



Are public banks a “necessary evil”? An analysis on the impacts of public ownership in banks.

Bernardo Serrão Brochado

Dissertation written under the supervision of Alberta Di Giuli

Dissertation submitted in partial fulfilment of requirements for the MSc in Finance, at Universidade Católica Portuguesa and for the MSc in International Management, at ESCP Europe Paris, May 11th, 2018.

Abstract

This thesis studies the impacts of ownership in the Eurozone banks in the period from 2011 to 2016.

Three main moments are found in previous literature: The first moment, from the 1960s to the 1990s, was characterized by a lack of comprehensive quantitative research. The second period starts with La Porta et al.'s (2002) critique on public banks. A profusion of research on public ownership of banks followed, generally presenting evidence that public banks tend to be less efficient, less profitable and riskier. With the financial crisis of 2007/2008, many banks were nationalized and the discussion about the impacts of public ownership restarted. In this context, I wanted to understand whether ownership continues to produce the same effects and whether those effects are dependent on the country where the bank is located. By using a Random Effects model, this thesis finds evidence that public ownership tends to decrease both profitability and efficiency. Additionally, evidence was found that effects of ownership on risk are dependent on the country where the bank is located. These results are interesting considering that the banks in the sample are mainly regulated by the same entity, the ECB. This raises the question of what mechanisms should be put in place to enhance the performance of these banks.

Keywords: Banks, Eurozone, Ownership, Profitability, Efficiency, Risk, Corporate Governance

Sumário

A presente tese procura estudar quais os impactos que a estrutura acionista exerceu sobre os bancos da Zona Euro, no período compreendido entre 2011 e 2016. Podem ser identificados três momentos distintos na literatura acadêmica: o primeiro momento decorre entre os anos 60 e 90, em que a discussão era essencialmente política. O segundo momento é impulsionado pela crítica feita por La Porta *et al.* (2002) aos bancos públicos, seguida por uma grande diversidade de autores que, em geral, apresentam evidências de que os bancos públicos tendem a ser menos eficientes, menos lucrativos e a ter mais risco nos seus balanços. Com a crise financeira de 2007/2008 e com a nacionalização de vários bancos, a discussão sobre os impactos da presença do Estado na estrutura acionista recomeçou. Neste contexto, pretende-se compreender se a estrutura acionista continua a ter os mesmos efeitos e se esses efeitos dependem do país onde o banco está localizado.

Esta tese utiliza um modelo de *Random Effects*, encontrando evidências de que a presença do Estado na estrutura acionista dos bancos tende a diminuir o seu nível de lucro e a sua eficiência. Além disso, são encontrados indícios de que o efeito no risco dos bancos é dependente do país onde o banco está localizado. Estes resultados são interessantes tendo em conta que os bancos presentes na amostra são essencialmente regulados pela mesma entidade, o BCE. Levanta-se, portanto, a questão sobre que mecanismos podem ser utilizados para harmonizar a *performance* dos bancos.

Palavras-chave: Bancos, Zona Euro, Estrutura acionista, Lucratividade, Eficiência, Risco, Governo das empresas

Résumé

Cette thèse cherche à étudier les impacts de la structure actioniste dans les banques de la zone euro dans la période de 2011 à 2016.

Trois faits principaux marquants se trouvent dans la littérature académique. Le premier moment, des années 60 aux années 90, a été une période caractérisée par une recherche majoritairement politique. La deuxième période commence avec la critique de La Porta et al., (2002) sur les banques publiques, suivie d'une affluence de recherches sur l'étatisation des banques, présentant généralement une preuve que les banques publiques ont tendance à être moins efficaces, moins rentables et plus risquées. Avec la crise financière de 2007-2008, de nombreuses banques ont été nationalisées et la discussion sur les conséquences de la participation des pouvoirs publics a repris. Dans ce contexte, j'ai voulu comprendre si la propriété continue d'avoir le même effet et si ces effets dépendent, dans quelque sens, des pays où chaque banque est siégée. En utilisant un modèle à effets aléatoires, cette thèse prouve que l'étatisation tend à diminuer la rentabilité et l'efficacité.

En outre, on trouve des indices que l'effet sur le risque des banques dépend du pays où se trouve la Banque. Ces résultats sont intéressants, étant donné que les banques présentes dans l'échantillon sont essentiellement régulées par la même entité, la BCE. On pose donc la question de quels mécanismes peuvent être utilisés afin d'harmoniser les performances des banques.

Mots-clés : Banque, zone euro, structure actioniste, rentabilité, efficacité, risque, gouvernement d'entreprise

Title: Are public banks a “necessary evil”? An analysis on the impacts of public ownership in banks.

Author: Bernardo de Valadares Serrão e Fernandes Brochado

Acknowledgements

First of all, I am grateful to the God for the good health and well-being that were necessary to complete this master's degree.

I wish to express my sincere thanks to my mother and father, for the support and for being my personal banks during these years.

I place on record, my sincere thank you to Prof. Alberta Di Giuli, my thesis' tutor for all the insights and help.

I am also grateful to Beatriz Pestana de Andrade for the motivation, patience, and support. I am thankful and indebted to Maria Carlos Barreiro, Augustin Lassieur, António Pedro Barreiro and António Capela for the linguistic and technical help.

Finally, I take this opportunity to express gratitude to Rev. Father Mário Rui Pedras and Rev. Father Hugo dos Santos for helping me to think about reality and for the logistical support.

Table of Contents

1. Introduction.....	1
2. Literature review.....	3
2.1. Two possible approaches.....	3
2.2. State-owned firms.....	3
2.3. Public banks.....	4
3. Data and methodology.....	9
3.1. Data sources.....	9
3.2. Sample.....	9
3.3. Dependent variables.....	11
3.3.1. Risk measures.....	11
3.3.2. Profitability measures.....	12
3.3.3. Efficiency measures.....	13
3.4. Regression.....	13
4. Results.....	15
5. Conclusion.....	19
References.....	22
Appendices.....	25
Additional statistics.....	26
Distribution of banks per country and year.....	26
Correlation matrix.....	26
Detailed descriptive statistics for the whole sample.....	27
Regressions with interaction dummies.....	28
Glossary and variables' names.....	30
Affidavit.....	31

1. Introduction

The present document constitutes the last step of my master studies in Finance and Management, provided by Católica-Lisbon School of Business and Economics and ESCP Europe.

After the revolutions of 1989 that resulted in the unavoidable fall of the Soviet Union in 1991, Charles Taylor, a Canadian philosopher, said that

“what should have died along with communism is the belief that modern societies can be run on a single principle, whether that of planning under the general will or that of free-market allocations” (Taylor (1992) p. 110).

The idea underneath the topic is somehow related to Taylor’s vision. Although this is not a thesis on political philosophy, the topic chosen has indeed a great impact in the daily life of millions of people, just like political decisions do. I would even venture to say that bank management is important to the life of virtually every citizen in the modern world. We only need to recall the impacts of the 2007/2008 crisis to realize that the influences of what started as a financial crisis quickly become economical and social and spread around all the globe. This is to say that the management of financial institutions is no more something that should concern only to those who have a bank account, but for everyone as, directly or indirectly, we all are stakeholders of – at least – the most significant banks.

The foregoing is a summary of why the chosen topic is of interest, not only for people linked to finance but probably also to economists and policymakers. In fact, many times we tend to stand for important decisions based more on our ideas than on facts. The problem, as Taylor seems to warn, is that ideologies tend to oversimplify the complex and dynamic reality. The goal of this thesis is, therefore, to shed some light on the topic of the effects of public ownership in banks during and after the period of the relevant impacts of the above-mentioned crisis in Europe. Impacts that were not confined to Greece, Ireland, and Portugal, also large economies were deeply affected as table 1 shows.

Moreover, this is a particularly interesting period to study, not only because is recent and there is little academic research on it, but because it fundamentally changed the banking landscape in Europe. In the one hand, regulators became much more demanding in aspects like liquidity and leverage – sore points of Basel III regulations.

To avoid that the financial problems became social¹, many governments entered in the capital of the banks during the crisis.

Table 1

Some relevant impacts in the European banking landscape due to the financial crisis

Country	Impact in the financial system	Year
Netherlands	Nationalization of Fortis (including the share in ABN AMRO)	2008
	Bailout of ING Bank	
	Bailout of SNS Bank (now De Volksbank)	2013
Spain	Restructuring of the financial system and €100 Bn rescue package by ESM	2012
France and Belgium	Bailout of Dexia, at the time the largest municipal lender in the world	2008
Italy	Monte dei Paschi bailout	2012
Austria	Raiffeisen Bank bailout	2009
Ireland	AIB and Bank of Ireland bailout, two largest Irish banks	2009
Greece	Piraeus Bank	2009
	National Bank of Greece	2015
Portugal	CGD, Millennium BCP – government support	2012
	BES – government bailout and restructuring	2014

N.B. The list is not meant to be exhaustive, rather some relevant cases that were found during the analysis of the data are presented for illustrating purposes.

