



Bank ownership and lending behavior

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Abstract

This paper checks whether state-ownership of banks is correlated with lending behavior over the business cycle and finds that their lending is less responsive to macroeconomic shocks than the lending of private banks.

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1. Introduction

While most of the existing literature on the role of state-owned banks focuses on their effect on growth and financial development (La Porta et al., 2002), this paper tests whether state ownership of banks is correlated with bank-lending behavior over the business cycle.¹

There are four possible reasons why state-owned banks may stabilize credit. The first has to do with the fact that their principal (the state) internalizes the benefits of a more stable macroeconomic environment. Therefore, credit stabilization is part of the objective function of state-owned banks. The second has to do with the fact that if bank failures are more likely during recessions and if depositors think that public banks are safer than private banks (because of either implicit or explicit full deposit insurance), the former

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¹ The literature on the relationship between bank ownership and bank performance (Demirgüç-Kunt and Huizinga, 2000; Micco et al., in press) is less related to questions addressed in this paper.

can enjoy a more stable deposit base and hence be better able to smooth credit. A third, less benign explanation, is that lower cyclical stability is due to the fact that managers of state-owned banks do not have a proper set of incentives and that lower cyclical stability is due to the behavior of “lazy” public bank managers. The fourth explanation relates to the possibility that politicians may direct the lending of public banks in order to maximize their probability of reelection (Dinc, 2005 finds that lending of state-owned banks is correlated with the electoral cycle). It is not clear, however, if this would lead to credit stabilization. Such result would require the assumption that the probability of recession is higher during electoral years. This is the opposite of what is predicted by standard political business cycle models.

2. Regressions results

We use the following econometric specification:

$$\begin{aligned} \text{GRL}_{i,j,t} = & \alpha_i + \beta_{j,t} + \gamma_1(\text{YGR}_{j,t} * \text{PUB}_{i,j,t}) + \gamma_2(\text{YGR}_{j,t} * \text{FOR}_{i,j,t}) + \delta(\text{YGR}_{j,t} * \text{SIZE}_i) \\ & + \phi(\text{ELECTION}_{j,t} * \text{PUB}_{i,j,t}) + \varepsilon_{i,j,t} \end{aligned} \quad (1)$$

where $\text{GRL}_{i,j,t}$ measures the growth rate of loans by bank i in country j at time t (measured as the difference between log-loans at time t and log-loans at time $t-1$), α_i is a bank fixed effect, $\beta_{j,t}$ is a country-year fixed effect that controls for all factors that are country-year specific. PUB is a dummy variable that takes value 1 if more than 50% of the bank is owned by the public sector; FOR is a dummy variable that takes value 1 if more than 50% of the bank is foreign-owned; SIZE is a variable that measures relative average bank size (bank's i average total assets divided by average total assets of the banking system in country j); ELECTION is a dummy variable that takes value 1 if country j has a major election in year t ; ² $\text{YGR}_{j,t}$ measures GDP growth of country j at time t and proxies for macroeconomic shocks. The interactions $\text{YGR}_{j,t} * \text{FOR}_{i,j,t}$ and $\text{YGR}_{j,t} * \text{FOR}_{i,j,t}$ measure how lending of public and foreign banks react (relative to private domestically owned banks) to shocks (the main effect of $\text{YGR}_{j,t}$ is controlled for by $\beta_{j,t}$). The interaction between bank size and GDP growth ($\text{YGR}_{j,t} * \text{SIZE}$) is included to control for a possible correlation between ownership type and bank size. We also recognize that, in presence of a correlation between political and business cycle, γ_1 might capture the effect of political lending and control for political lending by including the interaction between public ownership and the election dummy ($\text{ELECTION}_{j,t} * \text{PUB}_{i,j,t}$).³

We use a new data set based on Bankscope but with a more accurate coding of the ownership variable (see Micco et al., in press, for details). The original data set covers the 1995–2002 period and includes 49,804 observations (corresponding to 6628 banks), but the data set used in this paper is significantly smaller (25,325 observations). There are four reasons for this drop in the number of observations: (i) As we work with growth rates, we lose at least one observation for each bank.⁴ (ii) We only include banks for which all the dependent variables used in all regressions are available. (iii) We drop all country-years for which we do not have at least 5 banks. (iv) We drop outliers by excluding the top and bottom 2% of

² We define major elections as legislative elections in countries with a parliamentary system and presidential elections in countries with a presidential system.

