Universidade do Minho
Escola de Economia e Gestão

Margarita Arantes Salgueiro de Carvalho

Mergers and acquisitions, capital structure and labour market in the banking sector

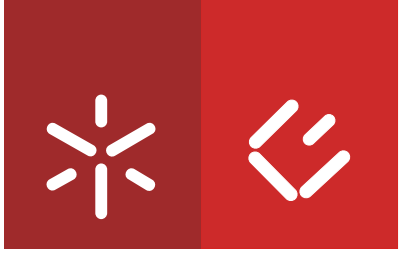
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Margarita Arantes Salgueiro de Carvalho

Mergers and acquisitions, capital structure and labour market in the banking sector

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Universidade do Minho
Escola de Economia e Gestão

Margarita Arantes Salgueiro de Carvalho

Mergers and acquisitions, capital structure and labour market in the banking sector

Tese de Doutoramento
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Trabalho realizado sob a orientação do
Professor Doutor João Cerejeira
e do
Professor Doutor Hélder Vasconcelos

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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

Fusões e Aquisições, Estrutura de Capital e Mercado de Trabalho no Setor Bancário

Resumo

Esta dissertação centra-se em três aspetos do comportamento bancário no mercado de trabalho. O primeiro estudo examina os impactos das fusões e aquisições (doravante F&A) nas remunerações dos trabalhadores dos bancos adquiridos para o período 1993-2007. Os resultados sugerem um efeito positivo das F&A nos salários, no entanto para os trabalhadores dos bancos adquiridos, os resultados sugerem um efeito menos positivo. Observa-se também que os efeitos das aquisições diferem ao longo do tempo sugerindo que a dimensão temporal é um elemento importante a considerar. Os resultados empíricos revelam que os efeitos diferem de acordo com o nível de qualificação e com o tipo de operação que se estiver a analisar.

O segundo estudo explora a ligação entre a *financeirização* e os salários dos trabalhadores. Tendo por base um painel de bancos europeus, pretende-se avaliar de que modo os bancos usam estrategicamente o endividamento de modo a evitar aumentos das remunerações. Os resultados sugerem a existência de um efeito negativo e significativo do endividamento nos salários médios dos trabalhadores. Adicionalmente, assumindo que os efeitos do endividamento poderão depender do risco individual do banco, observa-se que efeito do endividamento não difere estatisticamente, sugerindo assim que o endividamento poderá funcionar como um mecanismo disciplinador mesmo para os bancos sem risco de falência.

O terceiro estudo avalia como as características dos gestores poderão influenciar as decisões sobre o endividamento. Com recurso a dados de bancos europeus, os resultados sugerem que gestores mais novos são propensos ao risco e menos conservadores nas decisões de endividamento. No caso de gestores com maior antiguidade as suas preferências pelo risco poderão influenciar o nível de endividamento, apesar de este efeito diferir em função do nível de endividamento do banco no momento da contratação do gestor. A inclusão da dimensão temporal no processo de decisão parece validar a ideia de que uma perspetiva de curto prazo favorece o comportamento oportunista do gestor, com reflexos nas decisões relativas à estrutura de capital.

Palavras-chave: Aquisições; Bancos; Estrutura de Capital; Gestores; Salários.

Mergers and acquisitions, capital structure and labour market in the banking sector

Abstract

This thesis is focused on three aspects of banking behaviour on labour market. The first study examines the impacts of mergers and acquisitions (hereafter M&A) on wages of workers for the period 1993-2007. The results suggest a positive effect of M&A on wages; however, for workers of acquired banks, it seems that M&A has a detrimental impact reflected by a reduction of the positive effect. We have also observed that the effects of acquisitions differ over time indicating that time dimension is an important element to consider. The empirical results show that the effects differ according to the worker qualification level the M&A type.

The second study explores the link between financialization and employee wages. Using a panel of European banks we test whether banks use leverage strategically in order to refrain wage increases. The results indicate the existence of a negative and significant effect of leverage on average employee wages. In addition, considering that the effects of leverage could depend on individual bank risk. We also observe that the impact of leverage does not differ in magnitude in comparison to non-distressed banks, thus suggesting that leverage may be used as a disciplinary mechanism in this type of bank.

The third study assess how manager's characteristics may influence leverage decisions. Using data from European banks, the results show that younger managers are risk-prone and less conservative in leverage decisions. Managers with a longer tenure may bring their personal preferences towards risk and in this sense they will be more able to increase leverage. However, this effect differs according to the level of leverage at the manager's appointment date. The inclusion of the decision horizon seems to validate the idea that a short-term managerial horizon enhances the self-interested behaviour of the manager and this may be reflected on capital structure decisions.

Keywords: Acquisitions; Banks; Capital Structure; Managers; Wages.

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Chapter 1

Introduction

This thesis was motivated by the growing attention that has been devoted to the banking sector in recent years. The unique features of the banking sector make this sector an interesting topic of investigation as banks differ from non-banking institutions in many important ways.

Furthermore, the European banking sector has undergone structural changes: liberalization, deregulation, globalization, technological change, integration and harmonization through the creation of a European single market in banking. The new competitive environment promoted the adoption of a strategic behaviour of consolidation in order to react to the increased competition.

The consolidation processes that have been taking place have resulted in an increased number of M&A. It is well known that operating and financial synergies, an increase in market power, diversification and manager incentives, just to mention the most cited, may explain the rationale of these operations. On what concerns labour market, there is a widespread consensus that M&A have negative effects as they are associated with organizational restructuring involving plant closings, layoffs and reductions in compensation, serving as a restructuring mechanism. These consolidation processes aren't just limited to domestic markets but also to foreign markets. Thus a special attention has also been paid to foreign M&A and their impacts on workers.