With this in mind, in brief, this thesis wants to answer the question of whether or not there are significant differences in terms of risk, profitability and efficiency between banks owned by private entities and banks controlled by – or with some degree of influence from – public entities after the 2007/2008 crisis, particularly in the 2011 to 2016 period.

The remaining of this thesis is structured as follows. In the next section a literature review is presented where related academical work is analyzed, as well as the hypothesis I want to test with this research; further, in section 3, I explain in detail what models were used and how the data was gathered. Section 4 presents the main results and respective critical analysis and in the last section, the main conclusions are presented. Finally, after the list of references the appendices present additional information regarding the sample, the variables and the results, including a glossary and a list of the variables' names.

¹ Brown & Dinç (2005) explain that governments intervene, during crises, mainly to avoid the collapse of the payments system, to avoid fire sales or both.

2. Literature review

2.1. Two possible approaches

Two different approaches are used to analyze public ownership of institutions. Let's call them the political approach and the financial approach. Politically speaking, we can think in terms of the impacts of ownership in salaries, working conditions, the stability of the job, justice, corruption, and contribution for the overall welfare of society. Those are the kind of concerns that are at the very core of the classical dichotomies left vs right, socialism vs liberalism, individualism vs collectivism, etc. Those concerns are not of small importance, even in the managerial area and, today, that importance is even higher. Take my personal example during my master studies in ESCP Paris: as a management graduate student I heard, in almost every course, from International Marketing Decisions to Operations Management, about the importance of concepts as firm's culture, stakeholder theory or the "triple bottom line".

The financial approach, in turn, focuses especially on quantitative data, as accounting, market and/or financial indicators to establish trends and, ideally, causal relationships. In other words, the financial approach would look at what is *objectively* happening and try to generalize to help the interested parties understanding the quantitative impacts of their decisions.

I believe that it is not a matter of what approach is right or wrong, as both serve different purposes, and both are used by researchers, as we will see below. Instead, it is the dialogue between the objective facts observed and their subjective interpretations that will eventually enrich our knowledge about the reality. While the political approach is not appropriate to define, e.g., what management decisions would maximize return on assets, the financial approach is not able to answer to the moral question: what is *the right way* to maximize return on assets.

This said, this paper follows what I called the financial approach, therefore my goal is not to find if public ownership is better or worse in political terms, but what are its objective impacts and further discuss possible regulatory implications on that basis.

2.2. State-owned firms

As it is clear in Boardman & Vining (1989), studying firm's ownership has attracted scholars for a long time. In their classic paper, the authors explain that even though, in theory, public institutions should be less efficient than private ones, little empirical evidence was found for that at that time. Furthermore, they argue, most of the research at that point compared public

and private firms only in the U.S. and in non-competitive environments, like monopolies (e.g. utilities), duopolies (like airlines) and healthcare (which outputs cannot be priced by competitive forces). After Boardman & Vining, many things changed as it is clear in Magginson & Netter (2001). In this seminal paper, the authors analyze the impacts of privatization according to the research then available, in the context of the great divestures done by the governments of developed countries in the 1980s and 1990s. These divestures were started by Margret Thatcher in the U.K. (e.g. British Telecom) and by the first Chancellor of the Federal Republic of Germany, Konrad Adenauer (e.g. Volkswagen), in the after-war period and then they spread to the rest of Western Europe and to Japan. China, to some extent, and India also engaged in privatization later in this period, due to the bad performance of state-owned firms. Finally, Latin America also had relevant privatization programs in Brazil, Mexico, Chile, and Bolivia during the late 90s.

These privatizations were essentially grounded on ideological views and financial constraints, more than in empirical research, but they constituted a great laboratory for the empirical analyses that took place mainly in the 2000s. Magginson & Netter (2001) concludes that both in developed and in transition countries, privatization has a positive impact on firms. Specifically, firms are almost always more efficient and more profitable after privatization. However, there are relevant political impacts, namely the loss of jobs.

When it comes to more recent studies, Cornett et al. (2010) reinforce the impression that there seems to be a consensus on the idea that public firms are less efficient than private companies and politically driven. He adds an exception for specific cases as externalities, concentration issues or to provide public goods like prisons and police.

The rationale behind the idea that public companies tend to be less efficient than private companies is easy to explain using the principal-agent framework. Altubas et al. (2001) explain that, basically, without market pressure, managers of state-owned entities will have an incentive to follow their own interest, rather than the general welfare. Furthermore, regarding profitability, if the entities owned by the state are meant to have a social role, profitability is not necessarily their first goal.

2.3. Public banks

Applying this reasoning specifically to the banking industry, La Porta et al. (2002) and Iannotta et al. (2013) organize in a similar way the two types of views on the subject matter according to the goals of the public banks: the “political view” and either the “social view” (Iannotta et

al. p. 155) or, similarly, the “development view” (La Porta et al. p. 3). The political view explains that public banks are used to favor political interests and are more exposed to corruption, rather than to promote development, thereby public banks should be avoided. The social view, in contrast, argues that the role of public banks is to provide financial services to the part of the population that will not be covered by private banks because they would represent a significant risk and no increase in profitability. Obviously, the political view, because dealing with observable facts, is easier to prove than the social that is based on intentions, that are not – at least directly – observable.²

A similar historical pattern to the one observed with public companies in general, is observed for the banks. Before the era of great privatizations, there were some voices endorsing the role of public banks. The most remarkable is that of Gerschenkron (1962).³

Nonetheless, during the 2000s, after concluding that public companies, in general, have problems, researchers became increasingly interested in the public banks, possibly due to their very unique characteristics as intermediaries that manage considerable amounts of funds that are not theirs. The question is, if public companies are not able to manage in an efficient way their own funds, how would public banks do it with the others’?

La Porta et al. (2002) is probably the most influential paper in this field, being used as evidence, as Andrianova et al. (2010) notes, by respected institutions like the World Bank to promote the privatization of state-owned banks all around the world. In their seminal paper, La Porta et al. use a worldwide sample to show that public banks are related with slow subsequent development. They found out that, even after the wave of privatizations, there was still a significant presence of state-owned banks in the world, especially in developing countries. Further, they look to the 10 largest banks in each country of their sample and estimate the public ownership of those banks in the period before the privatizations (1960s) to study how

² A possible way to think about the social view used by La Porta et al. (2002) and defended by Iannotta et al. (2013) is that, if public banks pursue social view, then it will trigger economic development, which is observable (the detailed method used by La Porta is explained in this section). This makes sense if we assume that better financial services to poor people would give them conditions to be richer in the future, for example, by allowing them to receive better education or to provide it to their offspring. However, for me, this approach has, at least, two main problems. The first is that these positive economic effects are in the long run and most of studies of ownership use no more than a 20-year time frame. The second problem is that economic development has so many different drivers that it would virtually impossible to test if the development was led by the banking system with a reasonable degree of certainty.

³ Alexander Gerschenkron, cited by La Porta et al. (2002), in his remarkable essay *Economic Backwardness in Historical Perspective*, gives the example of Russia in the 19th century to explain the role public banks could have in the economic development, consistent with the social view. The general idea is that the more economically backward countries do not go through the same stages of development: the industrial growth will be faster as they can use new technology imported by more advanced countries. In this context, where investment is needed but where capital markets are not yet developed, the public banks have an important role providing capital to the entrepreneurs.

subsequent development is related to estimated public ownership. The results indicate that countries with larger public ownership in banks have lower development. These results are consistent using either the economic or the financial development indicators.

Another way to test the political view resorts on comparing governments' initiative before and after elections. Shi & Svensson (2003) compiled research to show that, independent on being a developed or developing country, there exist statistical evidence for (i) the existence of political budget cycles, meaning, different patterns on government expenditure, before and after elections and (ii) that those cycles have stronger effects in developing countries. The same researchers add their own research to the literature in 2006 and it was in line with their previous compilation.⁴ Brown & Dinç (2005) found strong evidence that governments are more likely to intervene in banks after elections, barely in the period right before elections. They start by presenting three geographical distinct case studies of banks taken over by the state in the 90s, being one in the Czech Republic, other in Thailand and the other in Peru. In the three cases, it is possible to find similarities between the actions of the governments. All try to avoid the political risks of an intervention in the banking system prior to elections. With this intuition, they study the 10 largest banks in 21 emerging markets and found that 75% of all political interventions occurred within 1 year and a half after the relevant government elections. Their regressions confirm with statistical significance that in the period before the election it decreases the probability of a government intervention. Moreover, the results are robust to GDP growth, IMF loans, early elections and changes in political parties.

Still, regarding the effects of elections, Dinç (2005) shows that, not only politics change their attitudes in election years, but the banks controlled by the state change as well. He compares the growth of loans between private and state-owned banks in emerging countries and found statistical evidence that public banks increase their lending during election years, even controlling for GDP growth and per capita, different model specifications, different timing of the election within the year, and different constructions for the sample.

