When Do State-owned Banks Hamper Economic Growth?[†]

Tobias Körner[*]
Ruhr Graduate School in Economics

Isabel Schnabel[**]
University of Mainz, CEPR, and MPI Bonn

March 19, 2009

Abstract:

In an influential paper, La Porta, Lopez-De-Silanes and Shleifer (2002) have documented a strong and negative relationship between state ownership of banks in 1970 and subsequent growth of per capita GDP. We show that this relationship does not hold for all countries. Instead the effect appears to depend on a country's stage of financial development and on the quality of political institutions, as measured by various political and governance indicators. In fact, the negative impact of state ownership on growth is fading when a country's financial system develops. Moreover, the weaker are the political institutions, the stronger is the negative impact. In highly developed countries, we do not find an effect of state ownership on growth at all. This calls into question the broad policy implications that have been drawn from the results by La Porta et al. (2002).

Keywords: State-owned banks, economic growth, financial development, quality of governance, political institutions.

JEL-Classification: O16, G18, G21.

[†]Financial support of the Ruhr Graduate School in Economics is gratefully acknowledged.

[*]Address: Ruhr Graduate School in Economics c/o RWI Essen, Hohenzollernstraße 1-3, 45128 Essen, Germany, +49-201-8149-517, tobias.koerner@rwi-essen.de.

[**]Address: Department of Law and Economics, Johannes Gutenberg University Mainz, 55099 Mainz, Germany, +49-6131-39-24191, isabel.schnabel@uni-mainz.de.

1 Introduction

In an influential cross-country study, La Porta et al. (2002) have documented a strong and negative relationship between state ownership of banks in 1970 and subsequent growth of real per capita GDP. According to their results, an increase in state ownership of banks by 10 percentage points reduces the annual growth rate of per capita GDP by 0.14 to 0.24 percentage points (see their Table V). The study by La Porta et al. (2002) shaped the way public banks are perceived by policy makers all over the world. For example, the World Bank writes in a policy research report, referring to the paper by La Porta et al. (2002), that "new research shows that, whatever its original objectives, state ownership tends to stunt financial sector development, thereby contributing to slower growth" (Caprio and Honohan, 2001). In fact, the privatization of public banks has become a standard recommendation of the International Monetary Fund, not only for developing countries.

However, a closer look at the paper by La Porta et al. (2002) reveals that the results are not as clear-cut as suggested by the authors and by policymakers. In a robustness check, the authors run separate regressions for different country groups, splitting their sample according to several country characteristics (initial income, financial development, and property rights protection, see their Table VIII). These regressions show an even stronger negative effect in countries with low initial income, financial development, or property rights protection, but a much smaller (and often insignificant) effect in the remaining countries. This indicates that the effect of state ownership may not be homogeneous across countries. Nevertheless, the authors' conclusions do not contain any such qualification, stating that "ultimately, [...] government ownership of banks is associated with slower financial and economic development, *including* in poor countries" (La Porta et al., 2002, p. 290, emphasis added).

In this paper, we will argue that an estimation ignoring the heterogeneity of countries is likely to be misspecified. We will show that the theoretical arguments underlying the nexus between state ownership in the banking system and economic growth already suggest heterogeneous effects. In particular, the prevalence and severity of agency conflicts may depend on variables such as financial development or the quality of political institutions. We check empirically whether and to what extent such country characteristics affect the impact of state ownership on economic growth.

Our empirical analysis shows that the impact of state ownership in the banking system

on GDP per capita growth depends strongly on a country's degree of financial development. When a country's financial system is hardly developed, the negative effect of state ownership of banks on economic growth is huge (an increase in state ownership of banks by 10 percentage points reduces the annual growth rate of per capita GDP by about 0.40 percentage points). However, this negative impact is fading when a country's financial system develops. In highly developed financial systems, we do not find any effect of state ownership on growth at all. Moreover, the impact of state ownership on growth depends on the quality of a country's political institutions and governance structures. In countries where political decision makers are relatively free to pursue their private objectives by abusing state-owned banks, we find an even stronger negative effect of state ownership on growth. In contrast, in countries where the actions of potentially self-interested politicians are restricted by well-functioning control mechanisms, the degree of state-ownership in the banking system does not seem to influence the growth rate of per capita GDP at all. In countries with well-developed financial systems *and* good political institutions, the effect of state ownership on growth may even be positive. Therefore, the empirical results do not support the view that state ownership of banks is always harmful for economic growth. In particular, there is no evidence that state ownership hampers economic growth in highly developed countries like Germany or Norway.

In this paper we will proceed as follows. Section 2 gives a brief overview of the related empirical literature. In Section 3, we review the debate about state-owned banks and discuss the conditions under which state ownership of banks can be expected to have an impact on long-run GDP growth. In Section 4, we introduce our empirical model and the data. Section 5 presents the regression results, and Section 6 concludes.

2 Related Literature

Our paper is closely related to the literature on the linkages between the structure of financial systems and economic growth. The study by La Porta et al. (2002) is to our knowledge the only paper dealing with the effect of state ownership in the banking system on economic growth. However, there are a number of papers providing indirect evidence on the relationship between state ownership of banks and economic growth, even though they do not explicitly analyze economic growth.

For example, Detragiache, Gupta and Tressel (2005) examine the determinants of financial sector performance in lower income countries in a cross-country study. Given that financial sector performance has been found to be robustly linked to GDP growth in earlier studies (Levine and Zervos, 1998; Beck, Levine and Loayza, 2000), country characteristics that enhance financial sector performance may be seen as accelerators of long-run economic growth. According to Detragiache et al. (2005), the effect of state ownership of banks for financial sector performance is ambiguous, depending on the particular performance measure and the set of control variables.

A similar approach has been taken by Barth, Caprio and Levine (2004), who analyze the effects of banking regulation and supervision, based on a sample that includes high and low income countries. In their basic regression, they find a significantly negative relationship between state ownership in the banking system and indicators of banking sector development and performance. When they add control variables measuring banking regulation, such as capital regulation and market entry, the sign of the ownership coefficient remains unchanged, but its statistical significance vanishes. This points towards imperfect multicollinearity among the explanatory variables. Nevertheless, Barth et al. (2004) interpret their results as evidence for a negative association between state ownership and financial sector performance.