The new banking environment marked by financial globalization, liberalization and banking deregulation have changed the way in which banking institutions operate. The financialization of the economy has changed corporate behaviour and, in the banking sector in particular, changes have occurred at the corporate governance level and in management models. Additionally, one especial feature of banking institutions that has implications on corporate governance is the use of excessive leverage. The prevalence of excessive leverage may bring some concerns regarding financial stability; however, the discussion in terms of corporate governance implications and management models is also a topic that deserves further discussion.

In the context of corporate governance and given that banks are highly leveraged firms, the discussion on the strategic use of leverage as a disciplinary mechanism and as a bargaining tool may bring some insights on the relationship between capital structure and wages in banking. However, if it is true that capital structure theories may contribute towards explaining the decisions on banking

capital structure, the role of a manager's characteristics regarding banking strategic decisions is also influential and may contribute towards explaining leverage decisions.

This discussion on the restructuring effects of M&A on wages and the use of leverage, as well as the relationship between a manager's characteristics and leverage represent the main topics which are presented and discussed independently in this dissertation.

For a better understanding of the European and Portuguese banking sector, Chapter 2 presents a brief description of the banking sector focusing on the main developments that have occurred, providing a background for the ideas that motivate the choice of the topics under investigation.

The remainder of the thesis is mainly empirical and it is structured in three main contributions as presented in Figure 1.1: Scope of the study. The first study presented in Chapter 3 uses matched employer-employee data for the Portuguese banking sector. It aims to analyse the effects of M&A at the individual level, considering the relationship between ownership change and workers. To our knowledge, at the conclusion of this study, no other study has done a similar type of analysis for the Portuguese banking sector.

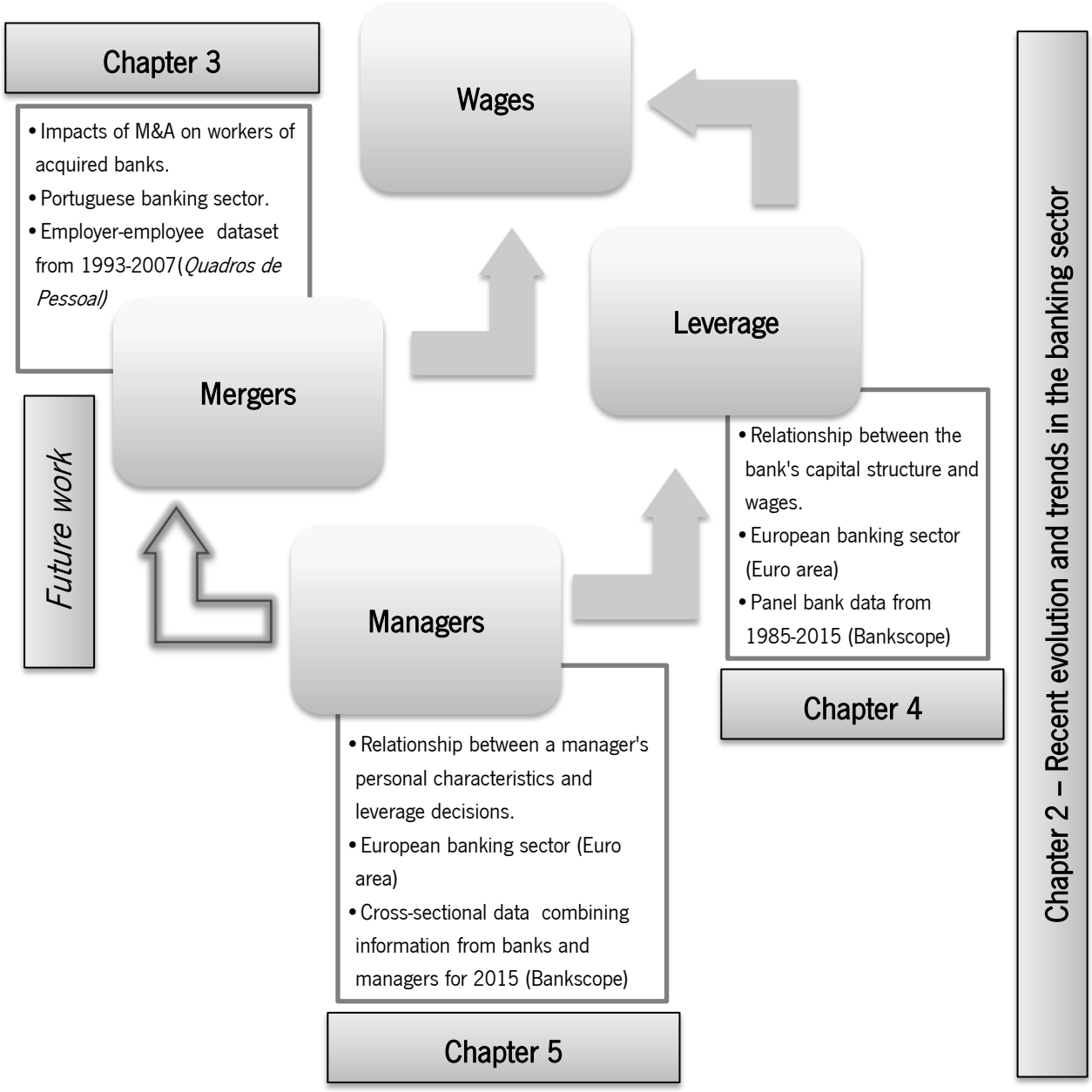
For our purpose, we obtained data on workers and banks using *Quadros de Pessoal*. The identification of M&A was possible using data collected on an annual basis by the *Associação Portuguesa de Bancos* (APB) in their *Boletins Informativos*. We have also identified the entities that were not engaged in those processes. The use of individual data allows us to evaluate the impact of M&A on individuals, including unobservable firm and individual characteristics using the fixed least squares dummy variables regression and the spell fixed effects approach presented in Andrews et al. (2006).