Interestingly, Micco et al. (2007) expanded this kind of study to industrial countries and found evidence the negative effect of ownership is probably confined to developing countries. This paper is slightly different from Dinç's in the way that the effect of elections on the overall performance is evaluated, rather than only on loans. This is good because it allows deducing with a higher level of confidence if the increase in lending is motivated by political or social factors. They use a dataset composed of about 6000 banks in developed countries and 2000 in

⁴ vide Shi & Svensson (2006)

developing countries from 1995 to 2002 and start by testing if in general there are effects of ownership in performance (using mostly the same dependent variables I did: ROA, NIM, CTIN. They also include employment over assets that I did not because I did not have enough data on that variable. Furthermore, I use risk measures that they do not). The results are curious. Whilst public banks in developing countries are significantly less profitable and less efficient than private banks, in developed countries the estimators were only significant for the CTIN ratio. When they insert the election year dummy in their regression they found again stronger effects at the level of profitability for developing countries and only in terms of margins for developed countries. In my opinion, this alone does not show a great evidence for political view in developed countries.

Using a more updated sample, Iannotta et al. (2013) use ratings to study differences in risk between public and private banks. Their conclusions signal that, when it comes to risk, the results are not so positive concerning the developed countries. They show that, in Europe, there is evidence for public ownership having negative effects in the banking industry. The authors distinguish between two types of risk, namely, default risk and operational risk during a period of 9 years, from 2000 to 2009. As a proxy for those risks, they use the issuer ratings (proxy for default risk) and the individual ratings (proxy for operating risk) from rating agencies. The regression results are significant and show that public banks are perceived to have lower default risk but higher operating risk. Therefore, the authors conclude, the lower default risk is not due to operational efficiency but rather to the support of the government. Moreover, controls for size and accounting variables are included and the results remained significant. As these results, per se, are not conclusive about the political vs. social view, the authors add election year dummies to their regressions that turned out to be very significant to explain the increase in operating risk. Finally, a method similar to Dinç's (2005), to study the impacts of ownership in loans in election years is used, and they reach the same results. The outcome is that public banks have better financing conditions (lower issuer ratings leads to lower bond yields) and benefit from government support, two incentives to higher risk-taking that is confirmed by higher operating risks. Furthermore, politics use public banks – also in developed countries – to influence the elections' results.

Sapienza (2004) gives additional strength to the political view theory in developed countries. She used two matching subsets of companies borrowing from public and from private banks and compares how different are the interest rates charged in the same period for the same company (or to an equivalent company in terms of risk) by public and private banks. She first finds that public banks charge lower interest rates for the same level of risk in general. These

effects vary according to the location, e.g. in the south of Italy public banks charge the lowest interest rates. However, she also finds that public banks charge lower interest rates to larger firms that can be seen as the public bank managers pursuing personal objectives. Furthermore, the most important evidence is that the strongest the political party is in a certain region, the lower the interest rates charged by the bank with that political affiliation

Overall, it appears that science is settled and that the overwhelming evidence shows that public banks tend to be less profitable,⁵ riskier⁶ and less efficient.⁷ The political view holds.

Or maybe not.

In fact, even during the 2000s, some studies were not so clear in endorsing the political view. Altunbas et al. (2001) showed that, in Germany, public banks were at least as efficient as the public ones and that public banks even have profit and cost advantages compared to privately held banks. Bonin et al. (2005) find similar evidence for a different sample. However, the 2007/2008 financial crisis, perhaps by increasing the number of public banks in Europe, brought new perspectives on the impact of ownership. Andrianova et al. (2010) show that controlling for the quality of the institutions and governance the results from La Porta et al. (2002) lose significance, consistent with earlier results in Barth et al. (2004) showing, in turn, that, controlling for supervisory and regulation, corrects some problems of public banks except for lower profitability.

Not only “old” evidence was revised, also new evidence appeared showing that there is still room to study ownership. Barry et al. (2011), Ferri et al. (2014) and Migliardo (2018) results suggest that only looking into the public/private ownership dichotomy is probably myopic. Issues like the objectives of the bank, different types of private ownership⁸ and concentration of shareholders are very important elements to explain bank performance and risk.

All of this indicates that, perhaps, there is a way to look to the role of public banks other than as a privatization target. That is exactly what this thesis tries to do. Having all of the exposed in mind, and also that the majority of the research already presented takes place outside Europe,⁹ I will focus on the European continent to understand if other elements rather than ownership alone can explain the negative results early literature presented. To do that I will

⁵ e.g. Iannotta et al. (2007), Micco et al. (2007), Lin & Zhang (2009)

⁶ e.g. Iannotta et al. (2007, 2013), Cornett et al. (2010)

⁷ Including operational efficiency and resource allocation. e.g. La Porta et al. (2002), Barth et al. (2004), Sapienza (2004), Jiang et al. (2013)

⁸ e.g. family owned banks, industry of the owner, institutional holding, management shareholders. Migliardo is the one going deeper in this kind of study.

⁹ Bonin (2005); Brown & Dinç (2005); Dinç (2005); Lin & Zhang (2009); Cornett et al. (2010); Jiang et al. (2013)

test 2 hypotheses. Firstly, I will try to understand if in the after-crisis period from 2011 to 2016 – uncharted territory for academical research to the best of my knowledge – there is significant evidence that public ownership leads to poorer performance, lower efficiency and higher risk, as pre-crisis literature suggest. I assume that public banks may have lower profitability and higher risk as that is consistent with both political and social views. However, there is no reason for public banks to be less efficient, unless the agency problems hold.

Secondly, I will try to understand if within the Eurozone, where all the significant banks are regulated by the same entity, there are relevant differences across different countries and if those differences are robust to the time effects, that were particularly relevant between 2011, when the effects of crisis were still strong, and 2016 when GDPs were already recovering. I suspect, based on the conflicting conclusions, e.g. by Altunbas et al. (2001) and Iannotta et al. (2013) that the impacts of ownership can vary across countries. This is particularly relevant, as most of the research I am aware of, when comparing different regions, compare industrial vs. transition countries and not differences within developed countries.

3. Data and methodology

3.1. Data sources

The main data source for this paper was the Orbis Bank Focus, a database developed by Moody's Bureau van Dijk that is focused in comprehensive global bank data. As Bhattacharya (2003) explains, Bankscope used to be the typical database in this kind of research, but it was closed in 2016. Orbis started only in 2017, hence, when I first started working with it, there were important limitations in terms of availability of data.

Ownership data, in particular, was not sufficient. Hence, for ownership I used the information in the banks' annual reports, websites and, for the most part of Spanish banks, I used the regulated information available in CNMV's website (Spanish financial information regulator). The remaining data consisted of financial accounts' elements gathered in Orbis, World Bank, and Thomson Reuters Eikon terminal. I used standardized balance sheet and income statement information to minimize potential comparability problems.

3.2. Sample

While defining the sample I had two main concerns. Firstly, I wanted to avoid elements that could add noise to the results and, secondly, I wanted to assure that the institutions were

comparable. Since the goal was to analyze the impacts of public ownership in banks in developed countries, obvious geographies would be Western Europe, The United States of America (U.S.A.), Japan and Australia. Nevertheless, the U.S.A. and Australia do not have a significant presence of public banks. Moreover, those are three very different countries in terms of culture and economy. In the other hand, despite diversified, European economies are more similar. Consequently, there would be fewer effects to control for.

Furthermore, I only used banks presenting their accounts in Euro and based in the 19 Eurozone countries, regardless of being subsidiaries or parent companies. This has the practical advantage of having a sample that is less affected by currency effects and composed by banks mainly regulated by the same authority (SSM/ECB).

In addition, it was established a floor regarding the size of the banks. The threshold was defined at the total (book value of) assets equal to € 30 billion, in, at least, one of the years observed. That is to say that I decided to focus on medium to large banking institutions for two main reasons. Size is considered to have a relevant impact on profitability, as referred by Athanasoglou et al. (2008) in the one hand, and, in the other, this is consistent with ECB's definition of significant banks¹⁰, thus regulatory environment for these banks is more similar. Finally, it is also important to mention that only institutions identified as commercial or savings banks were used, meaning that cooperative banks, investment banks, and other specialized banks were explicitly excluded from the sample since we would need to use specific metrics for each one of the different types of banks if we wanted our results to have meaning.

The time-period of this analysis is from 2011 to 2016, the maximum possible length as of January 2018, when data was collected.

Table 2 summarizes the dataset that resulted from these criteria after treatment of data. On average, this unbalanced panel was composed of around 80 banks in each year. Of those, 68.7%, on average, were privately owned.

¹⁰ The European Central Bank uses 4 criteria to evaluate if a bank is significant: 1. Size, measured as total assets. To be considered significant, the bank should have more than €30 bn; 2. Economic importance; 3. Significant cross-border activities and 4. Banks that received funding from the stability mechanism. In this study I used only the first criteria, the most straight forward. More information on this can be found in ECB (2013) and ECB (2014).

3.3. *Dependent variables*

As explained so far in this section, this research is based on a sample of European banks for a period of five years. There would be many ways to study the impact of ownership in an institution. In this paper what is evaluated is the impact of ownership on profitability, risk and efficiency. For risk and profitability, more than one variable was selected to increase the tests' robustness.