Another strand of the literature uses individual bank data to shed light on the performance of state-owned banks. In these studies, outcome variables, such as performance, efficiency and loan growth, are related to the ownership status. Micco, Panizza and Yanez (2007) find that state ownership has a negative impact on bank performance in less developed countries, but does not affect the performance in developed countries at all. Dinc (2005) finds that, in less developed countries, state-owned banks' loan growth rate is significantly higher in election years than that of private banks, indicating that the provision of loans is driven by political motives rather than the return prospects of the projects. Interestingly, such an effect cannot be found for developed countries.

3 State Ownership in the Banking System and Economic Growth

The positive impact of financial intermediation on economic growth has been documented widely (see Levine, 2005, for a survey). Theoretically, it can be explained by the ability of financial intermediaries to allocate funds to their most productive use, to diversify risks and to monitor borrowers. Financial intermediaries with a high expertise in collecting and analyzing information about potential borrowers and with sophisticated risk management and monitoring techniques contribute more to economic growth than intermediaries whose intermediation process is of a low quality.

Bank ownership may affect the quality of financial intermediation because of different objective functions of private and state-owned banks or because of different corporate governance structures. The ultimate objective of private banks is profit maximization. It is in the interest of a profit-maximizing bank to collect and analyze information about potential borrowers, to diversify risks and to monitor borrowers after providing a loan. Therefore, a good intermediation quality appears as a "by-product" of profit maximization. Even if there is an agency problem between bank managers and owners, the interests of bank managers can, in principle, be aligned with those of the owners by contracting explicitly on measurable performance outcomes.

State-owned banks are generally believed to follow other objectives than private banks. According to the *social view*, state-owned banks follow social objectives. For example, they finance projects that generate positive externalities and that would not be financed privately, such as infrastructure projects or higher school education (Hainz and Hakenes, 2007). Similarly, they provide financial services to people and in regions that are not served by private banks (Hakenes and Schnabel, 2006). According to the related *development view*, formulated by Gerschenkron (1962), state-owned banks may foster economic development by substituting for private financing in an environment with weak economic institutions.

However, as shown by the recent crisis, banks are also nationalized as a response to financial crises. Often the state continues to be the owner or a major shareholder long after the crisis. In this case, the objectives of state-owned banks may not differ very much from those of private banks.

For state-owned banks, the quality of financial intermediation may be lower due to two potential principal-agent problems: first, between the politician and the state bank manager, and second, between society (the taxpayer) and the politician.

The first agency problem refers to the conflict of interest between the owner, i. e. the state represented by politicians, and state bank managers (this is sometimes called the *agency view*, Sapienza, 2002). For example, soft budget constraints weaken the incentives of state bank managers. According to Megginson (2005, p. 40), this is frequently the source of operational inefficiency in state-owned enterprises. As a consequence, state bank managers might refrain from putting effort into ameliorating the intermediation quality, e. g. by fostering the bank's capacities in risk management. This may even be true if the objective of a state-owned bank is to maximize profits. However, operational inefficiency and as a consequence, low intermediation quality, should be even more pronounced if the state bank's primary focus is on financing socially desirable projects. The reason is that, in such circumstances, it is very difficult to measure the bank manager's performance, implying that a state bank manager cannot easily be held accountable. Thus, due to differing governance structures, state-owned banks potentially produce a lower intermediation quality than their private counterparts.

However, the quality differentials should be less pronounced in well developed financial systems. Even if the incentives to improve intermediation quality are generally weak in state-owned banks, a state bank manager is more likely to adopt new risk management techniques if they are ready-made available at relatively low implementation costs. Likewise, in mature financial systems, state-owned banks benefit from knowledge inflows through well-trained job-market candidates and experienced employees from private competitors. Moreover, well developed financial systems typically are marked by better regulation and prudential supervision. These tend to eliminate quality differentials between state-owned and private banks, in particular with regard to risk management techniques. Finally, competition may be stronger in highly developed financial systems, forcing public banks to provide a higher intermediation quality. Consequently, state-owned banks will benefit from high standards in well developed financial systems. These arguments suggest that a negative effect of state ownership on the quality of financial intermediation, and hence economic growth, may be expected to be less pronounced in highly developed financial systems.

In addition to the principal-agent problem between politicians and state bank managers,

a second conflict of interest may occur between society (the taxpayer) and the politicians. The politicians specify the role and the objectives of state-owned banks and influence their business policies. In doing so, a conflict of interest can arise between the political mandate and private interests. Self-interested politicians may use their influence on state-owned banks to finance projects that yield the highest returns in terms of electoral voting shares, political support, or even bribes. This view on state-owned banks, or state-owned enterprises in general, was termed the *political view* by La Porta et al. (2002). The outcome of this conflict of interest is determined by the quality of political institutions, for example by the degree to which the politicians' actions are made transparent to the public. In an environment of high quality political institutions, where the politicians' actions are largely in line with the mandate of state-owned banks, the *development view* or the *social view* might apply, and state ownership may not be harmful or even beneficial. Thus, the relationship between economic growth and state ownership in banking will also depend on the quality of a country's political institutions.

Summing up, the effect of state ownership of banks on economic growth cannot be expected to be uniform across countries. It should rather depend on country characteristics, such as the level of financial development or the quality of political institutions.

4 Empirical Model and Data

In our empirical analysis, we regress the long-run growth rate of real per capita GDP on state ownership in the banking system, an indicator of financial development, indicators of the quality of political institutions, and on interaction terms between these indicators and state ownership, plus some additional control variables (the initial level of real per capita GDP and a measure of a country's stock of human capital).

However, there is a problem of reverse causality. State ownership is a choice variable for the politicians who could, e. g., try to respond to low growth rates by raising (or lowering) state ownership. Likewise, financial development could occur as a consequence of overall economic development, implying that causation runs from financial development to the long run growth rate of GDP. Therefore, we use starting values for the ownership variable and for the financial development indicator.

Our sample of 82 countries comprises exactly the same countries that La Porta et al. (2002) use in their empirical analysis. In the first part of the analysis, we use cross-sectional data as La Porta et al. (2002). In the second part, we use a two-period panel, with real per capita GDP growth and the explanatory variables measured between 1970 and 1994, and between 1995 and 2007. As will be explained below, the choice of time periods was dictated by data availability. When possible, we use the same data sources as La Porta et al. (2002).

According to the World Bank's classification of income groups, 32 of the sample countries are high-income countries, 27 of which belong to the OECD. The other 50 countries are dispersed over the other income groups (low-income, lower-middle, and upper-middle). They belong to all regions of the world, with the largest number of countries being located in Latin America-Caribbean (19 countries) and in Middle East-Northern Africa (10 countries).