In line with the idea that financialization has changed the landscape of corporate governance in banking and focusing on the strategic use of leverage, the second study contributes to the literature on wages in the banking sector, considering the influence of capital structure on average employee pay, contributing for the analysis of the significance of some financialization related issues and their relation with changes in labour pay at the microeconomic level. In Chapter 4, we examine a panel of European banks from Bankscope for the 1987-2015 period. We employ the instrumental fixed effects estimation with two-stages least squares (IV2SLS) approach. Furthermore, we apply a novel identification strategy proposed by Lewbel (2012) also representing one of the contributions of this research. We also consider that the effects of leverage may vary according to the bank's exposure to risk and also highlight the non-linear relationship between leverage and average wages.

Considering the special features of banking as the use of excessive leverage, in Chapter 5, we focus on manager's characteristics and how they may be determinant for leverage choices. Aiming at providing empirical evidence on the limited research on the relationship between a manager's personal characteristics and leverage decisions in banking, we consider manager's preferences towards risk and we offer some evidence for the inclusion of the horizon dimension, considering that a short-time managerial horizon may have an influence on capital structure. One contribution of this study is to combine insights from the upper echelons' perspective with traditional theories in the explanation of the relationship between managers and corporate capital structure decisions. This study uses data that matches information from European banks and managers for 2015. We have implemented a simultaneous quantile regression equation model in order to account for non-linear effects of the explanatory variables and assess in a more reliable way, on how those effects vary along the leverage's distribution.

Finally, in Chapter 6, the dissertation ends with a final Conclusion, in which the main results of the three previous chapters are summarized and the main policy implications of the analysis are discussed. Furthermore, it addresses some limitations and some directions for future research.

Figure 1.1: Scope of the study



Chapter 2

Recent evolution and trends in the banking sector

The European financial system and the banking sector in particular have suffered several transformations, especially since the creation of the European Monetary Union (EMU) and the introduction of the euro. The integration of European banking markets progressed at a fast pace until the financial crisis broke out in 2007, whose effects contributed to the awareness of how this integration may affect stability. In spite of the crucial role of the EMU and the euro, a broad range of developments have also contributed to the transformation of the European banking sector.

First, the integration and liberalization of the European financial markets, accomplished through a progressive reduction of legal barriers, has contributed to a new competitive dynamic for banks. Developments in the legal environment at the European Union level have taken place since the late 1970s. The measures adopted have not only promoted the deregulation for entering domestic markets, but they have also shown an effort to evolve in terms of coordination and harmonization of regulations. Table 2.1 presents a brief review of the key legislative developments that have contributed towards the integration of European banking and the financial sectors.

Table 2.1: Overview of relevant developments in the legal environment for EU banking and the financial sectors

1973	*Directive on the Abolition of Restrictions on Freedom of Establishment and Freedom to Provide Services for Self-employed Activities of Banks and Other Financial Institutions.* Applies the national treatment principle, which ensures the equal regulatory and supervisory treatment of all firms operating in one country.
1977	*First Banking Directive*. Removed obstacles to the provision of services and establishment of branches across the borders of EU member states. Harmonized rules for bank licensing. Established EU-wide supervisory arrangements.
1988	*Directive on Liberalization of Capital Flows.* Free cross-border capital flows, with safeguards for countries with balance of payments problems
1989	*Second Banking Directive*. Single EU banking licence. Principles of home country control (home regulators have ultimate supervisory authority regarding the foreign activity of their banks) and mutual recognition (EU bank regulators recognise equivalence in their regulations). Passed in conjunction with the Own Funds and Solvency Directives, incorporating capital adequacy requirements similar to Basel I into EU law.
1993	*Investment Services Directive*. Legislative framework for investment firms and securities markets, providing for a single passport for investment Services
1999	*Financial Services Action Plan (FSAP).* Legislative framework for the Single Market in financial services.
2000	*Consolidated Banking Directive*. Consolidation of previous banking regulation.

Continued on next page

Table 2.1 – continued from previous page

2000	*Directive on e-money*. Access by non-credit institutions to the business of e-money issuance. Harmonised rules/standards relating to payments by mobile telephone, transport cards and Basel payment facilities.
2001	*Directive on the Reorganisation and Winding-Up of Credit Institutions*. Recognition throughout EU of reorganisation measures/winding-up proceedings by the home state of an EU credit institution.
2001	*Regulation on the European Company Statute*. Standard rules for company formation throughout the EU.
2002	*Financial Conglomerates Directive*. Supervision framework for a group of financial entities engaged in cross-sectoral activities (banking, insurance, securities).
2004	*New EU Takeover Directive*. Common framework for cross-border takeover bids.
2005-2010	*White Paper on Financial Services Policy*. Plan to implement outstanding FSAP measures, consolidation/convergence of financial services regulation and supervision.

Source: Goddard et al (2007), Dermine (2003).

Second, liberalization and deregulation have contributed to a change in the competitive environment as new players started to compete with banks in financial services. Moreover, the universal banking model has not only blurred the distinction between banks and non-bank intermediaries but it has also contributed towards the increase of market shares by foreign banks. Coupled with these developments, globalization, technological change and innovation in banking have promoted new opportunities for banks regarding their products and services. Banks have also pursued a diversification strategy focusing not only on other non-interest income sources of revenue, but also on an increased cross border activity. In spite of the effort to increase non-interest income, average profitability of European banks has presented substantial variations, as shown by Table 2.2, which signals, as pointed out by Molyneux (2013), differences in accounting and tax systems, intensity of competition in specific products' segments, the extent of product and geographic diversification and business cycles effects.

