The impact of bank ownership concentration on impaired loans and capital adequacy

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Abstract

This paper examines the impact of bank ownership concentration on two indicators of bank riskiness, namely banks' non-performing loans and capital adequacy. Using balance sheet information for around 500 commercial banks from more than 50 countries averaged over 2005–2007, we find that concentrated ownership (proxied by different levels of shareholding) significantly reduces a bank's non-performing loans ratio, conditional on supervisory control and shareholders protection rights. Furthermore, ownership concentration affects the capital adequacy ratio positively conditional on shareholder protection. At low levels of shareholder protection rights and supervisory control, ownership concentration reduces bank riskiness.

1. Introduction

How does concentrated ownership affect bank riskiness? The corporate finance literature comes up with different answers to this question. According to Berle and Means (1933), dispersed ownership reduces the effective power of shareholders to control the management of the firm. Similarly, Shleifer and Vishny (1986) argue that ownership concentration enhances corporate control by improving the monitoring of management. With diffused ownership, shareholders have little incentives to monitor. With concentrated ownership, the cost of shirking will be mostly borne by large shareholders who therefore have a strong incentive to monitor the firm's management.

However, other studies suggest that ownership concentration may not reduce bank riskiness. For example, Burkart et al. (1997) argue that tight outside ownership constitutes an expropriation threat that reduces managerial initiatives and non-contractible investments. According to Gomes and Novaes (1999, 2005), large shareholders can have interests that are different from those of minority shareholders. Moreover, the bargaining problems due to the presence of multiple controlling shareholders may prevent efficient decision-making. Demsetz and Lehen (1985) argue that in heavily regulated industries, such as the financial sector, regulation leads to more effective disciplining of managers. This, in turn, reduces the potential benefits of ownership control. Also Elyasiani and Jia (2008) pose that increased regulation can be a substitute for ownership monitoring.

In this paper, we test the traditional Berle-Means position that ownership concentration improves banking firm performance against the view that ownership concentration does not matter for banks' riskiness, using non-performing loans and capital adequacy as indicators of riskiness.\footnote{Surprisingly, only few studies examine the effect of ownership concentration on bank riskiness. In a recent study, Iannotta et al. (2007) compare the performance and risk of a sample of 181 large banks from 15 European countries and report that ownership concentration is associated with better loan quality, lower asset risk, and lower insolvency risk.} There are two important issues that have to be taken into account when testing these competing hypotheses in the context of the banking industry: the protection of minority shareholders and the protection of deposit holders.

If minority shareholders are hardly protected they may be unable to exert effective control over management (Shleifer and Vishny, 1997). La Porta et al. (1998) report that for non-financial
firms concentration of ownership is negatively related to investor protection. This is consistent with the hypothesis that small, diversified shareholders are unlikely to be important in countries that fail to protect their rights. Therefore, we need to take shareholder protection rules into account in our empirical model.

In addition, we have to take an important difference between a non-financial firm and a banking firm into account. The difference being that banks have depositors and non-financial firms do not. Consequently, bank shareholders may collude with managers against deposit holders to extend high-risk loans, which may result in a high level of impaired loans and inadequate bank capital (Boyd et al., 1998). Additionally, Pathan (2009) argues that strong boards increase the bank’s risk-appetite. To some extent, supervisory authorities act as the representative of deposit holders and safeguard their interests, while deposit insurance schemes protect the wealth of deposit holders. However, these deposit insurance schemes can reduce market discipline (Demirgüç-Kunt and Detragiache, 2002; Demirgüç-Kunt and Huizinga, 2004). Moral hazard problems may arise as bank managers and owners do not bear the full consequences of their actions. Consequently, supervisory agencies will want to keep a check on bank policies. Therefore, we need to incorporate the role of supervisory agencies and deposit insurance regulation into our empirical model.

We analyze data for around 500 banks from more than 50 countries averaged over 2005–2007. We examine whether ownership concentration (i) improves risk-weighted capital adequacy ratios through better risk-taking policies by management, and (ii) decreases the impaired loans to gross loans ratio by reducing the potential moral hazard problem. We find that concentrated ownership significantly reduces a bank’s non-performing loans ratio, conditional on supervisory control and shareholders protection rights. Furthermore, ownership concentration improves the capital adequacy ratio conditional on the extent of shareholder protection.