We use the measure of state ownership in the banking system introduced by La Porta et al. (2002). They determine the 10 largest commercial and development banks in each country, and compute the amount of assets owned by the state, taking direct ownership and ownership via state-owned shareholders into account. They measure state ownership in the banking system as the sum of state-owned assets divided by the sum of total assets of all these 10 banks. One caveat of this measure is that it overestimates state ownership in countries where state-owned banks are large, whereas it underestimates state ownership in countries where state-owned banks are small. However, since the 10 largest banks held more than 75 % of the total claims to the private sector in most countries, the potential discrepancy between the ownership measure and the actual degree of state ownership seems negligible.

For the growth rate of real per capita GDP between 1960 and 1995, the indicator of financial development in 1960, the real GDP per capita in 1960, and the stock of human capital we use the same sources as La Porta et al. (2002). GDP growth rates are taken from the International Monetary Fund's International Financial Statistics (IFS). The indicator of financial development, *Private credit*, is defined as the value of credits of financial intermediaries to the private sector divided by GDP. It is also based on IFS data and has been used widely in the finance-growth literature (see e. g., Levine and Zervos, 1998; Beck et al., 2000). *Private credit* measures financial depth, and therefore the extent to which an economy makes use of financial intermediation. It is commonly interpreted

as a proxy for the quality of financial intermediation. A more natural interpretation is that it measures the maturity of a banking system.

As measures of the quality of political institutions, we use four variables: Democracy, Political rights, Corruption control, and Bureaucracy quality. We use democracy indices and assessments of political rights, because high scorers in these areas typically are marked by distinct control mechanisms and high transparency in political decision making. On the other hand, we focus on perceived actual behavior of politicians and bureaucrats, which is reflected in governance indicators such as corruption and bureaucracy quality indices.

The *Democracy* indicator is taken from the Polity IV database. It assesses the prevalence of "three essential elements of democracy", namely institutions through which preferences about alternative policies and political leaders can be expressed, institutionalized constraints on the executive's power, and the guarantee of civil liberties. We use averages of *Democracy* over the period 1960 to 1995.

Political rights is an indicator calculated by Freedom House. Analysts base their ratings on a checklist of questions about the election process, the prevalence of political competition, and the functioning of the government. Countries in which free and fair elections are guaranteed, opposition in form of alternative parties or organizations exists and can be built up, and in which the government is free from corruption and accountable for its actions receive the highest scores. The indicator has been published since 1972, thus we use an average over the period 1972 to 1995.

We expect *Democracy* and *Political rights* to be highly correlated with the prevalence of control mechanisms, such as a free press, a free opposition and a strong and independent jurisdiction, and the degree of transparency in the political process. Thus, in highly-ranked countries, politicians' scope to abuse state-owned banks is likely to be reduced substantially. However, the mere existence of control mechanisms does not automatically mean effective control of politicians' daily actions in the sphere of state-owned banks. Likewise, the absence of democratic institutions does not necessarily mean that decision making in state-owned banks is left to politicians' discretion. Therefore, in our analysis, we also include indicators of the actual perceived quality of governance.

The indicators *Corruption control* and *Bureaucracy quality* are provided by the private company Political Risk Services (PRS). PRS analysts rate countries with regard to corruption within the political system and to the functioning of governmental services. The

PRS definition of corruption comprises "demands for special payments and bribes" in exchange for governmental services and support, but emphasizes "actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favor-for favors', secret party funding, and suspiciously close ties between politics and business." High ratings of *Bureaucracy quality* are given to bureaucracies that provide constant access to governmental services, tend to be "somewhat autonomous from political pressure", and "have established mechanisms for recruitment and training". Since both indicators reach back to 1982, we are able to use averages over the period 1982 to 1995.

In the second part of our analysis, we use basically the same data sources as in the first part, and compute the respective values for the two periods 1970-1994 and 1995-2007. Two exceptions have to be mentioned. First, *State ownership in the banking system* in 1995 is taken from Micco et al. (2007). They follow the methodology of La Porta et al. (2002) in calculating the ownership measure, but consider up to 20 banks in each country, which implies a smaller measurement error. Second, *Corruption control* and *Bureaucracy quality* are taken from the World Bank Governance Indicators (Kaufmann, Kraay and Mastruzzi, 2008). We made these indicators and the PRS indicators comparable by standardization.

The correlations for the 1960-1995 period are displayed in Table 1. *State ownership of banks* is significantly negatively correlated with subsequent real GDP per capita growth whereas the indicator of financial development, *Private credit*, and all political institutions and governance indicators are positively correlated with growth. *State ownership of banks* tends to be higher in financially less developed countries and in countries with weak political institutions and poor governance. The correlation between *Democracy* and *Political rights* is 0.96 indicating that they measure more or less the same. Similarly, the correlation between *Corruption control* and *Bureaucracy quality* is extremely high. The correlation between *Corruption control* and *Democracy* is 0.7, and the correlation between *Corruption control* and *Political rights* 0.65. This is quite high, but it also indicates that democratic structures are not a sufficient condition for corruption prevention.

Table 1 – Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Real GDP per capita growth 1960-1995	1								
(2) State ownership of banks 1970	−0.24**	1							
(3) Private credit 1960	0.32***	−0.25**	1						
(4) Democracy	0.29***	−0.32***	0.44***	1					
(5) Political rights	0.31***	0.31***	0.42***	0.96***	1				
(6) Corruption control	0.25**	−0.33***	0.55***	0.70***	0.65***	1			
(7) Bureaucracy quality	0.40***	−0.47***	0.48***	0.71***	0.68***	0.87***	1		
(8) Real GDP per capita 1960	−0.15	−0.38***	0.38***	0.54***	0.55***	0.64***	0.59***	1	
(9) Schooling	0.28**	−0.36***	0.44***	0.67***	0.67***	0.73***	0.68***	0.69***	1

Note: *, ** and *** denote significance at the 10, 5 and 1%-level, respectively.

Table 2 – Results of La Porta et al.

	All sample countries	Private credit < median	Private credit > median
State ownership of banks	−0.171**	−0.342***	−0.089
	(0.072)	(0.097)	(0.106)
Private credit	0.302***	−0.219	0.239**
	(0.103)	(0.684)	(0.103)
Adjusted R^2	0.39	0.54	0.17
Observations	82	41	41

Notes: The dependent variable is the growth rate of real GDP per capita between 1960 and 1995. Further control variables are real GDP per capita in 1960 and *Schooling* (not displayed). Robust standard errors are given in parentheses. *, ** and *** denote significance at the 10, 5 and 1%-level, respectively.