Table 2.2: Average profitability (% Return on Equity) of the EU-19 banking sector, between 1996 and 2015

Country	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Austria	5,92	8,10	8,64	10,25	13,80	7,84	7,50	9,15	11,46	11,86	26,30	14,62	4,76	4,38	4,63	3,53	4,73	-0,79	4,66	6,92
Belgium	10,85	9,24	6,33	8,95	11,93	34,44	19,17	20,65	11,84	13,46	25,70	5,85	-38,94	-7,09	9,84	3,78	7,03	7,55	9,44	11,46
Cyprus	8,82	17,54	-21,99	15,82	12,22	13,58	4,41	3,31	9,06	12,47	15,64	19,19	14,10	7,52	9,19	-52,84	-27,22	-24,24	-4,74	2,07
Estonia	31,20	32,39	-14,71	12,84	13,36	20,77	21,20	21,13	10,39	15,64	38,47	15,71	10,59	-69,45	1,80	32,69	14,52	18,43	11,39	20,34
Finland	6,96	14,31	6,09	13,24	17,93	-5,96	2,73	8,92	17,26	10,50	10,60	14,48	9,41	8,17	7,44	8,75	10,27	8,68	9,20	8,52
France	-	3,91	9,02	6,83	9,91	11,29	10,37	9,55	13,19	12,85	20,99	6,08	-11,32	6,66	9,19	3,29	8,64	9,56	1,93	8,04
Germany	6,25	6,82	14,09	4,48	6,86	4,64	-2,23	-9,46	-1,64	10,54	9,86	15,96	-12,20	-4,73	2,04	0,51	3,93	3,38	2,97	2,27
Greece	12,66	12,50	-10,03	3,76	-0,66	-13,63	-16,06	-14,60	17,12	16,51	12,53	15,63	6,03	-0,39	-7,63	-46,41	-85,06	33,23	-13,37	-29,24
Ireland	9,89	10,70	10,51	7,81	8,50	6,83	4,80	9,80	17,99	28,25	18,54	24,65	10,68	-74,30	-101,48	-19,78	-14,21	-14,60	10,66	3,06
Italy	1,48	6,40	9,04	8,52	14,80	6,55	-0,33	2,31	15,36	17,24	12,21	9,08	5,45	2,53	3,06	-11,34	-0,75	-14,47	-2,61	2,22
Latvia	30,34	28,93	-31,78	6,09	18,82	17,36	17,55	17,75	21,78	25,56	27,32	26,33	2,19	-45,38	-21,63	0,22	-	9,18	9,11	8,33
Lithuania	-	4,23	10,32	9,08	4,89	-0,63	9,54	13,35	12,23	11,47	18,77	23,81	13,63	-53,10	-4,46	16,47	8,91	12,77	7,76	8,21
Luxembourg	12,57	12,92	16,69	11,98	13,34	12,47	12,95	14,12	15,41	14,42	21,91	18,73	3,76	6,89	8,91	0,76	7,30	7,17	7,19	6,99
Netherlands	10,29	9,49	12,04	12,71	14,31	8,98	1,10	12,49	13,87	22,52	16,79	26,37	-31,63	-4,73	5,55	5,96	6,49	5,92	6,55	9,45
Portugal	9,14	7,29	9,04	7,61	5,40	9,43	8,83	12,57	25,64	17,59	14,67	13,00	5,63	4,96	3,19	-4,91	-13,20	-23,73	-17,49	-4,45
Slovak Republic	7,91	-0,08	-	55,18	22,15	13,01	16,65	17,04	14,32	14,38	16,28	18,53	10,27	5,88	10,16	5,09	7,00	8,73	8,10	8,67
Slovenia	11,71	8,96	12,61	7,34	12,55	8,03	11,81	11,73	11,30	9,60	11,93	14,09	7,19	3,41	-2,72	-12,58	-23,36	-117,67	-2,44	3,08
Spain	6,89	7,96	11,45	10,94	5,61	7,30	7,13	6,82	22,02	9,18	14,93	16,41	12,84	9,97	7,87	1,21	-9,01	1,94	4,00	4,64
Malta	17,15	18,28	13,21	11,95	21,33	12,88	10,96	11,37	9,17	12,14	10,76	8,39	-5,89	16,67	10,18	5,98	13,77	9,98	8,13	8,54

Source: Beck et al. (2018).

Third, the growing competition has contributed towards the adoption by banks of a defensive strategy, expansion through internal growth or through M&A. Since the mid-1980s and during the 1990s the level of M&A in European banking has increased considerably. In the European Union, and in Portugal as well, there has been a reduction in the number of credit institutions as reported in Table 2.3. In 2017, the number of credit institutions is 42.7% and 37.9% smaller than in 1998, for the European Union and Portugal, respectively.

Table 2.3: Number of credit institutions (MFIs) in the euro area and Portugal

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Europe	8320	7906	7521	7218	6906	6593	6406	6248	6130	6127
Portugal	227	223	218	212	202	200	197	186	178	175
Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Europe	6570	6458	6334	6210	6019	5846	5516	5454	5054	4769
Portugal	175	166	160	155	152	151	150	147	145	141

Source: ECB, Financial Corporations Statistics.

This downward trend is also observed at the level of bank branches and in the number of employees, which is not only explained by the restructuring and reorganization of banks, but also by the rapid adoption by customers of electronic payments as well as online and mobile banking.

Even though the banking sector was characterized by a large set of national regulations constraining its activities, presenting a delay in restructuring in comparison to other sectors, in 2001 the banking sector was one of the most active sectors in M&A activity representing almost 23% of the total value of M&A operations in Europe (Ayadi and Pujals, 2004).

At an initial stage the banking M&A processes were primarily domestic. During the period of 1990-2001, the ratio of domestic to cross-border bank mergers was five to one (Campa and Hernando, 2006). Before the global financial crisis, the majority of M&A occurred between domestics leading to an increase in banking concentration. Since 2000, the number of M&A transactions in the euro area banking sector has been falling almost continuously. From the start of the crisis in 2008, the number of domestic transactions remained broadly unchanged until 2013, reflecting ongoing consolidation in the banking system and an increase until 2013 in the relative share of domestic M&A (ECB, 2017).

For Portugal, 1999 was characterized by the intensification of the consolidation processes; however, the concentration of the banking sector observed a reduction as it was accompanied by an increase of small banks and foreign banks. By 2000, an increase in concentration is observed with

the five largest banking groups attaining more than 75% market share in terms of total assets (Carvalho, 2007). This statement is confirmed in Table 2.4, where a large increase in concentration is observed, which is evident for Portugal, especially in the 1999-2007 period.