Table 2
Number of banks in the sample by ownership type and by year.

Year	Public			Private	Total
	10% - 50%	> 50%	Total		
2011	12	14	26	41	67
2012	15	13	28	41	69
2013	18	19	37	49	86
2014	18	19	37	49	86
2015	14	20	34	52	86
2016	16	17	33	52	85

The criteria presiding the collection of variables was twofold. One priority was to use the same metrics that banks, regulators and financial analysts typically consider relevant for the industry. However, as an academical document, this thesis is expected to comply with scientific standards, therefore, my other concern was to use metrics that scholars use in their research when related to this topic. In other words, the selection of the dependent variables used in this paper results from the intersection of variables of interest for the banking industry and those usually employed in the literature. In that way, I believe the results would have relevant, practical interest, without losing theoretical strength.

3.3.1. Risk measures

Taking into account the time frame used in this thesis, it was mandatory to consider Basel III regulatory implications. Hence, one of the ratios used was precisely the Tier 1 ratio, defined as the core capital over the risk-weighted assets (RWA).¹¹ This ratio is used here as a proxy for the quality of the capital and to measure the leverage of the bank. As expected due to the

¹¹ Rules on the computation of core capital and RWA can be found in BIS and ECB documentation present in their websites. Furthermore, the ECB defines the rules the banks should use to compute their Tier 1 ratio. In this thesis, we used the values provided by banks and aggregated by Orbis instead of computing them.

regulatory constraints, this indicator has the second lowest variance (see table 3) of all indicators used.

To capture other dimensions of risk I used metrics with higher variance. To measure liquidity, literature uses ratios of liquid assets over total assets or loans to deposits.¹² This thesis uses a similar rationale, but more focused on the short-term liquidity. Therefore, we used liquid assets to deposits and short-term funding ratio, as provided by Orbis.

Also metrics related to non-performing loans were included in the tests. I used the NPL ratio, calculated as impaired or non-performing loans divided by total assets. Both these values were provided by Orbis. The motivation to use this variable was the possibility to compare the differences in the percentage of NPLs banks hold as it is a measure of the quality of the loans. Finally, also the provision coverage ratio was included because I was interested in understanding if there were differences in how provisions were managed because Ahmed (1999) found evidence that LLPs were significant in measuring changes in the quality of loans.

3.3.2. Profitability measures

As measures of profitability, the mentioned literature uses return ratios, typically return on assets, return on equity (ROE) and net interest margin (NIM). The same were used in this research, nevertheless, instead of the simple ROA, return on *average* assets was used. It is computed as the net income divided by the average of the total assets at the beginning of the year and those of the year-end. This adjustment is done because, while the net income measures the income of a whole year, the balance sheet is a snapshot in a particular moment in time. Both ROE and NIM were computed in the typical way. The former is the net income over the book value of equity and the latter is the difference between interest income and expenses divided by total assets.

Athanasoglou et al. (2008) uses, in part, the same approach and summarizes the difference between ROE and ROA explaining that ROA is the “key ratio for the evaluation of bank profitability” (p. 13) and that the difference between both ratios in the same bank helps to understand how much leverage the bank needs to deliver its level of profits, as I will do later in this thesis. Regarding the NIM, even not being as common as ROE and ROA, it is also used in similar research as Bonin (2005) describes. In the sample used, however, as you can see in table 3, NIM was the most stable variable, probably due to the low-interest rate environment observed in the years studied.

¹² See, for example, Bonin et al. (2005), Dinç (2005), Cornett et al. (2010) or Iannotta et al. (2007).

3.3.3. Efficiency measures

To measure efficiency *stricto sensu*, production frontier methods would probably be the best method. That was the approach used by Altunbas et al. (2001) and Bonin et al. (2005). Also, Migliardo (2018) uses this method and presents its advantages in a particularly clear way. Nonetheless, as explained in section 2, criticism of public institutions is often related with efficiency and, even though only regressions are used in this paper, I needed to include one variable able to capture that dimension.

Thus, I used cost to income ratio (excluding negative values): overheads divided by operating income. It gives an idea of the weight of the support functions in the bank, therefore it can show if there is difference in the level of administrative costs private banks have vis-à-vis public banks.

Table 3 shows that, on average, overheads are about 60% of the operating income, and that this value tends to increase with public ownership. Literature uses similar ratios, in particular, costs over assets (Bonin, 2005; Athanasoglou, 2008; Brown and Dinç, 2009).

3.4. Regression

According to what is explained in this section, it is easy to understand that the dataset is composed of panel data. It is an unbalanced dataset because there were missing values in some observations that were kept.

Table 3

Descriptive statistics – detailed statistics and distribution of banks per country can be find in the appendices

	Overall		Mean by ownership			N
	Mean	Standard deviation	Private	> 10% Public	>50% Public	
Return on Average Assets (%)	0.005	0.017	0.123	-0.167	-0.101	466
Return on Equity	0.020	0.146	0.012	0.033	0.009	453
Tier 1 Ratio	0.137	0.059	0.134	0.140	0.141	434
Net Interest Margin	0.015	0.008	0.015	0.015	0.013	478
Liquid Assets to Deposits & ST Funding	0.279	0.274	0.315	0.227	0.216	472
Provisions Coverage Ratio	0.122	0.162	0.123	0.120	0.125	394
Cost to Income Ratio	0.637	0.190	0.627	0.653	0.687	467
NPL Ratio	0.069	0.085	0.060	0.082	0.067	395
Total assets (million EUR)	245,552	416,229	248,817	240,796	199,085	479

The base case model of this study was a random effects model, described in equation 1. The specification of the model can be found in equation 2.

$$Y_{it} = \beta X_{it} + \alpha_i + u_{it} + \varepsilon_{it} \quad (1)$$

Where Y_{it} is the dependent variable, for the i bank in year t . Since we are dealing with unbalanced data, i and t varies depending on the specification of the model. β denotes the vector with the coefficients for the different independent variables, represented by X_{it} . α_i is the individual bank effect and $u_{it} + \varepsilon_{it}$ represent the random effects, where u is the between-entity error and ε is the within-entity error.

The reason to use a random effects model rather than a fixed effects model is in line with Migliardo (2018). Since we are studying the impacts of ownership in efficiency, risk, and profitability, and, since ownership is almost a time-invariant variable (or at least is a variable that changes very slowly) a fixed effects model would not be suitable. The specification of the model is as follows:

$$Y_{it} = \beta_0 + \beta_1 OWN_{it} + \sum_{j=1}^n \varphi_j C_{jit} + \varepsilon_{it} \quad (2)$$

Where OWN is a dummy variable that describes ownership. It can be either the variable PUBLIC or PUBLIC50, depending on the regression. If it is the variable PUBLIC then it will have the value 1 if bank i in the year t was held at least by 10% by governments, either directly or indirectly. This cutoff was decided because, according to Claessens et al. (2002), it is generally considered as the point above which a shareholder has effective control over a company. In the other hand, if the variable is PUBLIC50, then it is also a dummy, but in this case, it is 1 only when the bank i is owned by more than 50% by public entities. This works both as a robustness check, and to study the impact of an increasing ownership.

φ represents the coefficient associated with the control variables, which are denoted by C . The control variables used depend on the dependent variable for each regression and can include total assets as control for size, the GDP in PPP (constant 2011 international k\$) to control for country size, GDP per capita, the Central Government debt as measures of development of the country and debt level, GDP growth YoY to control for macroeconomic environment and the generic 10-year benchmark YTM at 31/Dec of the year t for the country of the bank i . The control variables are from World Bank and Thomson Reuters.

Coefficients were estimated with Stata software using GLS estimators for these different random effects equations, anyway, the detailed method can be found, e.g. in chapter 2.3. from Baltagi (2013).

In addition to this model, other two models were used to study the effects of country and year in the dependent variable. These models are specified, below, in equations 3 and 4. To estimate these models I run OLS (pooled OLS with dummies). This is equivalent to use FE estimator with country as the panel variable and therefore the results are consistent.

$$Y_i = \beta_0 + \beta_1 OWN_i + \sum_{k=1}^{12} \gamma_k Country_{ki} + \sum_{j=1}^n \varphi_j C_{ji} + \varepsilon_i \quad (3)$$

This equation is similar to equation 2. The main difference is that, in this case, a dummy variable was included for each of the 13 countries present in the sample, $Country_{ki}$. Only 12 dummies are needed because of perfect multicollinearity. The same rationale applies to equation 4 where, instead of dummies for countries, there are dummies for years (5 dummies since there are 6 years in this dataset).

$$Y_i = \beta_0 + \beta_1 OWN_i + \sum_{l=1}^5 \omega_l Year_{li} + \sum_{j=1}^n \varphi_j C_{ji} + \varepsilon_i \quad (4)$$

4. Results

The results of the regressions specified in the previous section are summarized in tables 4, 5 and 6. Additional estimations including models with interaction variables were used to check the consistency of the results.