5 Results

5.1 Baseline Results of La Porta et al.

In a first step, we replicate the main results from La Porta et al. (2002). Table 2 shows their baseline regression of GDP growth on *State ownership of banks* (SOB), *Private credit*, per capita GDP in 1960, and *Schooling*, using either the whole sample or splitting the sample at the median of *Private credit* (see Tables V and VIII in La Porta et al., 2002, p. 285, 291). For the ease of interpretation, we rescaled the growth rate of per capita GDP multiplying it by a factor of 10. The first column shows a large and negative coefficient of *State ownership of banks*, which is statistically significant at the 5%-level. Hence, a 10 percentage point decrease in state ownership would lead to an increase of the long-run growth rate of real per capita GDP by 0.17 percentage points. The sample split in the second and third column points towards the heterogeneity of the marginal effect. In the below-median sample, the marginal effect of state ownership is twice as large in absolute terms, and it is significant at the 1%-level. In contrast, in the above-median sample, the coefficient is close to zero; it is not statistically significant.

5.2 Interaction with Financial Development

The above sample split assumes that there are discrete differences among the two country groups. Given our discussion above, it is more plausible that the impact of state ownership on growth varies continuously with a country's stage of financial development. We

therefore include an interaction term of *State ownership of banks* and *Private credit*. One by one, we also include the political and governance indicators in the regression equation. The model in the sixth column includes all four indicators as control variables (see Table 3). In all regressions, the coefficient of the interaction term has a positive sign, and it is statistically significant at the 1%-level. Thus, there is a strong indication of heterogeneity: the impact of state-ownership on growth significantly and positively depends on financial development.

In order to calculate the effect of state ownership on growth, one has to fix *Private credit* at a certain level. To facilitate the interpretation of the regression coefficients, we substituted the values of *Private credit* by its deviations from the median of *Private credit*. Thus, the coefficient of *State ownership of banks* can be interpreted as the marginal effect of state ownership in the banking system in a country at the median level of financial development. In this country group, which includes countries like Columbia, Mexico or Tunisia, the marginal effect of state ownership in the banking system varies between –0.25 (first column) and –0.15 (sixth column). Thus, the annual growth rate of GDP increases by 0.25 (0.15) percentage points when state ownership decreases by 10 percentage points. Hence, for these countries we can confirm the results of La Porta et al. (2002), who emphasize the strong negative effect of state ownership on economic growth.

However, inspecting the marginal effects over the whole range of *Private credit* (Figure 1), we get a completely different picture for countries in higher stages of financial development. Figure 1 gives a graphical representation of the regression results. It shows the marginal effect of *State ownership of banks*, depending on the level of *Private credit*. The vertical lines give the 10, 25, 50, 75, and 90%-quantiles of *Private credit*.

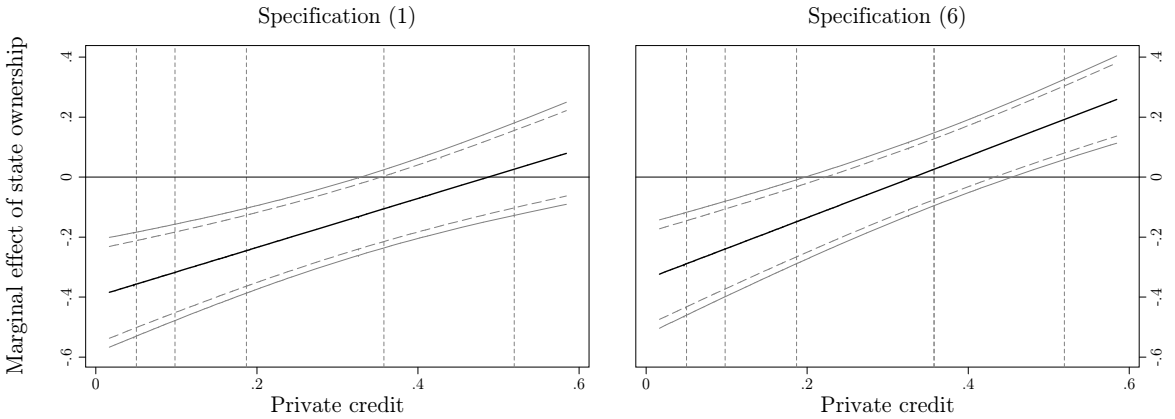
At the 75%-quantile, the marginal effect of state ownership is drastically lower than at the median, ranging between –0.11 (left box of Figure 1) and 0.03 (right box). It is not statistically significant. At even higher levels of financial development, the marginal effect of state ownership becomes positive and large. In the regression with the full set of institutional variables, it even becomes statistically significant: at the 90%-quantile of *Private credit*, where countries like Italy, Japan, and the U. S. can be found, the marginal effect of state ownership is 0.19 and is statistically significant at the 1%-level. At the other extreme, in countries with extremely low developed financial systems, things turn out to be even worse than documented by La Porta et al. (2002). For instance, at the lowest levels of financial development, as observed in Bangladesh, India, Tanzania and

Table 3 – Interaction with financial development

	(1)	(2)	(3)	(4)	(5)	(6)
State ownership of banks	−0.245***	−0.235***	−0.236***	−0.236***	−0.166**	−0.149**
	(0.072)	(0.072)	(0.070)	(0.074)	(0.068)	(0.071)
Private credit	0.013	−0.131	−0.148	−0.007	−0.015	−0.222
	(0.104)	(0.145)	(0.146)	(0.107)	(0.125)	(0.139)
SOB*Private credit	0.816***	0.947***	0.973***	0.762***	0.663***	1.025***
	(0.216)	(0.222)	(0.203)	(0.224)	(0.203)	(0.193)
Democracy		0.013*				−0.031
		(0.007)				(0.019)
Political rights			0.038***			0.078**
			(0.013)			(0.036)
Corruption control				0.014		−0.036
				(0.017)		(0.023)
Bureaucracy quality					0.037***	0.060***
					(0.010)	(0.017)
Adjusted R^2	0.46	0.46	0.49	0.46	0.53	0.57
Observations	82	81	81	81	81	80

Notes: The dependent variable is the growth rate of real GDP per capita between 1960 and 1995. Further control variables are real GDP per capita in 1960 and *Schooling* (not displayed). *Private credit* is median-corrected. Robust standard errors are given in parentheses. *, ** and *** denote significance at the 10, 5 and 1%-level, respectively.