Table 2.4: Concentration, employment and branches variation between 1999 and 2017

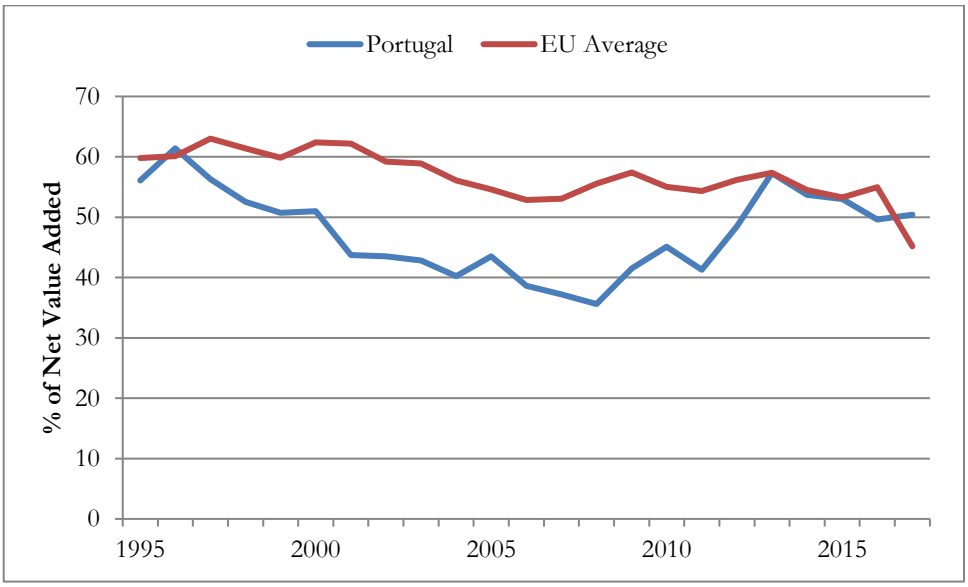
% change of CR-5			% change in number of employees			% change in branches		
Country	1999-07	2010-17	Country	1999-07	2010-17	Country	1999-07	2010-17
Austria	1.9	0.5	Austria	0.2	-1.1	Austria	-0.06	-0.07
Belgium	7.8	-6.1	Belgium	-1.1	-1.0	Belgium	-0.27	-0.08
Bulgaria	n.a.	1.3	Bulgaria	n.a.	-0.4	Bulgaria	n.a.	-0.36
Croatia	n.a.	n.a.	Croatia	n.a.	n.a.	Croatia	n.a.	n.a.
Cyprus	4.4	19.9	Cyprus	0.7	-2.3	Cyprus	-0.23	-0.43
Czech Rep.	0.6	1.6	Czech Rep.	-1.1	0.3	Czech Rep.	-0.01	-0.01
Denmark	-6.7	1.2	Denmark	0.1	-1.2	Denmark	-0.03	-0.12
Estonia	-3.2	-2.0	Estonia	1.5	-0.4	Estonia	-0.01	-0.08
Finland	-26.4	-11.2	Finland	-0.1	-0.5	Finland	0.02	-0.10
France	9.2	-2.0	France	0.2	-0.3	France	0.18	-0.04
Germany	3.1	-2.9	Germany	-1.0	-0.7	Germany	-0.23	-0.08
Greece	0.7	26.3	Greece	0.4	-1.8	Greece	0.08	-0.16
Hungary	1.8	-1.8	Hungary	1.3	-0.2	Hungary	0.22	-0.10
Ireland	9.3	-4.4	Ireland	-0.5	-2.3	Ireland	0.00	-0.06
Italy	7.5	3.6	Italy	-0.1	-0.8	Italy	0.09	-0.11
Latvia	6.6	13.1	Latvia	2.5	-1.2	Latvia	0.05	-0.15
Lithuania	-10.1	11.3	Lithuania	0.5	-0.1	Lithuania	0.10	-0.14
Luxembourg	4.5	-4.9	Luxembourg	5.2	-6.9	Luxembourg	-0.05	-0.07
Malta	-15.7	9.6	Malta	-0.9	1.8	Malta	-0.03	-0.04
Netherlands	4.1	-0.4	Netherlands	-0.9	-2.1	Netherlands	-0.13	-0.08
Poland	0.1	4.1	Poland	0.0	-0.4	Poland	0.06	0.01
Portugal	23.7	2.2	Portugal	-0.2	-1.3	Portugal	0.05	-0.17
Romania	n.a.	n.a.	Romania	n.a.	-0.5	Romania	n.a.	-0.07
Slovakia	7.4	2.5	Slovakia	-0.4	0.1	Slovakia	0.01	0.00
Slovenia	-7.9	2.3	Slovenia	0.5	-1.1	Slovenia	-0.01	-0.07
Spain	0.7	19.4	Spain	0.1	-1.7	Spain	0.03	-0.34
Sweden	5.4	0.4	Sweden	0.4	1.8	Sweden	-0.02	-0.01
UK	13.8	-5.6	UK	-0.1	-1.6	UK	-0.05	-0.03
Euro Area	9.0	-0.4	Euro Area	-0.5	-1.1	Euro Area	-0.04	-0.09

Source: Adapted from Duijm, P. and Schoenmaker, D. (2018).

Fourth, and finally, the changing environment in which banking institutions operate has experienced a deep change marked by the financialization of the economy. It is well known that the financialization process reflects the increase in importance of the financial sector. The economic contribution of banking and related financial services is manifest. As reported by the European Banking

Federation (2018), in the last decade, financial services (excluding insurance and pension activities) have contributed between 3% and 4% of the value of compensation of employees and gross value added in the EU economy. The financialization process has been accompanied by the reduction of wage share at the EU level, as observed in Figure 2.1. For Portugal, a large decline is identified, which is only reversed during the 2011-2013 period.