³ We would like to thank an anonymous referee for this suggestion.

⁴ We may lose more than one observation per bank because whenever a bank changes ownership we code it as a new bank. We also drop all the bank-year observations in which there is a change in ownership.

observations for each dependent variable and by dropping all observations in which bank-level loan growth is bigger than 100% (in absolute value) and aggregate loan growth is bigger than 50%.

To make sure that our results are not driven by the behavior of few countries with a large number of banks, we weight each observation by the bank's share in total bank assets (this is equivalent to giving each country the same weight).

Regression results are reported in Table 1. We will focus the discussion of the results on our main parameter of interest (γ_1).⁵ A negative value of this coefficient indicates that state-owned banks smooth credit; a positive coefficient indicates the opposite. We start by estimating the model of Eq. (1) by substituting the country-year fixed effects with the main effect of GDP growth (columns 1–3). We do this to show that loan growth is indeed correlated with macroeconomic shocks as measured by GDP growth. Column 1 shows that a 1% increase in GDP is associated with a 1.8% increase in lending of private domestic banks. The coefficient of $YGR * PUB$ is -1.3 , indicating that lending of state-owned banks is much less procyclical than that of private domestic banks. Column 2 focuses on developing countries and finds results that are essentially identical to those of column 1. Column 3 focuses on industrial countries and shows that credit cyclicality is much lower not only in this sub-sample (the elasticity goes from 1.8 to 0.9), but also in this case we find that the lending activity of state-owned banks is less procyclical than that of private banks.

In all three regressions we find that $ELECTION_{j,t} * PUB$ has a positive coefficient and point estimates similar to what found by Dinc (2005). While this provides some evidence for political lending, it is worth mentioning that the coefficients are rarely statistically significant.⁶

In columns 4–6 we estimate the specification described by Eq. (1) (as we include country-year fixed effects we cannot include the main effect of YGR). As before, we find that state-owned bank lending is less pro-cyclical than lending by domestic private banks. Column 4 indicates that state-owned banks are 50% less procyclical than domestic private banks. Column 5 shows that the results for the sub-sample of developing countries are basically identical to the results for the whole sample. This is not surprising, because our estimation method gives the same weight to each country and three quarters of our sample consists of developing countries (hence, from now on we will not discuss the regressions that include both developing and industrial countries). Column 6 shows that in industrial countries the coefficient is much smaller and not statistically significant indicating that lending of state-owned banks is not less procyclical than that of domestic private banks.

The results of columns 5 and 6 are interesting because they indicate that lending of public banks located in developing countries is not more pro-cyclical than lending of public banks located in industrial countries.⁷ This is in contrast with the well-known finding that monetary and fiscal policies are

⁵ While we control for foreign ownership we do not discuss the cyclicality of foreign lending because this would require a more complex model (Galindo et al., 2003). All the results discussed here are robust to including the lagged dependent variable and to estimating the model in levels.

⁶ Like Dinc (2005) we find that the coefficients are larger for developing countries but unlike him we never find that the coefficient is significant in developing countries and not significant in industrial countries (sometimes we find the opposite). This is probably due to differences in the sample. While Dinc (2005) focuses on 36 countries and 2058 observations, our sample includes 119 countries and more than 25,000 observations. The main difference consists in the fact that he focuses on industrial and emerging market countries and our sample of developing countries includes both emerging market and low income countries.