Figure 1 – Marginal effects of state ownership of banks on GDP growth



Notes: The Figure shows the marginal effects of state ownership in the banking system on real GDP per capita growth, depending on the level of *Private credit*. The left box refers to specification (1) of Table 3, whereas the right box refers to specification (6). The dashed lines represent 90%- and 95%-confidence intervals, respectively. The vertical dashed lines show 10, 25, 50, 75 and 90%-quantiles of *Private credit*.

Poland, the marginal effect of state ownership in the banking system is estimated to be –0.33.

Overall, the results show clearly that the impact of state ownership in the banking system on economic growth depends strongly on how well a country's financial system is developed.

5.3 Interaction with Financial Development and the Quality of Political Institutions

To address the potential conflict between politicians' and public interests in state-owned banks, we include an additional interaction term in the empirical model. By interacting the state ownership variable with indicators of the quality of political institutions, we test whether state-owned banks' impact on long-run economic growth depends on the ability of a political system to restrict politicians' exercise of power to their political mandate.

The results of these regressions are displayed in Table 4. In all specifications, the coefficient estimate of the interaction term is positive, indicating a positive effect of the quality of political institutions on the marginal effect of state ownership. For three of the four political indicators, namely *Democracy*, *Political rights*, and *Bureaucracy quality*, the coefficient of the interaction term is significant at least at the 5%-level. Again, we use

deviations from the median for the political indicators, such that the coefficient of *State ownership of banks* is directly interpretable: at median levels of *Private credit* and *Political rights*, for example, the marginal effect of state ownership on growth is –0.24. Depending on the institutional variable included, it ranges between –0.27 (*Democracy*) and –0.19 (*Bureaucracy quality*).

The economic importance of the additional interaction can be seen from Figure 2. It displays marginal effects of state-ownership, depending on each of the four institutional indicators, holding *Private credit* constant at its median. At low levels of *Democracy*, the marginal effect is much lower than at the median level. At the 25%-quantile, for example, it is –0.40, and it is statistically significant at the 1%-level. Examples are Egypt, Cote d'Ivoire and Hungary, which have a value of *Democracy* close to the 25%-quantile and of *Private credit* close to the 50%-quantile. In contrast, at the 75%-quantile of *Democracy*, the marginal effect of state ownership is close to zero. Example countries include Turkey, the United Kingdom and South Africa. Virtually the same picture can be drawn for the interaction between state ownership and *Political rights*. At low levels of this variable the marginal effect of state ownership is extremely low, whereas at relatively high levels it is neither economically nor statistically significant. Figure 2 also shows that the marginal effect of state ownership less strongly depends on *Corruption control*. The graph is relatively flat, and the difference in marginal effects at the 25%- and at the 75%-quantile is about 0.07. In contrast, the graph for the interaction between state ownership and *Bureaucracy quality*, is very steep. Differences between marginal effects at low and at high levels of *Bureaucracy quality* are nearly as much pronounced as with *Democracy* and *Political rights*: at the 25%-quantile the marginal effect of state ownership is –0.28, at the 75%-quantile it is virtually zero.

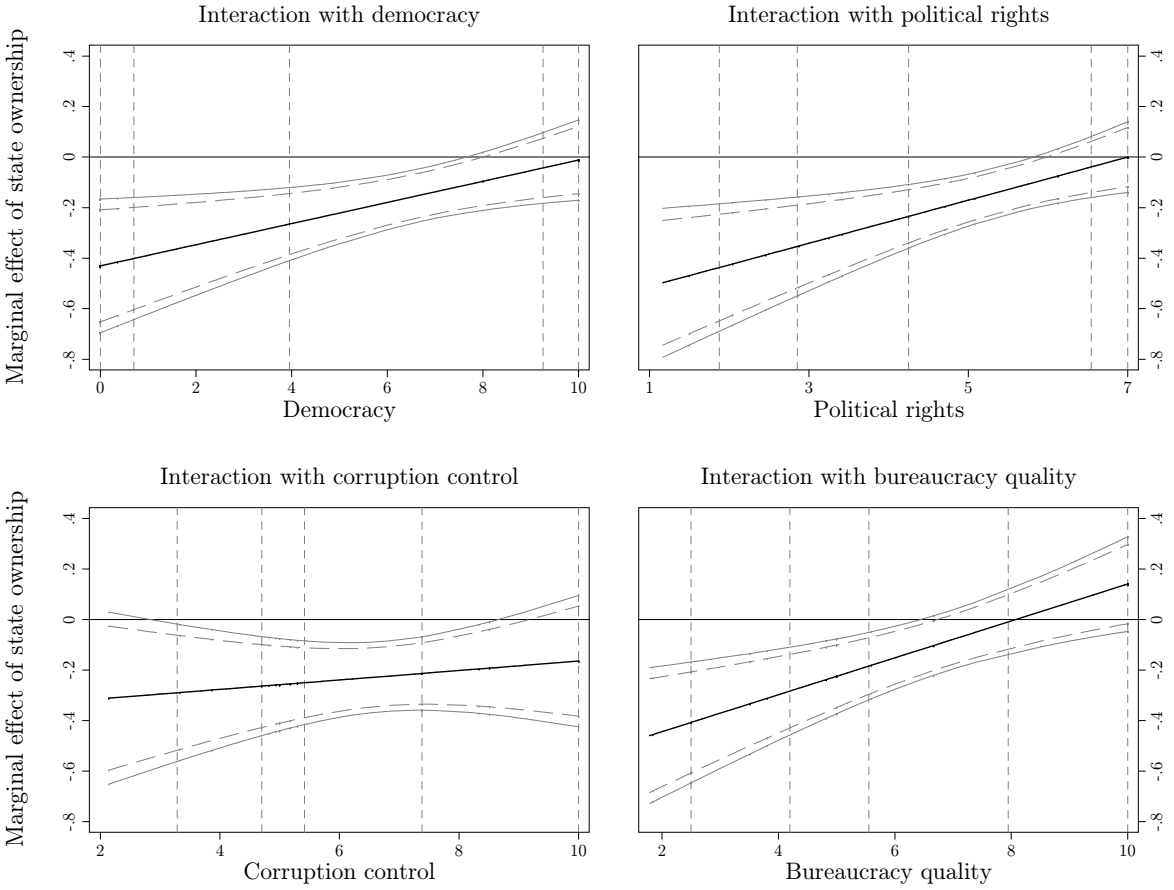
To complete the picture, Table 5 shows the marginal effects of state ownership in the banking system also for relatively low and for relatively high levels of financial development. When financial development is low and political institutions are weak, as represented by the lower quartiles of *Private credit* and the political indicators, respectively, the marginal effect of state ownership is down to values between –0.47 (*Democracy*) and –0.32 (*Bureaucracy quality*). At the other extreme, at the upper quartiles of both interaction variables, the marginal effects become positive in three out of four cases, though not statistically significant: high levels of financial development combined with a high quality of political institutions imply marginal effects of 0.06 (*Bureaucracy quality*), 0.08 (*Democracy*) and 0.09 (*Political rights*). Interestingly, this array is relevant for about 20 sample countries,