Figure 2.1: Compensation of employees, % of net value added, 1995 – 2017

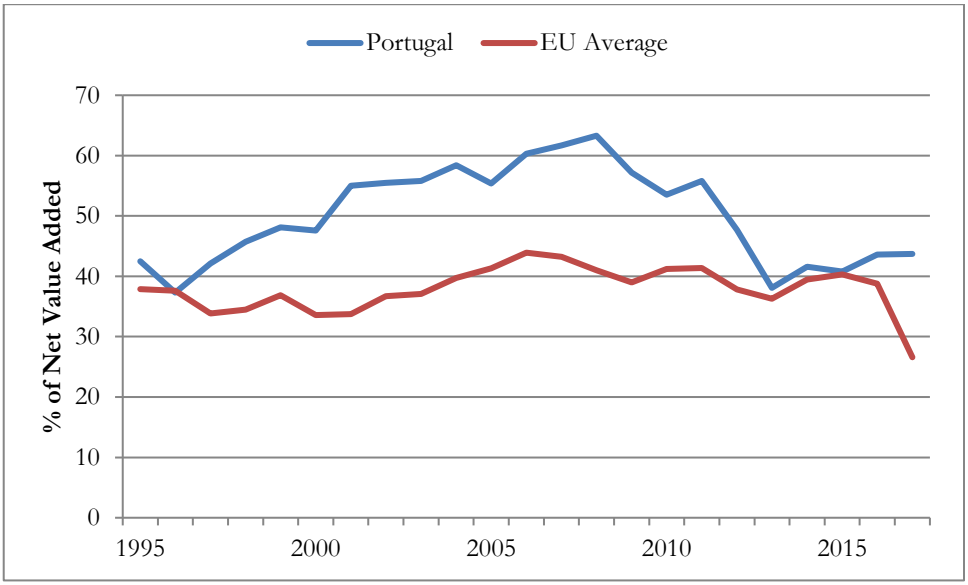


Source: OECD (2018a)

Notes: The financial corporation sector includes all private and public entities engaged in financial activities such as monetary institutions (including central banks), financial intermediaries, insurance companies and pension funds. The indicator is calculated by dividing compensation of employees by the net value added of the financial sector. The EU average is reported for the Eurozone countries, excluding Cyprus and Malta for whom data is not available.

Regarding profit share, Figure 2.2 depicts an increase in profit share that is manifest for Portugal with a large increase from 47.60% in 2000 to 63.30% in 2008. After a decline, in the post financial crisis, Portugal has been signalling, since 2014, an increasing profit share.

Figure 2.2: Net operating surplus,
% of net value added, 1995 – 2017

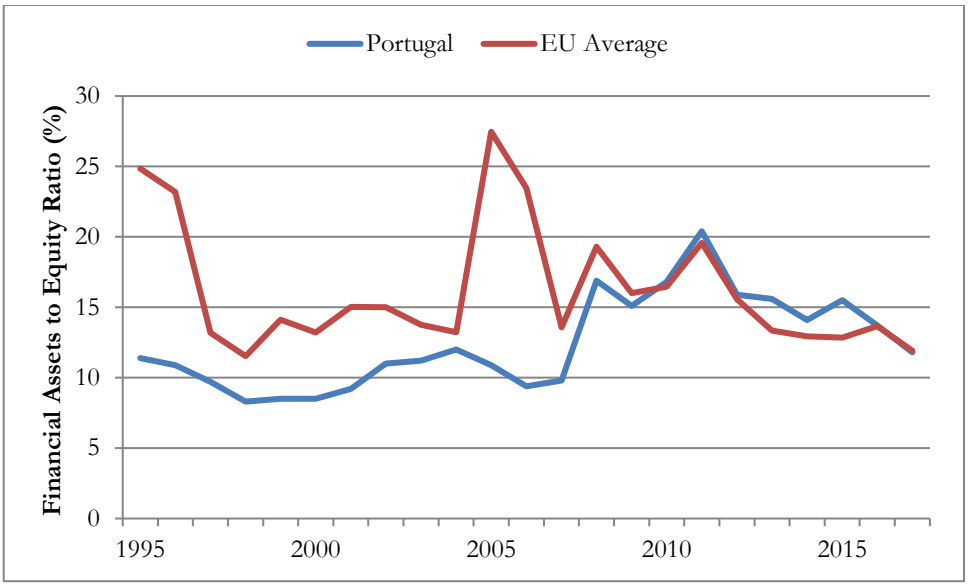


Source: OECD (2018a).

Notes: The financial corporation sector includes all private and public entities engaged in financial activities such as monetary institutions (including central banks), financial intermediaries, insurance companies and pension funds. The indicator is calculated by dividing operating surplus by the net value added of the financial sector and reflects the returns to capital needed to maintain the same level of production in the future. The EU average is reported for the Eurozone countries, excluding Cyprus and Malta for whom data is not available.

Financialization has brought changes that cannot be disentangled from the evolution occurred in the financial sector (Palley, 2007), therefore among other reasons, financialization has changed corporate behaviour. With regards to banking, this phenomenon has important consequences in the way how corporate governance is performed and in the banking management models that are implemented. In this sense, the financialization process and the changes in management and ownership have led to a growing emphasis on performance and shareholder value, inducing banks to re-examine their asset and liability management strategies (Molyneux, 2013) and to adopt a more risk-taking behaviour. The banking sector leverage has moved in an upward trend, with Portugal presenting lower levels in comparison to the EU average until 2009. While there was a similar trend in the deleveraging process, after 2011 Portugal presented a higher level of leverage in the banking sector, as observed in Figure 2.3.

Figure 2.3: Banking sector leverage, 1995 – 2016



Source: OECD (2018b).

Notes: The indicator covers the banking sector (central banks, and Monetary financial institutions), as well as other financial intermediaries, except insurance corporations and pension funds. The EU average is reported for the Eurozone countries, excluding Cyprus and Malta for whom data is not available.