Overall, the results show that there is statistical evidence that public banks tend to be less profitable and less efficient than their private counterparts. In the first model, estimated with GLS / Random effects, there was no evidence for public banks to have a higher risk.

Specifically, regarding the first model (presented in table 4), the results are especially robust in the case of profitability, where both ROAA and ROE are negatively impacted by public ownership. The results are even stronger when banks are owned by more than 50% by public institutions.

Also, in terms of efficiency, the results show that public banks tend to have higher costs than private counterparts. Moreover, this effect tends to increase with percentage of equity held by state.

Note that the impact of ownership in ROE is only significant for the threshold above 50%, this is probably because the 10% threshold captures banks with different levels of leverage that were bailed out by the state, hence that are not public “by nature”, however, the result is robust for banks with public ownership above 50%.

Table 4

Estimates for model 1. ROAA is the return on average assets, ROE stands for return on equity and CTIN in the cost to income ratio. GD is the variable controlling for the government debt in the country where the bank *i* is based. GDPG controls for the growth of GDP in the country where the company is based. TA is a control for size.

VARIABLES	ROAA	ROAA	ROAA	ROE	ROE	ROE	CTIN	CTIN	CTIN	CTIN
Public		-0.003** (0.002)	-0.003** (0.002)	-0.025 (0.019)			0.046* (0.025)	0.046* (0.027)		
Public50	-0.005** (0.002)				-0.069*** (0.025)	-0.069*** (0.025)			0.092** (0.041)	0.084** (0.041)
GD	-0.006** (0.003)	-0.004 (0.003)		-0.104*** (0.034)	-0.121*** (0.034)	-0.121*** (0.034)		0.030 (0.051)	0.048 (0.052)	
GDPG	0.110*** (0.021)	0.106*** (0.021)	0.114*** (0.020)	0.642*** (0.210)	0.689*** (0.208)	0.687*** (0.207)		-0.474** (0.234)	-0.523** (0.235)	-0.565** (0.231)
TA		0.000 (0.000)			0.000 (0.000)			0.000 (0.000)	0.000 (0.000)	
Constant	0.007** (0.003)	0.005* (0.003)	0.001 (0.001)	0.124*** (0.036)	0.144*** (0.038)	0.146*** (0.036)	0.618*** (0.019)	0.589*** (0.056)	0.572*** (0.057)	0.620*** (0.019)
Observations	392	401	401	391	383	383	467	401	395	395
Banks	85	87	87	87	85	85	88	87	85	85

Standard errors in parentheses

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

The effects of ownership in risk were not significant, therefore, results are omitted from the table. However, some control variables were significant to explain risk as GDP growth and debt level of the country where the bank is located giving a clue for country-specific effects.

In fact, when I control for country-specific effects (Model 2 – table 5), ownership becomes significant to explain the risk and the net interest margin. Together with the results from model 1, this seems to indicate that, in general, public banks tend to be less profitable and efficient than private banks in line with literature while the effect on risk is also dependent on the country.

This is the case of the capital ratios, the liquidity and the level of NPLs. There is evidence that, controlling for country of the operation, the capital ratios tend to be lower, consistent with the conclusions from Altunbas et al. (2001). Moreover, again, the effects are stronger for the threshold above 50%. However, the strongest effects are in terms of liquidity and NPLs, which

is consistent with the aforementioned literature showing public banks tend to have higher operational risk. While a higher level of NPLs is possible to explain in light of the social view by the bank providing loans to riskier individuals and companies, a lower level of liquidity translates management practices that are better explained by the principal-agent framework. Finally, when it comes to the net interest margin, there is only evidence of a slighter advantage for the banks owned by the state in the 10-50% segment. Taking into consideration that public banks have higher risk in their loans (as shown by the level of NPLs), it would be expected, *coeteris paribus*, that higher interest rates would be charged, unless loans have social ends – or political ones. With our data is not possible to determine what the case is.

Table 5

Model 2. CT1 stands for core tier 1 ratio, NIM for net interest margin, LDS is the proxy for liquidity. PVR is the provisions coverage ratio and NPL ratio is the NPL ratio. In this model, the control for countries is done using a dummy for each country. This model is equivalent to a fixed effects model with the country as the panel variable. The omitted country – the effects are reflected in the constant – is Austria.

VARIABLES	CT1	CT1	NIM	NIM	LDS	LDS	PVR	PVR	NPLR	NPLR
Public	-0.010*			0.001**	-0.175***			0.016	0.026***	
	(0.006)			(0.001)	(0.024)			(0.019)	(0.007)	
Public50		-0.013*	-0.000			-0.196***	0.035			0.026***
		(0.007)	(0.001)			(0.029)	(0.025)			(0.009)
Control for country	included	included	included	included	included	included	included	included	included	included
Size control			included	included	included	included				
Constant	0.121***	0.121***	0.027***	0.027***	-0.025	-0.024	0.094***	0.094***	0.044***	0.044***
	(0.010)	(0.010)	(0.003)	(0.003)	(0.113)	(0.115)	(0.035)	(0.034)	(0.012)	(0.013)
Observations	434	424	461	471	472	462	384	394	395	385
R-squared	0.228	0.235	0.341	0.332	0.358	0.335	0.087	0.080	0.559	0.550

Standard errors in parentheses

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

Further evidence on the impact of the ownership when controlling for countries with interaction dummies can be found in the appendix, with the main results being that profitability, again, tend to be lower in public banks and also the NIM, where we can see that this variable really depends on the country, being the Belgium, Luxembourg, France, and Italy the countries with the most significant positive impact.

Table 6
Model 3 – controlling for time effects. The variables have the usual meaning.

VARIABLES	CT1	CT1	NIM	NIM	LDS	LDS	PVR	PVR	NPLR	NPLR
Public	0.005 (0.006)			-0.000 (0.001)	-0.087*** (0.025)			-0.003 (0.016)	0.022** (0.009)	
Public50		0.005 (0.007)	-0.003*** (0.001)			-0.072** (0.030)	0.005 (0.020)			-0.003 (0.011)
Year effects	included	included	included	included	included	included	included	included	included	included
Size control			included	included	included	included				
Constant	0.109*** (0.008)	0.109*** (0.008)	0.028*** (0.004)	0.028*** (0.004)	-0.112 (0.123)	-0.116 (0.125)	0.164*** (0.021)	0.168*** (0.022)	0.039*** (0.012)	0.049*** (0.012)
Observations	434	424	461	471	472	462	384	394	395	385
R-squared	0.087	0.089	0.052	0.028	0.053	0.040	0.110	0.112	0.029	0.014

Standard errors in parentheses

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

Since the years after the crisis are relevant to understand how the system as a whole is evolving, the third model gives us some ideas of the impacts of time in banks. The results should be interpreted with care because the model in table 6 is neither controlling for country, nor firm fixed effects. In any case, what we can see herein is that the time helps to explain part of the previous results. Regarding capital ratios, the significant difference between public and private banks we saw in model 2 is essentially explained by the general positive trend that would be expected because of the gradual implementation of Basel III. Additionally, we can also see that, when the time effects are included, the difference in NIM is only significant for banks in the PUBLIC50 criteria, i. e. the NIM tends to be lower for PUBLIC50 companies if we discount the effects of time, that are particularly relevant for this variable due to the impact of monetary policy in the period 2011-2016¹³. Figure 1 shows a time series with the average NIM according to the type of bank where we can see that PUBLIC50 margins tend to be more stable around lower values as the results of the regressions also indicate.

When it comes to risk, we can see that the negative impact on NPL due to ownership is robust to time trends, while the same cannot be said for Public50 banks. This is probably because a relevant part of the banks with considerable risk in their balances received state aid in the form of equity, thus, being captured by the variable PUBLIC. This is not of small importance because there was a general increase in NPLs throughout the years analyzed according to the ECB.¹⁴

¹³ Recall that the Eurozone ECB refinancing rate decreased from around 1% in the end of 2011 to 0.5% in the end of 2016.

¹⁴ Vide ECB (2016, September)

Finally, there is a consistent effect of ownership on liquidity even with more liquidity available from the ECB stimulus programs. However, since this effect is mainly observable in banks within the segment 10-50%, this can be also the impact of the bailed-out banks in the sample. To better understand this, please check figure 2 where we can see that indeed public banks (both PUBLIC and PUBLIC50) have, on average, less liquidity, as showed in model 2, but only PUBLIC50 banks evolved in time according to the general trend.

