.877***	-3.851***	-3.620***	-3.487***	-4.027***	-4.026***	-3.963***	-3.920***
	(1.129)	(1.118)	(1.107)	(1.116)	(1.190)	(1.172)	(1.163)	(1.147)
disclosure*developed					0.675	1.175	1.124	1.735*
					(1.060)	(1.005)	(1.045)	(0.979)
bd	-0.074	-0.045	-0.078	-0.053	-0.073	-0.047	-0.076	-0.057
	(0.062)	(0.059)	(0.051)	(0.051)	(0.060)	(0.057)	(0.048)	(0.048)
iq	1.251**	2.058***	1.273***	1.842***	1.025*	1.686**	0.958*	1.379**
	(0.511)	(0.622)	(0.457)	(0.500)	(0.600)	(0.706)	(0.542)	(0.580)
ent_int	0.023	0.030	0.027	0.027	0.022	0.028	0.027	0.026
	(0.040)	(0.042)	(0.036)	(0.036)	(0.040)	(0.042)	(0.036)	(0.037)
dep	-7.746**	-5.495	-6.738**	-5.805*	-7.977**	-5.603	-7.007**	-5.686*
	(3.362)	(3.671)	(2.984)	(3.106)	(3.376)	(3.661)	(2.986)	(3.076)
st_int	-0.062	-0.047			-0.064	-0.048		
	(0.085)	(0.088)			(0.084)	(0.087)		
for_int	0.009	-0.014			0.010	-0.012		
	(0.055)	(0.056)			(0.055)	(0.056)		
ff			-0.035	-0.023			-0.035	-0.021
			(0.092)	(0.091)			(0.091)	(0.089)
gdpc	0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
ln_gdpc		-3.496		-2.225		-4.170*		-3.453*
		(2.303)		(1.792)		(2.331)		(1.878)
ccp	0.277***	0.280***	0.326***	0.326***	0.276***	0.271***	0.330***	0.315***
	(0.094)	(0.090)	(0.107)	(0.109)	(0.094)	(0.088)	(0.106)	(0.105)
year=2005	3.575	5.248**	2.790	3.961*	3.749	5.542**	3.216	4.574**
	(2.582)	(2.629)	(2.321)	(2.302)	(2.649)	(2.660)	(2.393)	(2.324)
year=2010	1.371	4.557	1.500	3.567	1.550	4.952	2.032	4.441
	(3.393)	(3.439)	(2.768)	(2.663)	(3.456)	(3.460)	(2.874)	(2.703)
Constant	96.703***	121.471***	95.954***	110.874***	96.692***	125.930***	96.266***	119.808***
	(6.879)	(17.281)	(7.785)	(14.919)	(6.928)	(17.515)	(7.812)	(15.115)
N	183	183	201	201	183	183	201	201
chi2	50.68	55.51	39.29	41.17	49.83	54.80	40.10	45.81
r2_w	0.158	0.182	0.100	0.106	0.161	0.194	0.107	0.128

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

Table 7. Disclosure Index and Competition, robustness check (robust s.e. in brackets)

VARIABLE	Panel A: Without dummy for developed countries				Panel B: With dummy for developed countries			
disclosure	0.010	0.010	0.009	0.008	0.011	0.011	0.009	0.008
	(0.008)	(0.008)	(0.007)	(0.007)	(0.008)	(0.008)	(0.007)	(0.008)
disclosure*developed					-0.005	-0.004	-0.001	0.000
					(0.004)	(0.004)	(0.005)	(0.005)
bd	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
iq	-0.005*	-0.003	-0.006**	-0.005	-0.003	-0.001	-0.005*	-0.005
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ent_int	-0.000*	-0.000*	-0.000**	-0.000**	-0.000*	-0.000*	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
dep	0.001	0.007	-0.015	-0.017	0.004	0.008	-0.014	-0.017
	(0.024)	(0.023)	(0.022)	(0.024)	(0.024)	(0.023)	(0.022)	(0.024)
st_int	0.000	0.000			0.000	0.000		
	(0.001)	(0.001)			(0.001)	(0.001)		
for_int	0.000	0.000			0.000	0.000		
	(0.000)	(0.000)			(0.000)	(0.000)		
ff			-0.000	-0.000			-0.000	-0.000
			(0.000)	(0.000)			(0.000)	(0.000)
gdpc	-0.000		0.000		-0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
ln_gdpc		-0.013		0.006		-0.011		0.006
		(0.011)		(0.012)		(0.012)		(0.012)
ccp	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
year=2005	0.069***	0.073***	0.074***	0.077***	0.068***	0.071***	0.074***	0.077***

	(0.016)	(0.016)	(0.014)	(0.014)	(0.016)	(0.016)	(0.015)	(0.014)
year=2010	0.039**	0.047***	0.041***	0.043***	0.037*	0.045**	0.040***	0.043***
	(0.018)	(0.017)	(0.014)	(0.014)	(0.019)	(0.018)	(0.014)	(0.015)
Constant	0.145***	0.243***	0.198***	0.155*	0.143***	0.221**	0.197***	0.156*
	(0.043)	(0.092)	(0.050)	(0.093)	(0.043)	(0.094)	(0.050)	(0.091)
N	158	158	173	173	158	158	173	173
chi2	47.21	51.52	61.77	62.26	47.42	51.20	61.46	61.92
r2_w	0.275	0.281	0.309	0.310	0.272	0.277	0.309	0.310

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

5. Conclusion

There is an implicit assumption among policy-makers that one of the main impediments to the efficient and stable functioning of the banking system is the lack of sufficient information disclosure by the market participants. Therefore, several policy initiatives have been proposed in order to raise the level of transparency in the market. However, the consequences of such policies are not unambiguous. There are quite a few theoretical studies showing the negative effect of greater transparency on the social welfare and on the stability in the financial system.

Competition is generally considered as a necessary prerequisite for the efficient and stable financial system. Quite many studies have been conducted in order to find the determinants of competition so that to work out the appropriate regulatory policies. However, an important possible determinant – information disclosure - has been left aside. Therefore, this paper is aimed to fill this gap in the literature.

We carry out the cross-country analysis covering 213 countries during the years 2001, 2003 and 2010. Our hypothesis states that there exists a positive link between bank competition and bank information disclosure. We also examine the link between bank concentration and information transparency.

Our results confirm the existence of the link between competition and transparency, as well as between concentration and transparency. However, our findings do not always support the regulators' predictions: higher level of banking system transparency is associated with higher market power of banks. What greater transparency improves is the bank concentration, not competition. More transparent banking markets are less concentrated. This result indirectly confirms the fact that concentration does not reflect the level of competition in the market.

One possible explanation of this phenomenon is that regulation with respect to market transparency is able to keep under control only the formal characteristics of the market (such as the level of bank concentration). At the same time, market participants are able to adjust their behaviour in a favourable for them way retaining market power. This situation, though, differs in more advanced economies, where bank regulation is more efficient in influencing the substance of the market as opposed to the form.

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