The recapitalization effort that European banks have made in recent years has resulted in a strengthened capital position. Notwithstanding, the Portuguese banks' capital levels have remained above the minimum legal requirements, their solvency situation has improved considerably since 2011 and they have placed the core equity Tier 1 (CET1) ratio comfortably above the minimum requirements (APB, 2015, 2017).

Having in mind the evolution that have occurred in this particular sector as well as the specificities that typifies the banking behaviour we stablish a comprehensive framework that links banking behaviour to labour market in order to answer to the following questions:

- What effects M&A have on wages and employment?
- How leverage decisions may influence wages?
- What manager's characteristics are determinant for leverage decisions?

Chapter 3

Mergers and Acquisitions and wage effects in the Portuguese banking sector

3.1. Introduction

Until the mid-1980s, the Portuguese banking sector was publicly owned and limited by strong administrative and legal controls. In the following years several factors contributed towards the development of this sector. The liberalization and the deregulation in the banking sector together with globalization and technological development have created a new competitive environment. The harmonization of the prudential regulation implemented during the first half of the nineties and the creation in 1993 of the Single European Market for financial services were important determinants of the liberalization process[1]. As a result, the integration of financial markets has blurred the distinction between activities such as lending, investment banking, asset management and insurance. All these transformations have created threats and opportunities, and banks have reacted to the increasing competition by cutting costs and expanding in size, often by merging with competitors or taking them over.

The Portuguese case is an interesting subject of investigation as it has undergone, since 1990, an accelerating consolidation process, representing an interesting opportunity to investigate the effects of M&A on wages. For Portugal, research focusing on the banking labour market is scarce and, to our knowledge, the only study that presents evidence regarding the Portuguese banking industry was presented by Monteiro (2004, 2010) who assessed the impact of privatisation on wages. Additionally, a comprehensive dataset covering this period is available so it is possible to assess the impact of M&A operations on individuals whose firms where subject to ownership changes. The use of matched employer-employee data allows us to access detailed information on individuals and in doing so it is

[1] The *Second Banking Directive* (89/646/CEE, of 15 December 1989) has been transposed into Portuguese legislation by the Decree-Law 298/92, of 31 December, which established the RGICSF (*Regime Geral das Instituições de Crédito e Sociedades Financeiras*).

possible to control for differences at the worker level and to control for changes in the composition of the workforce.

The literature on employment and wage effects of M&A is mostly concentrated at the plant and firm level (Conyon et al., 2002a; Conyon et al., 2004; Gugler and Yurtoglu, 2004; Lehto and Böckerman, 2008; McGucking and Nguyen, 2001; Oberhofer, 2013), so it is not possible to assess the effects of these operations on an individual worker. Using individual workers' wages rather than plant or firm wages will allow us to deal with individual heterogeneity. Thus, this study contributes by analysing the effects of M&A at the individual level, considering the relationship between ownership changes and workers. In this context, the aim of this study is to assess the impacts of M&A on the labour market for workers of acquired firms, including unobservable firm and individual characteristics by using the fixed effects least squares dummy variables regression as proposed by Andrews et al. (2006) and the spell fixed effects approach implemented by Graham et al. (2012) in their study on managerial attributes and executive compensation.

The impacts of M&A may not happen immediately, so this investigation also takes into account the time dimension and it examines the effect of M&A on wages in different years after the M&A. The longitudinal nature of our dataset enables us to analyse the impact of M&A on employees and to consider the time dimension of those effects.

This research also tries to assess if the effects on wages differ according to the worker's qualification level and the type of M&A[2]. Regarding the definition of M&A we have adopted an all-embracing concept of M&A according to what matters, which is the existence of a common strategy to be implemented in the firms that are integrated. In this sense, patrimony depends on a unique economic centre, so we are concerned with the integration event no matter which form of integration it assumes.

The remainder of the paper is organized as follows: Section 3.2 briefly summarizes the literature that has examined the relationship between M&A, employment and wages. The following section focuses on the data and the description of the sample and it also contains the descriptive statistics for some of the variables used. Section 3.4 presents the empirical methodology and the corresponding results are reported in Section 3.5. Finally, the main conclusions are outlined in Section 3.6.

[2] We classify M&A as being domestic or foreign. To classify a bank as a foreign entity we consider in our analysis a 50% threshold of foreign participation.

3.2. Literature review

3.2.1. Efficiency, employment and wages

The perception that M&A have negative effects on the labour market has been an interesting subject of investigation in recent years. The recognition of the M&A's efficiency gains related to increased productivity and reduced costs has put into question the relation between efficiency, employment and wages reduction. According to Jensen (1988), ownership changes result in organizational restructuring involving plant closings, layoffs of top-level and mid-level managers, staff and production workers and reduced compensation.

In this sense, labour market impacts are crucial, since the workforce adjustments are determinant in achieving M&A gains, therefore the efficiency motive represents one of the most important motivations for the pursuance of these operations, so in synergy-promoting M&A we can expect that the firms involved may wish to rationalize and use their assets jointly to obtain scale economies. It is expected that the rationalization will include human capital, and the downsizing of overlapping activities certainly will include a reduction in the workforce (McGucking and Nguyen, 2001; Lehto and Böckerman, 2008). However, it may not be just the case that merging firms exploit short-run economies of scale, by reducing overall employment in the new entity; it may also be observed that efficiency gains would permit the newly combined entity to grow, which would increase labour demand, leading to an employment increase.

In the analysis of the effect of M&A on the labour market, several studies focus their attention on the changes in employment and/or in wages within a given time period. At the firm-level, the effects of M&A are obtained for the average plant or firm level worker. Even controlling for firm or plant-level human capital, these studies may not capture the effects on individual workers. The mixed results on the employment effects give an indication of the employment effects; however, they are uncertain concerning the nature of the labour market effects (Pendleton, 2016).