Table 4 – Interaction of SOB with financial development and the quality of political institutions

	(1)	(2)	(3)	(4)	(5)
State ownership of banks	−0.245***	−0.265***	−0.235***	−0.250***	−0.184***
	(0.072)	(0.074)	(0.064)	(0.084)	(0.068)
Private credit	0.013	0.019	0.020	0.024	0.078
	(0.104)	(0.161)	(0.159)	(0.103)	(0.085)
SOB*Private credit	0.816***	0.721***	0.736***	0.694***	0.431***
	(0.216)	(0.200)	(0.190)	(0.228)	(0.146)
SOB* *Variable*		0.042**	0.085**	0.019	0.073***
		(0.019)	(0.033)	(0.034)	(0.024)
Democracy		−0.014			
		(0.014)			
Political rights			−0.022		
			(0.027)		
Corruption control				0.004	
				(0.020)	
Bureaucracy quality					0.002
					(0.014)
Adjusted R^2	0.46	0.50	0.53	0.45	0.57
Observations	82	81	81	81	81

Notes: The dependent variable is the growth rate of real GDP per capita between 1960 and 1995. Further control variables are real GDP per capita in 1960 and *Schooling* (not displayed). SOB* *Variable* is the interaction term built of *State ownership of banks* and the respective political indicator, i. e. *Democracy* in column (2), *Political rights* in column (3), *Corruption control* in column (4), and *Bureaucracy quality* in column (5). *Private credit* and the political indicators are median-corrected. Robust standard errors are given in parentheses. *, ** and *** denote significance at the 10, 5 and 1%-level, respectively.

Figure 2 – Marginal effects of state ownership of banks on GDP growth



Notes: The figure shows the marginal effects of state ownership in the banking system on real GDP per capita growth, depending on the level of the political indicators. The boxes refer to specifications (2), (3), (4) and (5) of Table 4. The dashed lines represent 90%- and 95%-confidence intervals, respectively. The vertical dashed lines show 10, 25, 50, 75 and 90%-quantiles of various indicators of the quality of political institutions.

Table 5 – Marginal effects of state ownership of banks on GDP growth

		Private credit		
		Lower quartile	Median	Upper quartile
Democracy	Lower quartile	-0.47^{***}	-0.40^{***}	-0.28^{**}
	Median	-0.33^{***}	-0.26^{***}	-0.14^{*}
	Upper quartile	-0.11	-0.04	0.08
Political rights	Lower quartile	-0.42^{***}	-0.35^{***}	-0.23^{**}
	Median	-0.30^{***}	-0.23^{***}	-0.11
	Upper quartile	-0.10	-0.04	0.09
Corruption	Lower quartile	-0.33^{***}	-0.26^{***}	-0.14
	Median	-0.31^{***}	-0.25^{***}	-0.13
	Upper quartile	-0.26^{**}	-0.19^{**}	-0.08
Bureaucracy	Lower quartile	-0.32^{***}	-0.28^{***}	-0.21^{**}
	Median	-0.22^{***}	-0.18^{***}	-0.11^{*}
	Upper quartile	-0.05	-0.01	0.06

Notes: The table shows marginal effects of state ownership in the banking system on real GDP per capita growth as implied by the results given in Table 4. The first section refers to specification (2) of Table 4, the second to specification (3), the third to specification (4), and the fourth to specification (5). *, ** and *** denote significance at the 10, 5 and 1%-level, respectively.

i. e. in 20 countries the values of *Private credit* and of the quality of political institutions are located in the upper third of the observed range of values. These countries belong to the group of most developed economies, nearly all of them being OECD members. In countries having the highest values of *Private credit* and of the political indicators, the positive marginal effect becomes even larger: at the 90%-quantiles of *Private credit* and *Bureaucracy quality* for instance, it is 0.28 and statistically significant at the 1%-level (not reported in Table 5).

5.4 Panel Estimation

Finally, we extended the cross-section sample of La Porta et al. (2002) along the time series dimensions by considering two periods, 1970-1994 and 1995-2007. Due to data constraints, we were not able to start the latter period in an earlier year. In particular, state ownership data of good quality is available only for 1995 or for later years. The starting-value approach to the problem of reverse causality thus restricts the second period to begin in 1995. As a robustness check, we repeated the subsequent analysis with equally long periods, 1970-1987 and 1990-2007. The results are virtually unchanged.

We ran two types of regressions: random effects and fixed effects. The random-effects

estimation results are displayed in Table 6. The table contains two main messages: first, the interaction effect with regard to financial development continues to be positive, but it is smaller than in the cross-section. In all specifications, the coefficient of the interaction term between *State ownership of banks* in 1970 and *Private credit* is statistically significant at the 1%-level. The coefficient ranges between 0.54 and 0.63, whereas the cross-section results suggested a coefficient size of 0.66 to 1.1. Second, the interaction between state ownership and the quality of political institutions is neither economically nor statistically significant any more, and therefore we excluded it from the regression equation.