There are two papers that are related to our study. Caprio et al. (2007) assess the impact of ownership structure of banks and shareholders protection laws on bank valuation using data on 244 banks in 44 countries. They find that ownership structure is an important mechanism for governing banks as (i) larger cash-flow rights by the controlling owner boost valuation, and (ii) weak shareholders protection laws lower bank valuation. In contrast to Caprio et al. (2007), we focus on impaired loans and capital adequacy instead of the value of the bank. Furthermore, our data set is much broader.

The study that comes closest to the present paper is from Laeven and Levine (2008) who assess theories on the relationship between risk taking by banks, their ownership structures and national bank regulations. In line with our findings, these authors report that ownership concentration affects risk taking, conditional on shareholder protection rights and the supervisory environment. However, there are various important differences between both studies. First, Laeven and Levine (2008) only consider ownership stakes of 10% and 20%, whereas our results suggest that at higher levels of ownership concentration the results may be different. Second, these authors proxy bank risks by the so-called Z-score whereas we take the impaired loans ratio and the capital adequacy ratio as proxies for risk. Third, Laeven and Levine (2008) use data for some 300 banks whereas we have a much larger dataset. Finally, we follow Aiken and West (1991) in examining interaction effects and do not draw conclusions on the basis of the (in)significance of interaction terms.

The organization of the remainder of this paper is as follows. Section 2 describes our model, while Section 3 discusses the data. Section 4 reports the main estimation results and the outcomes of a sensitivity analysis. Finally, Section 5 offers the conclusions and discusses some implications of our findings.

2 The model

We use two dependent variables: the impaired loans to gross loans ratio and the capital adequacy ratio. Both variables may be considered as indicators of bank riskiness. The impaired loans to gross loans ratio is a standard proxy for a bank’s asset risk. The capital adequacy ratio plays a central role in the international bank solvency standards of the Basel Committee of the Bank for International Settlements (BIS) and is a proxy for bank capitalization. Demirgüç-Kunt et al. (2006) and Podpiera (2004) show that low capitalization implies that the bank is more risky.

Our explanatory variables are ownership concentration, a proxy for shareholder protection, a proxy for supervisory control, and various control variables that have been suggested in the literature. As argued in the previous section, shareholder protection and

<table>
<thead>
<tr>
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<th>Data sources and expected signs.</th>
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<tbody>
<tr>
<td>Dependent variables</td>
<td>Expected sign</td>
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<tr>
<td>Impaired loans/gross loans</td>
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<td>Risk-weighted capital adequacy</td>
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<td>Explanatory variables</td>
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<tr>
<td>Supervisory control (SC)</td>
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<tr>
<td>Cost/income (efficiency)</td>
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<td>Bank equity (size)</td>
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<td>Activities restrictions</td>
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<td>Loan growth</td>
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<td>Listed bank</td>
<td>Positive/negative</td>
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<tr>
<td>GDP per capita</td>
<td>Negative</td>
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</table>

2 Autore et al. (2009) report that firm value is positively associated with the strength of shareholder rights.

3 Park and Peristiani (2007) analyze the moral hazard problem in the context of banking firms and examine whether bank shareholders have incentives to transfer wealth from the deposit insurer by pursuing riskier strategies. These authors argue that tighter capital rules and more rigorous supervision reduce moral hazard incentives in the banking system. See also Brockman and Yan (2009).

4 Similarly, De Jong et al. (2008) argue that country-specific variables (like shareholder protection rights) directly and indirectly affect firm-specific variables. Their analysis refers to the leverage and capital structure of firms.