⁷ While the estimations of columns 5 and 6 suggest that lending of public banks located in developing countries is less procyclical than lending of public banks located in industrial countries, a formal test shows that the two coefficients are not significantly different from each other (results available upon request).

Table 1
Credit cyclicality

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
|----------------|-----------------------------------|----------------------|----------------------|----------------------|--------------------|----------------------|-------------------------------------|-------------------|-----------------------------|----------------------|----------------------------|----------------------|
| | Loans growth weighted estimations | | | | | | Loans growth unweighted estimations | | Growth other earning assets | | Growth non-interest income | |
| YGR | 1.810 (0.106)*** | 1.701 (0.230)*** | 0.866 (0.162)*** | | | | | | | | | |
| YGR*PUB | -1.311 (0.154)*** | -1.444 (0.319)*** | -0.591 (0.324)* | -0.536 (0.146)*** | -0.524 (0.308)* | -0.079 (0.346) | -0.885 (0.411)** | 0.468 (1.479) | 0.775 (0.532) | 2.863 (0.502)*** | -0.601 (0.649) | 2.334 (0.807)*** |
| YGR*FOR | -0.352 (0.147)** | -0.435 (0.314) | 1.036 (0.207)*** | 0.426 (0.156)*** | 0.401 (0.334) | 0.767 (0.269)*** | -0.381 (0.357) | 0.470 (1.301) | -0.538 (0.578) | 0.921 (0.390)** | -1.125 (0.701) | -7.356 (0.597)*** |
| YGR*SIZE | -2.554 (0.495)*** | -1.855 (1.096)* | -6.023 (0.531)*** | -1.370 (0.546)** | -1.012 (1.155) | -8.982 (1.202)*** | -2.019 (1.740) | -6.910 (5.128) | -1.324 (1.999) | -2.846 (1.742) | -3.027 (2.450) | -9.303 (2.707)*** |
| ELECTION | -0.005 (0.004) | -0.008 (0.011) | 0.003 (0.003) | | | | | | -0.060 (0.065) | -0.136 (0.026)*** | -0.036 (0.079) | 0.227 (0.047)*** |
| PUB*ELECT | 0.022 (0.009)*** | 0.025 (0.021) | 0.012 (0.007)* | 0.015 (0.009)* | 0.032 (0.020) | -0.042 (0.080) | 0.014 (0.028) | -0.023 (0.036) | 0.010 (0.036) | 0.022 (0.012)* | -0.113 (0.043)*** | -0.040 (0.018)** |
| GRLOANS | | | | | | | | | | | 0.258 (0.036)*** | 0.273 (0.018)*** |
| Observations | 25246 | 5651 | 19595 | 25246 | 5651 | 19595 | 3800 | 1522 | 5587 | 19418 | 5552 | 19332 |
| R ² | 0.45 | 0.46 | 0.43 | 0.69 | 0.70 | 0.61 | 0.666 | 0.58 | 0.59 | 0.54 | 0.60 | 0.51 |
| Group | All | Developing | Industrial | All | Developing | Industrial | Developing | Industrial | Developing | Industrial | Developing | Industrial |

All regressions include bank fixed effects. All regressions in columns 4–14 include country-year fixed effects.

* Significant at 10% confidence level; ** 5% confidence level; *** 1% confidence level.

countercyclical in industrial countries and procyclical in developing countries (see [Gavin and Perotti, 1997](#); [Kaminsky et al., 2005](#), for empirical evidence and [Guerson, 2005](#) for a theoretical model).

Columns 7 and 8 test the robustness of the previous results by using estimations without weights.⁸ While the results for developing countries are similar to the ones described before, we now find that γ_1 is large and positive (but not statistically significant) in the sub-sample of industrial countries.