Figure 1 Average NIM in % (2011 – 2016)

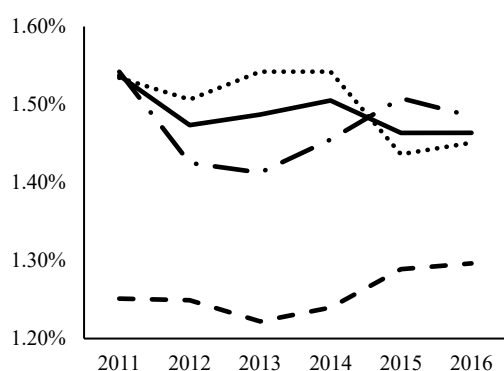
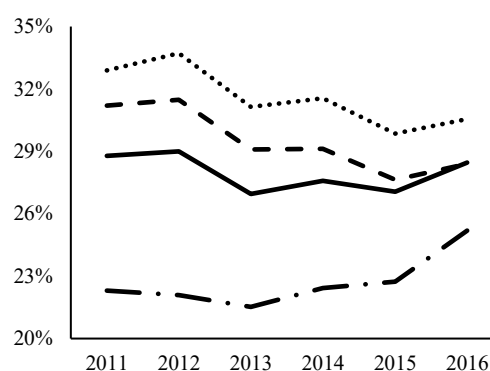


Figure 2 Average liquidity in % (LDS 2011 – 2016)



— All banks — Public50 Private — Public

5. Conclusion

This thesis studies the impacts of ownership in Eurozone’s significant commercial and savings banks in the period from 2011 to 2016.

It is possible to identify three main moments in the earlier literature on public ownership. The first moment goes from the 1960s to the 1990s, a period characterized by lack of quantitative comprehensive research, as Boardman & Vining (1989) note. Regarding the banking industry in specific, this period is specifically marked by Alexander Gerschenkron’s (vide section 2) defense of public banks, using the example of the role of public banks in the economic development of Russia in the 19th century.

This view on public banks was later called “social view” and was highly criticized by La Porta et al. (2002). The latter became the main reference in the second period, during the early 2000s. This period was marked by a profusion of research on public ownership of banks, generally presenting evidence that public banks tend to be less efficient (La Porta et al., 2002; Barth et al., 2004; Sapienza, 2004; Jiang et al., 2013), less profitable (Iannotta et al., 2007; Micco et al. 2007; Lin & Zhang, 2009) and riskier (Iannotta et al., 2007 and 2013; Cornett et al., 2010). Moreover, country-level research (e.g. Sapienza, 2004) and studies on “political business

cycles” (e.g. Shi & Svensson, 2003) showed clear evidence for the existence of political corruption (or, at least, political influence) affecting public banks, especially in election years. However, the 2007/2008 financial crisis with the consequent capitalization of several private banks by states and new regulatory challenges, fundamentally changed the picture. Hence, in the third period (from the 2010s until today) researchers started to go deeper in ownership research, correcting earlier results and concluding that only public vs. private ownership is a limited framework to explain banks’ risk and performance. Additionally, researchers studying the effect of the financial crisis on banks found that public banks may have a role as a countercyclical tool, namely by lending when the private banks are not eager to, during financial crises, conditional on being in “good governance countries” and on efficient regulation (Andrianova et al., 2010; Brei & Schclarek, 2013; Bertay et al., 2015).

This thesis adds to the literature considering the ideas from the third period and considering that only a little part of the research was done in Europe, and virtually none in the after-crisis period of 2011 to 2016. Moreover, herein differences within developed countries are studied whereas, usually, researchers compare industrial and developed countries.

With regard to the hypotheses presented in section 2, the results show evidence that, also after the 2007/2008 crisis, public banks generally tend to have relatively lower profitability vis-à-vis privately held banks. Furthermore, public banks tend to be less efficient, specifically by having higher costs, which is consistent with the political view. However, the most interesting conclusions are that the effects of ownership are highly dependent on the country and somehow related to time as well. This means that being public, per se, is not sufficient to guarantee that a bank will be poorly managed, in line with the results in Altunbas et al. (2001). Even leading to worse profitability and lower efficiency, it seems to be clear from the results in this paper that external factors have a relevant importance in the way the public banks are managed.

These conclusions are important because they are both a confirmation and a challenge to the established theory. A confirmation because it was found evidence that public banks, even after the financial crisis, tend to be less profitable, but a challenge, at the same time, because depending on the country the performance and risk differences could be not distinguishable from that of the private banks. It is now necessary to understand what the drivers for the differences across countries are and implement the necessary changes if we are interested in use public banks as effective countercyclical tools, appropriate to provide some support to the economy during recessions, therefore giving some support to the social view. In the other hand, if there is no role for these banks in some countries, there is probably no need for an additional cost in their government budgets.

Curiously, probably all the banks in the study are supervised by the same entity, the European Central Bank. Since “bureaucratic quality”, according to Andrianova et al. (2010), is the key to understand differences across public banks, then it is up to local central banks to avoid public banks to be political banks.

References

- Andrianova, S., Demetriades, P. O., & Shortland, A. (2010). Is Government Ownership of Banks Really Harmful to Growth? *SSRN Electronic Journal*. doi:10.2139/ssrn.1633841
- Ahmed, A. S., Takeda, C., & Thomas, S. (1999). Bank loan loss provisions: A reexamination of capital management, earnings management and signaling effects. *Journal of Accounting and Economics*, 28(1), 1-25. doi:10.1016/s0165-4101(99)00017-8
- Altunbas, Y., Evans, L., & Molyneux, P. (2001). Bank Ownership and Efficiency. *Journal of Money, Credit and Banking*, 33(4), 926. doi:10.2307/2673929
- Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money*, 18(2), 121-136. doi:10.1016/j.intfin.2006.07.001
- Baltagi, B. H. (2013). *Econometric analysis of panel data*. Chichester, West Sussex: John Wiley & Sons.
- Barry, T. A., Lepetit, L., & Tarazi, A. (2011). Ownership structure and risk in publicly held and privately owned banks. *Journal of Banking & Finance*, 35(5), 1327-1340. doi:10.1016/j.jbankfin.2010.10.004
- Barth, J. R., Caprio, G., & Levine, R. (2004). Bank regulation and supervision: What works best? *Journal of Financial Intermediation*, 13(2), 205-248. doi:10.1016/j.jfi.2003.06.002
- Bertay, A. C., Demirgüç-Kunt, A., & Huizinga, H. (2015). Bank ownership and credit over the business cycle: Is lending by state banks less procyclical? *Journal of Banking & Finance*, 50, 326-339. doi:10.1016/j.jbankfin.2014.03.012
- Bhattacharya, K. (2003). How Good is the BankScope Database? A Cross-Validation Exercise With Correction Factors for Market Concentration Measures. *SSRN Electronic Journal*. doi:10.2139/ssrn.901147
- Boardman, A. E., & Vining, A. R. (1989). Ownership and Performance in Competitive Environments: A Comparison of the Performance of Private, Mixed, and State-Owned Enterprises. *The Journal of Law and Economics*, 32(1), 1-33. doi:10.1086/467167
- Bonin, J. P., Wachtel, P., & Hasan, I. (2005). Bank Performance, Efficiency and Ownership in Transition Countries. *Journal of Banking & Finance*, 29(1), 31-53. doi:10.1016/j.jbankfin.2004.06.015
- Brei, M., & Schclarek, A. (2013). Public bank lending in times of crisis. *Journal of Financial Stability*, 9(4), 820-830. doi:10.1016/j.jfs.2013.01.002
- Brown, C. O., & Dinç, I. S. (2005). The Politics of Bank Failures: Evidence from Emerging Markets. *The Quarterly Journal of Economics*, 120(4), 1413-1444. doi:10.1162/003355305775097506
- Brown, C. O., & Dinç, I. S. (2009). Too Many to Fail? Evidence of Regulatory Forbearance When the Banking Sector Is Weak. *Review of Financial Studies*, 24(4), 1378-1405. doi:10.1093/rfs/hhp039
- Claessens, S., Djankov, S., Fan, J. P., & Lang, L. H. (2002). Disentangling the Incentive and Entrenchment Effects of Large Shareholdings. *The Journal of Finance*, 57(6), 2741-2771. doi:10.1111/1540-6261.00511