5 Both variables arguably compensate each other. A bank with a higher asset risk should have a higher capital ratio. However, if a bank’s impaired loans ratio goes up and the bank does not respond by attracting new capital, the capital ratio will decline.
supervisory control may condition the effect of ownership concentration and we therefore include various interaction terms.6

Our control variables include (i) cost/income ratio, as a proxy for bank efficiency; (ii) bank size (measured by equity), as small banks can behave differently from large banks; (iii) activities restrictions, following Boyd et al. (1998)7; (iv) loan growth as a proxy for a bank’s growth opportunities (Caprio et al., 2007); (v) bank concentration, as a proxy for competition in the banking system (Beck et al., 2006); (vi) a dummy indicating whether the bank is listed or not (Iannotta et al., 2007)8; and (vii) income per capita of the country in which the bank is located (Beck et al., 2006). So our model is:

\[
Q_{ij} = \beta_0 + \beta_1(O_{ij}) + \beta_2(SPR_{ij}) + \beta_3(O_{ij} \times SPR_{ij}) + \beta_4(SC_{ij}) + \beta_5\left(\text{Efficiency}_{ij}\right) + \beta_6\left(\text{Size}_{ij}\right) + \beta_7\left(\text{ActivitiesRestrictions}_{ij}\right) + \beta_8\left(\text{LoanGrowth}_{ij}\right) + \beta_9\left(\text{Concentration}_{ij}\right) + \beta_{10}\left(\text{Listed}_{ij}\right) + \frac{\beta_{11}}{(\text{GDPpercapita})_{ij}}
\]

where \(Q_{ij}\) is the dependent variable (i.e., the impaired loans to gross loans ratio or the capital adequacy ratio) of bank \(i\) in country \(j\), \(OC\) is an indicator of bank ownership concentration, \(SPR\) is our proxy for shareholder protection rights, \(SC\) is a proxy for supervisory control, \(Efficiency\) is the cost to income ratio as proxy for managerial efficiency, \(Size\) is an indicator of bank size, \(Loan Growth\) is an indicator of loan growth, \(Activities Restrictions\) is an indicator showing the extent to which banks are allowed to have various activities, \(Concentration\) is an indicator of the concentration in the banking industry, \(Listed\) is a dummy indicating whether the bank is listed, and \(GDP per capita\) is income per capita of the country in which the bank is located. Table 1 gives the sources of the data and shows the expected signs of the variables used.

3. Data

Our data on bank ownership concentration come from Bureau Van Dijk’s Bankscope database. This indicator characterizes the degree of independence of a company with regard to its shareholders. We collected data for all banking companies for 2005–2007 as reported in the December 2008 version of the Bankscope database. The sample used in the empirical analysis consists of around 500 banks from more than 50 countries. Table 2 shows the distribution of banks according to ownership. Almost two thirds of the banks in our sample have an owner with more than 50% shareholding. Furthermore, 8% of the banks had no shareholder with more than 10% ownership stake; 14% had one or more owners with more than 10% of the shares, but none of them had more than 25% of the shares, and 8% of the banks had one or more shareholders with at least 25% of the shares but less than 50%.

In our empirical analysis we employ three indicators of ownership concentration. Ownership concentration 1 is a dummy that is

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6 In some corporate finance studies, ownership concentration is considered endogenous to firm value. However, we do not consider this to be a problem for our model. First, ownership patterns of firms are generally stable over time and depend on particular histories of corporations (La Porta et al., 2002). Second, our variables of interest are not bank valuation as such. We assume that loan quality and capital adequacy will be directly reflected in banking spreads. Third, bank balance sheet ratios are expected to improve their profitability but also increases risk-taking behavior.

7 According to Boyd et al. (1998), allowing banks to diversify their activities improves their profitability but also increases risk-taking behavior.

8 According to Iannotta et al. (2007), listed banks may face different monitoring and pressure on the management compared to unlisted banks.
dummy that is one in case there is a controlling owner with more than 50% of the shares and zero otherwise.9

From the Bankscope database we also obtained the impaired loans to gross loans ratio, the capital adequacy measure, the cost to income ratio (our proxy for efficiency), equity (our proxy for size), and loan growth. The capital adequacy measure is Tier 1 capital (i.e., the shareholder funds plus perpetual non-cumulative preference shares) as a percentage of risk-weighted assets and off balance sheet risks as measured under the Basel rules. The cost to income ratio measures overhead costs, mainly consisting of salaries.

Our indicator of shareholders protection (SPR) is derived from Djankov et al. (2008), who recently updated the study of La Porta et al. (2002). This indicator includes legal provisions, like cumulative voting or proportional representation of minorities on the board of directors, presence of oppressed minorities mechanism, and proxy votes by mail. It has a scale from 1 (low protection) to 5 (high protection).