Figure 3 shows the marginal effects of state ownership of banks, depending on *Private credit*. As *Private credit* in 1970 differs substantially from *Private credit* in 1995 in distribution and size, the marginal effect graph is plotted twice, in the first row together with the quantiles of *Private credit* in 1970, in the second row with the respective quantiles of *Private credit* in 1995. Moreover, the first column of Figure 3 refers to the specification without any political indicators on the right hand side (specification (1) in Table 6), whereas the second column refers to the specification with all such indicators included (specification (6)). For the first period, the marginal effect at the 50%-quantile is –0.11 and statistically significant at the 5%-level (top left side of Figure 3). In contrast, in the second period the marginal effect at the 50%-quantile is about zero (bottom left side of Figure 3). Still, in both periods, there are remarkable differences between marginal effects at low levels and high levels of financial development. In the first period, the marginal effects at the 10%-quantile of *Private credit* and the 90%-quantile differ by 0.35. As in the cross-sectional analysis, the inclusion of indicators of the quality of political institutions leads to an upward-shift of the graph of marginal effects.

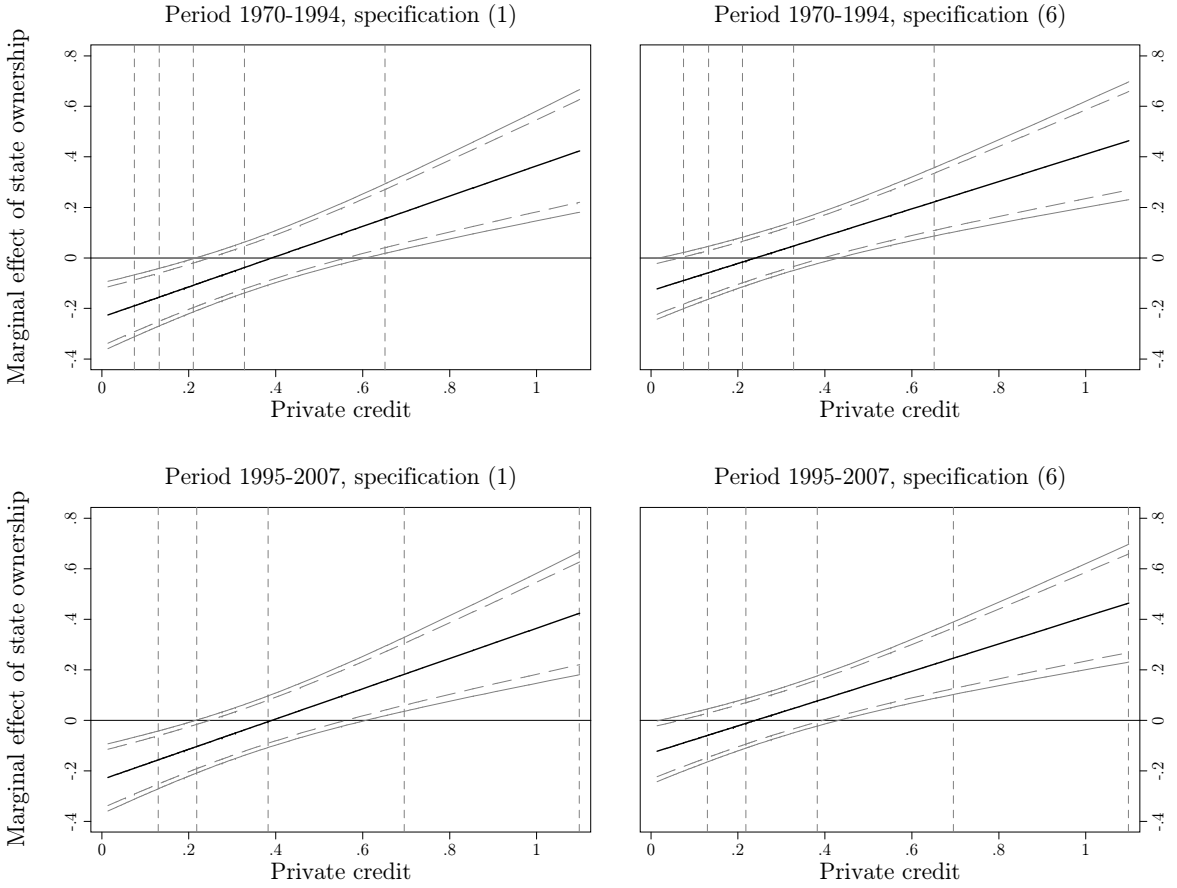
As a last step, we estimated a fixed-effects regression model, thereby accounting for unobserved country-specific characteristics that do not change over time. We find that the interaction term coefficient survives in terms of statistical significance in 5 out of 6 specifications (see Table 7). However, the significance level drops to 10%, and, compared to the random effects results, the coefficient drop by roughly one third. Nevertheless, these results confirm the importance of heterogeneity with regard to ownership effects on growth. Even when we rely on within-country variation only, the heterogeneity still shines through.

Table 6 – Interaction with financial development: Random effects

	(1)	(2)	(3)	(4)	(5)	(6)
State ownership of banks	−0.234***	−0.233***	−0.228***	−0.197***	−0.137**	−0.130**
	(0.069)	(0.074)	(0.071)	(0.076)	(0.065)	(0.062)
Private credit	−0.027	−0.051	−0.061	−0.057	−0.062	−0.111***
	(0.052)	(0.046)	(0.045)	(0.047)	(0.053)	(0.039)
SOB*Private credit	0.599***	0.607***	0.629***	0.502***	0.451***	0.540***
	(0.145)	(0.157)	(0.148)	(0.174)	(0.149)	(0.134)
Democracy		0.003				−0.007
		(0.006)				(0.011)
Political rights			0.004			−0.001
			(0.010)			(0.020)
Corruption control				0.088***		−0.061*
				(0.029)		(0.035)
Bureaucracy quality					0.133***	0.194***
					(0.026)	(0.037)
R^2	0.21	0.24	0.22	0.26	0.34	0.41
Observations	157	150	155	156	156	149

Notes: The dependent variable is the growth rate of real GDP per capita between 1970 and 1994, and the growth rate between 1995 and 2007, respectively. Further control variables are real GDP per capita in 1970 and 1995, and *Schooling* between 1970 and 1994, and between 1995 and 2007 (not displayed). Robust standard errors are given in parentheses. *, ** and *** denote significance at the 10, 5 and 1%-level, respectively.

Figure 3 – Marginal effects of state ownership of banks on GDP growth – Random effects estimation



Notes: The figure shows the marginal effects of state ownership in the banking system on real GDP per capita growth, depending on the level of *Private credit*. The graphs on the left hand side refer to specification (1) of Table 6, whereas those on the right hand side refer to specification (6). The dashed lines represent the 90%- and 95%-confidence intervals, respectively. The vertical dashed lines show 10, 25, 50, 75 and 90%-quantiles of *Private credit* in 1970 (top) and in 1995 (bottom).