- Cornett, M. M., Guo, L., Khaksari, S., & Tehranian, H. (2010). The impact of state ownership on performance differences in privately-owned versus state-owned banks: An international comparison. *Journal of Financial Intermediation*, 19(1), 74-94. doi:10.1016/j.jfi.2008.09.005
- Dinç, I. (2005). Politicians and banks: Political influences on government-owned banks in emerging markets. *Journal of Financial Economics*, 77(2), 453-479. doi:10.1016/j.jfineco.2004.06.011
- European Central Bank. (2013). Council Regulation (EU) No 1024/2013 of 15 October 2013. *The European Banking Union: A Compendium*. doi:10.5040/9781509909568.0008
- European Central Bank. (2014). Regulation (EU) No 468/2014 of the European Central Bank of 16 April 2014. *The European Banking Union: A Compendium*. doi:10.5040/9781509909568.0011
- European Central Bank. (2016, September). *Draft guidance to banks on non-performing loans* (Publication). Retrieved May, 2018, from https://www.bankingsupervision.europa.eu/legalframework/publiccons/pdf/npl/npl_guidance.en.pdf
- Ferri, G., Kalmi, P., & Kerola, E. (2014). Does bank ownership affect lending behavior? Evidence from the Euro area. *Journal of Banking & Finance*, 48, 194-209. doi:10.1016/j.jbankfin.2014.05.007
- Iannotta, G., Nocera, G., & Sironi, A. (2007). Ownership structure, risk and performance in the European banking industry. *Journal of Banking & Finance*, 31(7), 2127-2149. doi:10.1016/j.jbankfin.2006.07.013
- Iannotta, G., Nocera, G., & Sironi, A. (2013). The impact of government ownership on bank risk. *Journal of Financial Intermediation*, 22(2), 152-176. doi:10.1016/j.jfi.2012.11.002
- Jiang, C., Yao, S., & Feng, G. (2013). Bank ownership, privatization, and performance: Evidence from a transition country. *Journal of Banking & Finance*, 37(9), 3364-3372. doi:10.1016/j.jbankfin.2013.05.009
- La Porta, R., Lopez-De-Silanes, F., & Shleifer, A. (2002). Government Ownership of Banks. *The Journal of Finance*, 57(1), 265-301. doi:10.1111/1540-6261.00422
- Lin, X., & Zhang, Y. (2009). Bank ownership reform and bank performance in China. *Journal of Banking & Finance*, 33(1), 20-29. doi:10.1016/j.jbankfin.2006.11.022
- Meggison, W. L., & Netter, J. M. (2001). From State to Market: A Survey of Empirical Studies on Privatization. *Journal of Economic Literature*, 39(2), 321-389. Retrieved May, 2018, from <https://www.jstor.org/stable/pdf/2698243.pdf>.
- Micco, A., Panizza, U., & Yañez, M. (2007). Bank ownership and performance. Does politics matter? *Journal of Banking & Finance*, 31(1), 219-241. doi:10.1016/j.jbankfin.2006.02.007
- Migliardo, C., & Forgione, A. F. (2018). Ownership structure and bank performance in EU-15 countries. *Corporate Governance: The International Journal of Business in Society*. doi:10.1108/cg-06-2017-0112
- Sapienza, P. (2004). The effects of government ownership on bank lending. *Journal of Financial Economics*, 72(2), 357-384. doi:10.1016/j.jfineco.2002.10.002
- Shi, M., & Svensson, J. (2003). Political Budget Cycles: A Review of Recent Developments. *Nordic Journal of Political Economy*, 29, 67-76. Retrieved from http://www.nopecjournal.org/NOPEC_2003_a04.pdf

Shi, M., & Svensson, J. (2006). Political budget cycles: Do they differ across countries and why? [Abstract].
Journal of Public Economics, 90(8-9), 1367-1389. doi:10.1016/j.jpubeco.2005.09.009

Taylor, C. (1992). *The Ethics of Authenticity*. London, England: Harvard University Press

Appendices

Additional statistics

Distribution of banks per country and year

Table 7a

Distribution of private banks per year and per country

	2011	2012	2013	2014	2015	2016
Germany	6	6	7	7	8	7
France	4	3	4	4	4	4
Netherlands	1	1	0	0	2	2
Spain	10	10	11	11	11	11
Belgium	0	1	5	5	5	5
Ireland	2	2	2	2	2	2
Other Eurozone	18	18	20	20	20	21
Total	41	41	49	49	52	52

Table 7b

Distribution of banks with, at least, 10% public ownership

	2011	2012	2013	2014	2015	2016
Germany	5	5	8	8	8	8
France	4	5	5	5	5	5
Netherlands	3	3	5	5	3	3
Spain	2	3	5	4	3	3
Belgium	3	3	3	3	2	2
Ireland	2	2	3	3	3	3
Other Eurozone	7	7	8	9	10	9
Total	26	28	37	37	34	33

Table 7c

Distribution of banks with, at least, 50% public ownership

	2011	2012	2013	2014	2015	2016
Germany	3	3	6	6	7	7
France	2	2	2	2	2	2
Netherlands	2	2	3	3	3	3
Spain	1	1	1	1	1	1
Belgium	1	1	1	1	1	1
Ireland	2	2	3	3	3	3
Other Eurozone	3	2	3	3	3	0
Total	14	13	19	19	20	17

Table 8a

Correlation matrix for the control variables

	Public	GDP	GDPC	GD	GDPG	TA
Public	1					
GDP	0.0163	1				
GDPC	0.1276	-0.1314	1			
GD	-0.0563	-0.1751	-0.7363	1		
GDPG	0.0703	-0.0749	0.409	-0.2715	1	
TA	-0.0035	0.2567	-0.0435	-0.081	-0.0266	1

Table 8b
Correlation matrix for the main variables

	Public	Public50	LDS	ROAA	ROE	CT1	CTIN	NIM	PVR	NPLR
Public	1.000									
Public50	0.639	1.000								
LDS	-0.134	0.086	1.000							
ROAA	-0.077	-0.097	0.108	1.000						
ROE	-0.066	-0.120	0.129	0.863	1.000					
CT1	0.136	0.141	0.214	0.213	0.172	1.000				
CTIN	0.092	0.166	0.202	-0.213	-0.254	-0.028	1.000			
NIM	-0.121	-0.292	0.344	0.012	0.029	-0.084	0.266	1.000		
PVR	-0.032	0.020	-0.091	-0.211	-0.176	-0.367	0.094	0.083	1.000	
NPLR	-0.149	-0.006	0.343	-0.385	-0.409	-0.016	-0.008	0.333	-0.086	1.000

Table 9
Detailed descriptive statistics for the whole sample

	Total Assets (Million EUR)	Return on Average Assets (%)	Return on Equity	LDS	Tier 1 Ratio	Cost to Income Ratio	Net Interest Margin	Provisions Coverage Ratio	NPL Ratio
Observations	479	466	454	472	434	467	478	394	395
Min	7,618	-13.4	-0.933	0.000	-0.060	0.140	-0.008	-1.537	0.00
Percentile 25	40,914	0.049	0.011	0.091	0.108	0.540	0.010	0.057	0.02
Mean	245,551	0.005	0.020	0.279	0.137	0.637	0.015	0.122	0.07
Percentile 75	212,026	0.527	0.084	0.364	0.152	0.725	0.018	0.151	0.08
Max	2,264,317	6.415	0.351	2.251	0.749	1.825	0.050	1.107	0.54
Skewness	2.982	-4.085	-2.696	2.141	4.750	0.975	0.929	-1.181	2.49
Excess Kurtosis	8.988	26.988	11.210	7.196	42.436	5.441	1.478	33.541	7.46