We use data on bank concentration from the World Bank’s 2007 Database on Financial Development and Structure. The bank concentration variable used represents the assets of the three largest banks as a percentage of the assets of all commercial banks in the country concerned.

Finally, we calculate variables measuring activities restrictions and supervisory control from the World Bank’s 2007 Regulation and Supervision database. As to activities restrictions (AR), we consider the conditions under which banks can engage in (i) securities activities, (ii) insurance activities, and (iii) real estate activities. The variable ranges from 1 (unrestricted) to 4 (each of the activities is prohibited).

We combine two indicators to construct our proxy for the supervisory regime (Control). The first indicator refers to supervisory agency control and is the total number of affirmative answers to the following questions: (i) Is an external audit a compulsory obligation for banks? (ii) Can the supervisory authority force a bank to change its internal organizational structure? (iii) Can the supervisory agency legally declare that a bank is insolvent? (iv) Can the supervisory authority intervene and suspend some or all ownership rights of a problem bank? (v) Can the supervisory agency superease shareholders rights? (vi) Can the supervisory agency remove and replace management? (vii) Can the supervisory agency remove and replace directors? (viii) Is the minimum capital adequacy requirement greater than 8%? (ix) Can the supervisory authority ask banks to increase minimum required capital in the face of higher credit risk? (x) Can the supervisory authority can banks to increase minimum required capital in the face of higher market risk? and (xi) Can the supervisory authority ask banks to increase minimum required capital in the face of higher operational risk? The second indicator of the supervisory regime measures deposit insurance agency control and is the total number of affirmative answers to the following questions: (i) Can the deposit insurance agency legally declare that a bank is insolvent? (ii) Can the deposit insurance agency intervene and suspend some or all ownership rights of a problem bank? (iii) Can the deposit insurance agency supersede shareholders rights? (iv) Can the deposit insurance agency remove and replace management? and (v) Can the deposit insurance agency remove and replace directors? We aggregate the supervisory control and insurance agency control indicators to construct the regulatory control variable.

In our analysis, we average data on impaired loans to gross loans ratio, risk-weighted capital, equity, cost to income ratio, and bank concentration for the period 2005–2007 in order to cancel out short-term fluctuations. Table 3 shows the summary statistics of our key variables used, while Table A1 in the appendix shows the correlation matrix.

4. Results

We estimate a country random effects model. The use of a fixed effects model is not feasible here because many variables like shareholder protection rights, supervisory control environment, bank concentration and per capita income are the same for all banks in a country. Our main results are shown in Table A2 in the appendix.

In the model for the capital adequacy ratio the coefficients of the control variables have the expected signs, except for the dummy for listed banks. Banks with more growth potential (proxied by loan growth) have higher capital adequacy ratios. The coefficient is significant at the 1% significance level. The coefficient of the cost to income ratio is negative, implying that banks with lower managerial efficiency have lower capital adequacy ratios. However, the coefficient is only significant at the 10% level. Surprisingly, listed banks appear to have lower capital adequacy ratios; this finding is significant at the 1% significance level. The model appears significant at the 1% level of significance according to the Wald chi-square test. Moreover, it also explains more than 30% of the variation in the data.

The model for the impaired loans ratio is significant at the 1% significance level as indicated by the Wald chi-square test. All
variables have the expected sign. However, the only variable that appears significant after controlling for our main variables is the proxy for activities restrictions. It comes up with a positive sign, which indicates that banks that face more restrictions are more risk-taking, which results in lower asset quality.

Before we turn to the results regarding the impact of ownership concentration, it is important to note that inference cannot be based on simple t-statistics because model parameters do not provide substantial information in case of models with multiplicative terms (Brambor et al., 2006). Looking at our results without the correct treatment of interaction terms would suggest that ownership does not matter. However, this is a deceptive finding, As Aiken and West (1991) point out, in interactive models we need to take the derivative of the model with respect to the variable of interest and evaluate its effect on the means of other constituent terms of the derivative. Our key hypotheses relate to the significance of the marginal effect of ownership concentration on our dependent variables. So, we are interested in testing the hypotheses that

\[ H_0 : \beta_1 + \beta_3(\text{PR}) + \beta_2(\text{SC}) + \beta_7(\text{PR}, \text{SC}) = 0 \]
\[ H_1 : \beta_1 + \beta_3(\text{PR}) + \beta_2(\text{SC}) + \beta_7(\text{PR}, \text{SC}) \neq 0 \]

where \text{PR} and \text{SC} are average shareholder protection rights and supervisory control regime, respectively. Rejection of the null hypothesis implies that ownership concentration affects the impaired loans to gross loans ratio or the capital adequacy ratio. In order to assess the significance of the variables of interest, we need to draw confidence intervals, for which standard errors can be calculated following the methodology of Aiken and West (1991).