2.1. Do they smooth or are they just lazy?

So far we provided evidence in support of the idea that state-owned banks play a smoothing role. A less benign interpretation would be that public banks managers are just “lazy” and, lacking incentives to maximize profits, they do not aggressively look for lending opportunities during expansions and do not cut lending during recessions when risk increases. A possible way to discriminate the “useful smoothers” hypothesis from the “lazy managers” hypothesis is to compare how the non-lending activities of public and private banks vary over the business cycle. The last four columns of [Table 1](#) report regressions similar to those of columns 5 and 6 but substitute loans growth with the growth rate in other earning assets (earning assets which are different from loans) and the growth rate of non-interest income (income that derives from fees and services and not from lending activities). The key idea is that, if the previous results were driven by the behavior of lazy public bank managers, columns 9–12 should yield results that are similar to those of columns 5 and 6 (there is no reason why managers of public banks should have a mandate to stabilize non-lending activities).

Columns 9 and 10 show that the growth rate of other earning assets held by state-owned banks is never less procyclical than that of private domestic banks. In fact, in the case of industrial countries, we find that it is significantly more procyclical (possibly due to the fact that state-owned banks smooth more lending than deposits and hence need to substitute lending with other earning assets).

When we focus on non-interest income, we find no statistically significant difference between the behavior of public and private banks located in developing countries and, as in the case of other earning assets, we find that public banks located in industrial countries are more procyclical than their private counterparts.⁹

While our results tend to be consistent with the credit smoothing interpretation, it is difficult to draw strong conclusions from the exercise described above (other earning assets and non-interest income are defined as residual entities and may mean very different things in different types of banks). Hence, we cannot rule out that the observed behavior of public bank managers is driven by either “laziness” or political motives ([Sapienza, 2004](#) documents that lending of Italian public banks is mainly driven by political motives).

⁸ To avoid problems related to including a large number of small banks, we drop all banks which have assets that are less than 1% of total bank assets in the country. This reduces our sample to 5322 observations. In a previous version of the paper, we also tested for reverse causality (countries that have a large share of state-owned banks may be subject to smaller shocks because of the smoothing role performed by these banks) by replacing GDP growth with its exogenous component. We found that controlling for reverse causality strengthens our basic findings of a smoothing role of state owned banks.

⁹ In the regression for non-interest income we control for loans growth because some fees might be related to lending activity. The results are unchanged if we drop this control. When we focus on growth of other earning assets, we find that the coefficient for $YGR * PUB$ in the industrial country regression is not significantly different from that of the developing countries regression. However, the two coefficients are significantly different in the regression for non-interest income (full results available upon request).

3. Conclusions

This paper provides evidence for the fact that state-owned banks may play a credit smoothing role. It shows that their lending is less responsive to macroeconomic shocks than the lending of private banks (both domestically and foreign-owned). This suggests that state-owned banks could play a useful role in the transmission of monetary policy (this is in contrast with the findings of [Cecchetti and Krause, 2001](#), who, however, focus on a different test).

One interesting finding is that lending of public banks located in developing countries seem to be less procyclical (or at least not more procyclical) than lending of public banks located in industrial countries. This suggests that public bank lending in developing countries has a very different response to the business cycle with respect to monetary policy.¹⁰

In future research it would be interesting to explore the determinants of the relationship between bank ownership and credit cyclicity. Is it really true that public bank managers try to smooth the business cycle or are there other motives that lead to the behavior documented in this paper? It would also be interesting to test whether the smoothing behavior documented in this paper is optimal or is just a waste of resources. This last question is particularly important for at least two reasons. First of all, public banks might increase credit but direct it to sectors with low productivity and hence lead to a misallocation of resources. Second, the methodology used in this paper does not allow to investigate the general equilibrium effects of our results. It may be possible that state-owned bank lending crowds out private lending and does not affect aggregate lending during the business cycle. Analyzing such a hypothesis goes beyond the purpose of this paper because it would require moving from micro to macro data leading to much more serious endogeneity issues.

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¹⁰ We would like to thank an anonymous referee for suggesting this interpretation.

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