Table 10
Regressions with interaction dummies

VARIABLES	ROAA	ROAA	ROE	ROE	CTI	CTI	NIM	NIM	LDS	LDS	NPLR	NPLR	CTIN	CTIN
GD	0.018*	0.018												
	(0.011)	(0.011)												
GDPG	0.132***	0.134***	0.957***											
	(0.024)	(0.025)	(0.256)											
1.Public	-0.012***		0.007			-0.013	-0.003**			-0.031	0.011			0.056
	(0.004)		(0.040)			(0.013)	(0.002)			(0.053)	(0.014)			(0.044)
1.Public50		-0.009		-0.025	-0.004			-0.003	-0.066			-0.003	0.032	
		(0.006)		(0.063)	(0.022)			(0.003)	(0.093)			(0.023)	(0.074)	
Belgium	-0.002	-0.002	0.032	0.033	0.098***	0.127***	-0.010***	-0.008***	-0.077	-0.071	-0.020	-0.022	-0.118**	-0.143***
	(0.005)	(0.005)	(0.042)	(0.036)	(0.014)	(0.015)	(0.002)	(0.002)	(0.060)	(0.063)	(0.019)	(0.017)	(0.046)	(0.050)
Cyprus	-0.017***	-0.017***	-0.107*	-0.174***	-0.022	-0.022	0.014***	0.015***	-0.026	-0.024	0.127***	0.127***	-0.216***	-0.216***
	(0.006)	(0.006)	(0.057)	(0.052)	(0.024)	(0.023)	(0.002)	(0.002)	(0.082)	(0.077)	(0.021)	(0.021)	(0.065)	(0.064)
Finland	0.007	0.007	0.023	0.014	0.046*	0.046**	-0.010***	-0.010***	0.101	0.103	-0.031	-0.031	-0.043	-0.043
	(0.007)	(0.007)	(0.068)	(0.061)	(0.024)	(0.023)	(0.003)	(0.003)	(0.100)	(0.094)	(0.025)	(0.025)	(0.079)	(0.077)
France	-0.002	0.000	0.026	0.043	-0.003	-0.001	-0.012***	-0.007***	0.343***	0.474***	-0.026	-0.024	-0.060	0.011
	(0.004)	(0.004)	(0.043)	(0.035)	(0.014)	(0.014)	(0.002)	(0.002)	(0.058)	(0.060)	(0.016)	(0.015)	(0.045)	(0.050)
Germany	0.001	0.000	-0.004	0.003	0.025*	0.028**	-0.007***	-0.008***	0.133**	0.164***	-0.031*	-0.030*	0.026	0.042
	(0.004)	(0.004)	(0.038)	(0.033)	(0.013)	(0.013)	(0.002)	(0.002)	(0.053)	(0.052)	(0.016)	(0.015)	(0.042)	(0.043)
Greece	-0.017	-0.024**	0.017	-0.125***	0.004	-0.007	0.009***	0.003*	-0.200***	-0.178*	0.185***	0.209***	-0.071	-0.079
	(0.012)	(0.011)	(0.085)	(0.043)	(0.015)	(0.025)	(0.003)	(0.002)	(0.062)	(0.100)	(0.027)	(0.016)	(0.049)	(0.084)
Ireland	-0.002	-0.002	-0.071	0.009	0.060***	0.060***	-0.006***	-0.006***	0.266***	0.267***	0.003	0.003	-0.139**	-0.139**
	(0.006)	(0.006)	(0.056)	(0.047)	(0.020)	(0.019)	(0.002)	(0.002)	(0.076)	(0.072)	(0.019)	(0.020)	(0.061)	(0.060)
Italy	-0.011*	-0.010	-0.065*	-0.060*	-0.002	-0.002	-0.005***	-0.004***	-0.028	-0.002	0.043***	0.048***	-0.018	-0.031
	(0.006)	(0.006)	(0.035)	(0.031)	(0.012)	(0.012)	(0.001)	(0.001)	(0.051)	(0.049)	(0.014)	(0.014)	(0.040)	(0.041)
Luxembourg	0.010	0.013	0.002	0.025	0.026	-0.008	-0.016***	-0.007***	0.351***	0.585***	-0.039	-0.017	-0.295***	-0.451***
	(0.009)	(0.008)	(0.068)	(0.046)	(0.019)	(0.021)	(0.003)	(0.002)	(0.074)	(0.088)	(0.024)	(0.025)	(0.059)	(0.073)
Netherlands	-0.000	0.004	-0.038	0.098**	0.043**	0.016	-0.011***	-0.010***	0.235***	-0.005	-0.023	-0.027	-0.188***	-0.200**
	(0.007)	(0.006)	(0.068)	(0.047)	(0.018)	(0.023)	(0.003)	(0.002)	(0.076)	(0.093)	(0.029)	(0.025)	(0.061)	(0.077)
Portugal	-0.013	-0.013	-0.121*	-0.143**	-0.003	-0.003	-0.006**	-0.006**	-0.174*	-0.174*	0.004	0.004	-0.081	-0.081
	(0.008)	(0.008)	(0.068)	(0.061)	(0.024)	(0.023)	(0.003)	(0.003)	(0.099)	(0.093)	(0.025)	(0.025)	(0.079)	(0.077)
Spain	-0.004	-0.007*	-0.020	-0.018	-0.007	-0.003	-0.006***	-0.007***	-0.125**	-0.127***	0.018	0.021	-0.076*	-0.092**
	(0.004)	(0.004)	(0.034)	(0.031)	(0.012)	(0.012)	(0.001)	(0.001)	(0.050)	(0.048)	(0.014)	(0.014)	(0.040)	(0.040)

Table 10 (continued)

VARIABLES	ROAA	ROAA	ROE	ROE	CT1	CT1	NIM	NIM	LDS	LDS	NPLR	NPLR	CTIN	CTIN
PublicxBelgium	0.011*		-0.019			-0.080***	0.007***			0.087	-0.021			0.144**
	(0.006)		(0.063)			(0.022)	(0.003)			(0.088)	(0.025)			(0.072)
PublicxFrance	0.013**		-0.025			0.020	0.014***			-0.342***	-0.015			-0.247***
	(0.005)		(0.058)			(0.020)	(0.002)			(0.078)	(0.021)			(0.066)
PublicxGermany	0.011**		-0.017			-0.008	0.002			-0.236***	-0.001			-0.127**
	(0.005)		(0.053)			(0.019)	(0.002)			(0.070)	(0.022)			(0.059)
PublicxGreece	0.003		-0.167*			0.027	-0.004			0.003	0.018			-0.046
	(0.008)		(0.097)			(0.029)	(0.003)			(0.116)	(0.030)			(0.097)
PublicxIreland	-0.009		-0.163**			-0.000	0.001			-0.384***	0.158***			0.201**
	(0.007)		(0.070)			(0.025)	(0.003)			(0.095)	(0.025)			(0.079)
PublicxItaly	0.016***		0.084			0.013	0.009***			-0.136	0.032			0.026
	(0.006)		(0.064)			(0.023)	(0.003)			(0.088)	(0.027)			(0.073)
PublicxLuxembourg	0.015*		-0.015			0.088***	0.015***			-0.533***				0.239**
	(0.008)		(0.086)			(0.029)	(0.003)			(0.111)				(0.092)
PublicxNetherlands	0.013*		0.030			0.061**	0.004			0.322***	-0.015			0.101
	(0.008)		(0.080)			(0.027)	(0.003)			(0.108)	(0.033)			(0.090)
PublicxPortugal	0.004		-0.062			-0.007	-0.004			0.062	-0.000			0.051
	(0.008)		(0.088)			(0.030)	(0.004)			(0.121)	(0.032)			(0.100)
Public50xBelgium		0.006		-0.070	-0.079**			0.001	0.252*			-0.007	0.347***	
		(0.009)		(0.087)	(0.033)			(0.004)	(0.135)			(0.034)	(0.107)	
Public50xFrance		0.007		-0.004	0.004			0.014***	-0.242**			-0.014	-0.140	
		(0.008)		(0.077)	(0.030)			(0.003)	(0.120)			(0.034)	(0.094)	
Public50xGermany		0.009		0.016	-0.018			0.002	-0.206*			0.014	-0.083	
		(0.007)		(0.071)	(0.026)			(0.003)	(0.106)			(0.030)	(0.085)	
Public50xIreland		-0.011		-0.138*	-0.009			0.000	-0.349***			0.173***	0.225**	
		(0.008)		(0.081)	(0.031)			(0.004)	(0.125)			(0.031)	(0.099)	
Public50xLuxembourg		0.007		0.016	0.027			-0.002	-0.324**			-0.017	0.066	
		(0.010)		(0.092)	(0.035)			(0.004)	(0.143)			(0.039)	(0.113)	
Public50xNetherlands		0.005		-0.142*	0.023			0.002	0.047			0.005	0.162	
		(0.008)		(0.081)	(0.030)			(0.004)	(0.125)			(0.035)	(0.099)	
Public50xPortugal		0.001		-0.004	-0.016			-0.005	0.097			0.014	0.076	
		(0.010)		(0.095)	(0.036)			(0.004)	(0.148)			(0.037)	(0.117)	
Size control							yes	yes	yes	yes				
Constant	-0.013	-0.013	0.040	0.045*	0.121***	0.121***	0.026***	0.025***	0.034	0.020	0.044***	0.044***	0.691***	0.691***
	(0.009)	(0.010)	(0.029)	(0.026)	(0.010)	(0.010)	(0.003)	(0.003)	(0.112)	(0.105)	(0.012)	(0.012)	(0.034)	(0.034)
Observations	401	392	391	443	424	434	471	461	462	472	395	385	461	467
R-squared	0.199	0.183	0.173	0.173	0.260	0.302	0.430	0.394	0.390	0.464	0.620	0.612	0.208	0.227

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Glossary and variables' names

BIS – Bank for International Settlements. Basel Committee is placed in the BIS headquarters

CT1 - Core tier 1 ratio

CTIN – Cost to income ratio

ECB – The European Central Bank.

ESM – European Stability Mechanism.

GD – Central Government Debt, gross, Maastricht definition (% GDP)

GDPC – GDP per capita, PPP (constant 2011 international k\$)

GDPG – GDP growth rate YoY

LDS – Liquid assets / Deposits & Short-term funding

LLP – Loan Loss Provisions

NIM – Net Interest Margin. Interest income - interest expenses / total assets

NPL – Non-Performing Loans or impaired loans

NPLR – NPL ratio. NPL /TA

PPP - Purchasing Power Parity

PVR - Provision Coverage Ratio. Loan Loss Provisions/NPL

ROAA – Return on Average Assets

ROE – Return on Equity

SSM – Single Supervisory Mechanism. The mechanism used by ECB in its supervisory activity.

TA – Total Assets (book value)

YTM – Yield to Maturity

Affidavit

ESCP Europe

I, the undersigned, do hereby state that I have not plagiarised the paper enclosed and that I am the only author of all sentences within this text. Any sentence included which was written by another author was placed within quotation marks, with explicit indication of its source. I am aware that by contravening the stated ESCP Europe rules on plagiarism, I break the recognized academic principles and I expose myself to sanctions upon which the disciplinary committee will decide.

I also confirm this work has not previously been submitted during studies prior to ESCP Europe. If this work has been written during studies conducted in parallel to my time at ESCP Europe, I must state it.

I accept full responsibility for the content of this paper.

 (Signature)

..... BERNARDO BROCHADO (Print name)

..... 10/05/2018 (Day/month/year)