4.1. Results for the capital adequacy ratio

The basic objective of the paper is to compare banks without shareholders with significant control with banks that do have shareholders with significant control. As pointed out in the previous section, we employ three dummies indicating ownership concentration. The marginal effects and confidence intervals (at a 5% significance level) are shown in Fig. 1. The upper panel shows the marginal effect of ownership concentration on the capital adequacy ratio at different levels of shareholder protection rights. The bottom panel of Fig. 1 shows the same marginal effect conditional on different levels of regulatory control.

Let us start with the results in case we assume that there is concentrated ownership when one or more shareholders own 10% of the bank’s shares (ownership level 1). As Fig. 1 shows, ownership concentration has no significant impact on the capital adequacy ratio when we use this 10% cut-off point of control. The same result shows up if ownership concentration is defined using a 25% ownership stake (ownership level 2). However, if ownership concentration is defined using a 50% threshold (ownership level 3) it has a significant and positive effect on the capital adequacy ratio. Moreover, Fig. 1 also shows that as shareholder protection improves the effect of ownership concentration becomes positive. However, as supervisory control increases the impact reduces. This is in line with the view of Demsetz and Lehen (1985) that in heavily regulated industries, such as the financial sector, regulation leads to more effective disciplining of managers and this, in turn, reduces the benefits of ownership control. So ownership concentration matters less when regulatory control is stronger.

4.2. Results for the impaired loans ratio

The results for the marginal impact of ownership concentration on the impaired loans ratio, conditional on shareholder protection rights and the supervisory control, are shown in Fig. 2. The results for ownership concentration level 1 show a positive impact of ownership concentration on non-performing loans. However, there
is a negative impact of ownership concentration on impaired loans when concentration is defined using cut-off points of 25% and 50% (levels 2 and 3 ownership, respectively), although it is only significant for the latter. This suggests that when concentration exceeds 10%, ownership concentration increases the volume of non-performing loans. However, when it is above 50%, ownership concentration reduces the volume of non-performing loans. Similarly, Jia (2009) finds that accountability to shareholders and depositors gives joint-equity banks a better incentive to engage in prudent lending. These results indicate that when two or three shareholders have blocks of ownership, the quality of the portfolio of the bank may deteriorate for the reasons explained by Gomes and Novaes (1999, 2005). In contrast, when there is one controlling owner, the monitoring of the bank’s management is more efficient, leading to a lower impaired loans ratio.

Another important finding that follows from the lower panel of Fig. 2 is that in case of weaker supervisory control the impact of controlling ownership concentration is negative and significant. This result is in line with the view of Demsetz and Lehen (1985). Furthermore, our results suggest that with higher levels of supervisory control the impact of ownership concentration is not significant, but in the case of a poorer supervisory control regime the impact can be negative and significant.

4.3. Sensitivity analysis

To check whether our results are robust, we (i) applied our analysis to non-OECD banks only, and (ii) used five-year averages instead of three-year averages. The use of only non-OECD countries does not affect our results. However, the explanatory power of the model as indicated by the R-squared is higher. All interaction terms and marginal effects retain their signs. Similarly, the use of five-year instead of three-year averages does not affect our main conclusions (results available on request).

Finally, we have taken the type of ownership into account as this may matter (Iannotta et al., 2007). However, it turned out that more than two thirds of the fully owned firms in our sample were held by some kind of banking conglomerate, while other types of ownership (like government ownership) were less represented in our sample. Furthermore, it turned out that when a bank is owned by a banking conglomerate the latter very often has more than 50% of the shares of the bank. Including a dummy for ownership by a bank holding company in our model would therefore imply a high degree of collinearity with one of our ownership concentration variables. We therefore decided to re-estimate our model dropping all banks that are not owned by a banking conglomerate.\(^\text{10}\)

The estimation results are shown in Table A3 in the appendix, accompanied by Figs. 3 and 4, which are congruent with Figs. 2 and 3. The two figures reveal that these results are very similar to those for the full sample.