Table 7 – Interaction with financial development: Fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)
State ownership of banks	−0.195	−0.154	−0.174	−0.194	−0.180*	−0.202*
	(0.117)	(0.118)	(0.119)	(0.118)	(0.108)	(0.112)
Private credit	−0.072	−0.050	−0.075	−0.084	−0.052	−0.043
	(0.061)	(0.072)	(0.065)	(0.062)	(0.061)	(0.062)
SOB*Private credit	0.391*	0.319	0.381*	0.385*	0.413*	0.430*
	(0.212)	(0.229)	(0.213)	(0.224)	(0.215)	(0.249)
Democracy		0.005				−0.005
		(0.008)				(0.018)
Political rights			0.008			−0.006
			(0.012)			(0.029)
Corruption control				0.047		−0.066
				(0.055)		(0.060)
Bureaucracy quality					0.121***	0.163***
					(0.043)	(0.060)
R^2	0.39	0.39	0.38	0.40	0.46	0.48
Observations	157	150	155	156	156	149

Notes: The dependent variable is the growth rate of real GDP per capita between 1970 and 1994, and the growth rate between 1995 and 2007, respectively. Further control variables are real GDP per capita in 1970 and 1995, and *Schooling* between 1970 and 1994, and between 1995 and 2007 (not displayed). Robust standard errors are given in parentheses. *, ** and *** denote significance at the 10, 5 and 1%-level, respectively.

6 Conclusion

We have shown that the negative impact of state ownership in the banking system on subsequent GDP per capita growth, as documented by La Porta, Lopez-De-Silanes and Shleifer (2002), depends strongly on a country's stage of financial development and on the quality of its political institutions. In financially less developed countries with poor political institutions, the impact of state ownership of banks on economic growth is strongly negative and highly statistically significant. However, in an environment as it is typically observed in developed countries, state ownership in the banking system has no measurable impact on growth at all. In some specifications, we even find a statistically significant *positive* effect of state ownership.

When extending the sample of La Porta et al. (2002) along the time series dimension, the effect of state ownership generally becomes weaker in the more recent period. This is due to the fact that countries have become financially more developed over time. However, there is still evidence of a heterogeneous effect, in particular with regard to financial development. Even when controlling for unobserved heterogeneity of countries in a fixed-effects framework, the interaction of financial development and state ownership remains significant in most regressions. This is remarkable, given that such regressions exploit the within-country variation only.

Our results are in line with empirical studies at the individual bank level (Micco et al., 2007; Dinc, 2005) that detect differences in the behavior and performance of private and state-owned banks in less developed countries, but not in developed countries. The former group of countries typically has a low financial development and relatively poor political institutions.

We have interpreted our findings in light of two distinct agency problems associated with state-owned banks. First, the principal-agent problem between politicians and state bank managers appears to be mitigated in well-developed financial systems, where state-owned banks can benefit from high financial standards. Second, good political institutions mitigate the agency problem between society and politicians, making the abuse of state-owned banks by politicians less likely.

Our analysis calls into question the broad policy implications that have been drawn from the results of La Porta et al. (2002). The benefits and costs of state-owned banks appear

to depend on the quality of financial and political institutions. Policy makers considering a privatization, or alternatively a nationalization of banks (as in the current financial crisis) should be aware of the importance of corporate governance structures and of the economic and political environment for the benefits and costs of such policies.

References

Barth, James R., Gerard Caprio, and Ross Levine, "Bank regulation and supervision: what works best?," *Journal of Financial Intermediation*, 2004, *13* (2), 205–248.

Beck, Thorsten, Ross Levine, and Norman Loayza, "Finance and the sources of growth," *Journal of Financial Economics*, 2000, *58* (1-2), 261–300.

Caprio, Gerard and Patrick Honohan, *Finance for growth: policy choices in a volatile world* A World Bank policy research report, 1st ed., Oxford: Oxford University Press, 2001.

Detragiache, Enrica, Poonam Gupta, and Thierry Tressel, "Finance in Lower-Income Countries," IMF Working Paper 05/167 2005.

Dinc, I. Serdar, "Politicians and banks: Political influences on government-owned banks in emerging markets," *Journal of Financial Economics*, 2005, *77* (2), 453–479.

Freedom House, *Freedom in the World Country Ratings 1972-2007* 2007. http://www.freedomhouse.org.

Gerschenkron, Alexander, *Economic Backwardness in Historical Perspective*, Cambridge: Belknap Press of Harvard University Press, 1962.

Gurr, Tedd R., Keith Jaggers, and Monty G. Marshall, *Polity IV Project: Political Regime Characteristics and Transitions, 1800-2007* Center for Systemic Peace and Center for Global Policy at the George Mason University 2007.

Hainz, Christa and Hendrik Hakenes, "The Politician and his Banker," Working Paper, CESifo 2007.

Hakenes, Hendrik and Isabel Schnabel, "The Threat of Capital Drain: A Rationale for Public Banks?," Max Planck Institute for Research on Collective Goods Bonn Preprint 2006.

International Monetary Fund, *International Financial Statistics*, Washington DC: International Monetary Fund, October 2008.

Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi, "Governance matters VII : aggregate and individual governance indicators 1996-2007," Policy Research Working Paper 4654, The World Bank 2008.

La Porta, Rafael, Florencio Lopez-De-Silanes, and Andrei Shleifer, "Government Ownership of Banks," *Journal of Finance*, 2002, *57* (1), 265–301.

Levine, Ross, "Finance and Growth–Theory and Evicence," in Philippe Aghion and Steven N. Durlauf, eds., *Handbook of Economic Growth*, 1st ed., Amsterdam: Elsevier, 2005.

_ **and Sara Zervos**, "Stock Markets, Banks, and Economic Growth," *American Economic Review*, 1998, *88* (3), 537–58.

Megginson, William L., *The Financial Economics of Privatization*, New York: Oxford University Press, 2005.

Micco, Alejandro, Ugo Panizza, and Monica Yanez, "Bank ownership and performance. Does politics matter?," *Journal of Banking & Finance*, 2007, *31* (1), 219–241.

Political Risk Services, *International Country Risk Guide*, East Syracuse, NY: The PRS Group, 1996.

Sapienza, Paola, "What Do State-Owned Firms Maximize? Evidence from the Italian Banks," Discussion Paper No. 3168, C.E.P.R. 2002.