5. Conclusions and policy implications

This paper examines the effect of ownership concentration on impaired loans and capital adequacy ratios for a sample of about 800 banks from 50 countries. We find that ownership concentration significantly affects loan quality and bank capitalization, although the results sometimes differ depending on the definition of ownership concentration used. As for the capital adequacy ratio, the effect of ownership concentration is positive and results in a better risk-weighted capitalization, while its effect is negative on

\(^{10}\) Estimating the model for those observations that were dropped does not make sense, in view of the sample size.
Fig. 3. Marginal effect of ownership concentration on capital adequacy ratio controlling for ownership type. This figure examines the impact of ownership concentration on capital adequacy ratio and corresponds to our sensitivity results as given in Table A3. The upper panel shows the marginal effect of ownership concentration at different levels of shareholder protection and the lower panel shows the marginal effect of ownership concentration at different supervisory control levels. The graphs at the left pertain to model 1 where we examine the impact of ownership concentration greater than 10%. The graphs in the middle correspond to model 2 examining the impact of ownership greater than 25% and the graphs at the right represent ownership concentration greater than 50%.

Fig. 4. Marginal effect of ownership concentration on impaired loans to gross loans ratio controlling for ownership type. This figure examines the impact of ownership concentration on impaired loans to gross loans ratio and corresponds to our sensitivity results as given in Table A3. The upper panel shows the marginal effect of ownership concentration at different levels of shareholder protection and the lower panel shows the marginal effect of ownership concentration at different supervisory control levels. The graphs at the left pertain to model 1 where we examine the impact of ownership concentration greater than 10%. The graphs in the middle correspond to model 2 examining the impact of ownership greater than 25% and the graphs at the right represent ownership concentration greater than 50%.
the non-performing loans ratio at least if ownership is above 50% of the shares. We find some evidence for the view of Demsetz and Lehen (1985) who argue that ownership concentration matters less in regulated firms, like banks. However, an important extension to their theory is the level of supervisory control as our results suggest that in case of weak supervisory control, ownership concentration matters. Moreover, our findings tend to support the Berle-Means (1933) view that ownership concentration is associated with superior firm performance. Furthermore, it turns out that shareholder protection matters as suggested by Shleifer and

### Table A1

<table>
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<tr>
<th>Variable</th>
<th>Ownership level 1</th>
<th>Ownership level 2</th>
<th>Ownership level 3</th>
<th>Shareholder protection rights</th>
<th>Supervisory control</th>
<th>Impaired loans/gross loans</th>
<th>Risk-weighted capital adequacy</th>
<th>Activities restrictions</th>
<th>Bank equity</th>
<th>Cost/Income</th>
<th>Loan growth</th>
<th>Bank concentration</th>
<th>Listed bank</th>
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<td>Listed bank</td>
<td>-0.17</td>
<td>-0.17</td>
<td>-0.27</td>
<td>-0.01</td>
<td>0.06</td>
<td>0.13</td>
<td>-0.23</td>
<td>0.15</td>
<td>-0.02</td>
<td>-0.06</td>
<td>0.01</td>
<td>0.07</td>
<td>1.00</td>
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</table>

### Table A2

Estimation results of base model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard error (Robust)</th>
<th>Coefficient</th>
<th>Standard error (Robust)</th>
<th>Coefficient</th>
<th>Standard error (Robust)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership concentration (OC)</td>
<td>-3.011</td>
<td>2.072</td>
<td>0.093</td>
<td>23.210</td>
<td>24.900</td>
<td>26.744</td>
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<tr>
<td>Shareholder protection rights (SPR)</td>
<td>7.633</td>
<td>5.18</td>
<td>4.109</td>
<td>10.776</td>
<td>10.818</td>
<td>11.165</td>
</tr>
<tr>
<td>Supervisory control (SC)</td>
<td>-1.132</td>
<td>0.046</td>
<td>-0.228</td>
<td>0.218</td>
<td>-0.247</td>
<td>0.196</td>
</tr>
<tr>
<td>OC’S PR</td>
<td>1.118</td>
<td>-1.904</td>
<td>-1.248</td>
<td>-5.912</td>
<td>-6.435</td>
<td>-7.760</td>
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<tr>
<td>OC’S SC</td>
<td>2.425</td>
<td>1.86</td>
<td>1.366</td>
<td>3.177</td>
<td>3.152</td>
<td>3.251</td>
</tr>
<tr>
<td>Bank size</td>
<td>-0.089</td>
<td>0.368</td>
<td>0.264</td>
<td>0.842</td>
<td>0.899</td>
<td>1.205</td>
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<tr>
<td>Bank equity</td>
<td>0.287</td>
<td>0.254</td>
<td>0.19</td>
<td>0.466</td>
<td>0.471</td>
<td>0.481</td>
</tr>
<tr>
<td>Cost/income</td>
<td>0.007</td>
<td>0.006</td>
<td>0.005</td>
<td>-0.010</td>
<td>-0.011</td>
<td>-0.008</td>
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<tr>
<td>Loan growth</td>
<td>0.009</td>
<td>0.009</td>
<td>0.009</td>
<td>0.005</td>
<td>0.005</td>
<td>0.005</td>
</tr>
<tr>
<td>Bank concentration</td>
<td>0.381  ***</td>
<td>0.360  ***</td>
<td>0.424  ***</td>
<td>0.594</td>
<td>0.617</td>
<td>0.576</td>
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<tr>
<td>Listed bank</td>
<td>-0.146</td>
<td>0.142</td>
<td>0.134</td>
<td>0.544</td>
<td>0.532</td>
<td>0.47</td>
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<tr>
<td>Loan growth</td>
<td>-0.675</td>
<td>-0.633</td>
<td>-0.56</td>
<td>2.745</td>
<td>2.721</td>
<td>2.627</td>
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<tr>
<td>Bank concentration</td>
<td>0.473</td>
<td>0.458</td>
<td>0.446</td>
<td>0.764</td>
<td>0.748</td>
<td>0.761</td>
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<tr>
<td>Listed bank</td>
<td>1.074</td>
<td>0.993</td>
<td>0.916</td>
<td>4.03</td>
<td>4.01</td>
<td>3.23</td>
</tr>
<tr>
<td>GDP/capita</td>
<td>-1.517</td>
<td>-1.404</td>
<td>-0.817</td>
<td>4.533</td>
<td>4.046</td>
<td>4.687</td>
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<tr>
<td>Constant</td>
<td>1.912</td>
<td>1.876</td>
<td>1.815</td>
<td>7.354</td>
<td>7.171</td>
<td>6.204</td>
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<tr>
<td>Number of observations</td>
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<td>501</td>
<td>501</td>
<td>312</td>
<td>312</td>
<td>312</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.105</td>
<td>0.292</td>
<td>0.306</td>
<td>0.276</td>
<td>0.296</td>
<td>0.329</td>
</tr>
<tr>
<td>Wald chi-squared</td>
<td>78.226  ***</td>
<td>64.016  ***</td>
<td>70.461  ***</td>
<td>54.852  ***</td>
<td>54.281</td>
<td>59.811  ***</td>
</tr>
</tbody>
</table>

* Indicates significance at 10% level.
** Indicates significance at 5% level.
*** Indicates significance at 1% level.
Vishny (1997): with limited shareholders protection rights, the impact of dispersed ownership is insignificant for the capital adequacy ratio, but when protection and/or regulatory control are weak ownership concentration becomes significant.

Our findings may also be relevant for policymakers. First, it is important for supervisors to consider the different impact that their policies may have on banking firms subject to their ownership pattern. Second, our results indicate that when shareholders protection rights are weak, ownership concentration is beneficial for the banking firm. It can compensate for lower shareholder protection and, given a satisfactory level of supervisory control, ownership concentration improves bank performance. Finally, attention needs to be paid to the impact of multiple shareholders with none of them having a controlling stake. Our results suggest that this kind of banks can be a victim of sub-optimal bargaining problems as suggested by Gomes and Novaes (1999, 2005). The design of control mechanism for such special banks should be considered in policy design.

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Appendix A

(See Tables A1-A3).

References