3.2.1.1. Firm-level evidence

Oberhofer (2013) confirms the evidence of a positive and significant impact of acquisitions on employment of acquired firms. His study examines the post-acquisition employment growth of acquired firms and concludes that targets of acquisition increase their employment growth rate after the operation which, according to the author, provides evidence for the existence of efficiency gains.

Several studies report negative employment effects of M&A. More precisely, Conyon et al. (2002a) report that UK mergers result in a reduction in wages and compensation for non-production workers and it has also found a reduction in employment on related mergers in comparison to non-related mergers. In a previous study, Conyon et al. (2001) consider the hypothesis that hostile takeovers constitute a disciplinary mechanism that will increase productivity and employment reduction and an opportunity to renege on implicit contracts that will increase job losses. They analyse the employment effects of hostile takeovers in the United Kingdom for the 1993-1996 period and they observe that hostile and friendly acquisitions are associated with a decrease in labour demand, therefore there is no difference between these two types of transactions. Indeed, both types of acquisitions have an immediate negative effect on employment.

The hypothesis that mergers may serve as a mechanism of restructuring is also considered by Gugler and Yurtoglu (2004) in their study on employment effects for US and European mergers, they consider that M&A represent a general device to restore a firm's optimal employment level. Comparing USA and Europe, the authors find that there is a decline in employment for mergers involving European firms. Since Europe has more rigid labour markets, mergers constitute an effective mechanism to reduce excess labour. M&A, as suggested by Shleifer and Summers (1988), may constitute a mechanism to renege on implicit contracts, laying off workers or reducing their wages; in the case of rigid labour markets, they also serve as a means to renegotiate the existing labour contracts. This restructuring mechanism constitutes an important reason for the reduction of employment (Lehto and Böckerman, 2008; Kubo and Saito, 2012).

In their study regarding the changes in employment and wages after a merger in Japan, Kubo and Saito (2012) find a reduction in the number of employees that occurs three years following the operation. A possible explanation for this suggests that firms try to reduce employment by suspending the recruitment of new employees, or by asking for voluntary retirement. In this sense, firms try to avoid the dismissal of employees. They also find that this negative effect on employment is more pronounced for related and non-rescue mergers. When analysing the employment conditions of those that remain in the firm, they observe a wage increase and conclude that employment conditions

improve after a merger, namely for related and non-rescue mergers. Kuvandikov et al. (2014) however, consider that for related transactions, the expected reduction in employment is not always observed. This indicates that M&A are not always bad for the labour market, thus considering that it is important to distinguish between job transfer and job loss.

In line with these ideas, notwithstanding that in some cases ownership changes may be less positive for workers, it may be the case that in larger plants where the managerial discipline hypothesis is more valid, the reduction in employment may have benefits as ownership changes improve efficiency that countervail the losses for many workers (McGucking and Nguyen, 2001). The same point of view is also shared by Amess et al. (2014), according to whom, for related acquisitions, a wage increase is expected as a result of efficiency gains. This increase in wages will result from low productivity workers losing their jobs after takeovers and a higher average productivity and wages for the remaining workers is observed.

Ownership changes may not just be an opportunity to renege on implicit contracts, but they have other consequences on wages as long as they affect the structure of the product market and influence wages through profits and bargaining positions (Conyon et al., 2004). The authors observe that profitability and wages increase following an acquisition and that the type of transaction is important. In this sense, workers will obtain larger wage increases if they are involved in related mergers and the increase in wages results not just from an improved bargaining position, but also from the increase in profitability, suggesting that there is an increase in labour efficiency.

3.2.1.2. Evidence from linked employer-employee data

Empirical studies that have made use of matched employer-employee data focus their analysis at the individual level. According to Siegel (2008), M&A transactions increase additional investment in human capital and promote quality improvement for workers that remain in the same firm. For Swedish manufacturing plants, the authors find that employment is reduced after ownership change. However, this effect occurs most strongly for full acquisitions and divestitures and unrelated acquisitions. The findings suggest that M&A are associated with a decline in earnings. However, when analysing different types of transactions, the findings also suggest that earnings decline more in the case of workers who worked at a plant that was acquired by an owner that did not previously own an establishment. For partial investitures, the authors observe an increase in earnings. Thus, human capital is valued differently according to the type of transaction and those who acquire just a part of the firm or those

who enter into a new industry by a purchase mechanism, value more the existing stock of human capital.

The positive effect on earnings and in the quality of human capital is also observed in a subsequent study (Siegel et al., 2009), which suggests that plants involved in an ownership change present an improvement in terms of average employee age, experience and percentage of workers with a college degree. At the individual level, it seems that job losses for women and non-Swedish workers occur with ownership changes, however higher turnover rates are observed for the same type of workers that were not subject to ownership changes. The authors observe that highly educated workers appear to be more mobile, and women, foreign-born and younger workers employed at plants involved in ownership changes experience higher job losses and reductions in wages.

Siegel and Simons (2010) find, by using linked employer-employee data for virtually all Swedish manufacturing firms and employees and consistent with human capital theory, that M&A enhance plant productivity, although they also result in the downsizing of establishments and firms. Furthermore, they observe that M&A have a positive effect on workers' careers by improving the sorting and matching of workers and managers to firms and industries that are best suited to their skills. In spite of the reduction of establishments and firms, the plants involved in M&A operations were subject to a quality improvement of their employees.

This line of reasoning is in accordance with Smeets et al. (2016) in their study on post-merger organizational integration, pointing out the importance of human capital, as well as knowledge sharing in M&A. In this sense, even if M&A may result in a negative experience for many employees, highly skilled workers will still benefit. Thus, workers with less firm-specific human capital, education and tenure will probably be more prone to leave the merged firm.

3.2.2. Foreign ownership, employment and wages

3.2.2.1. Firm-level evidence

As cross-border M&A have increased substantially worldwide, the relationship between foreign ownership and wages has also been a topic of investigation. In their study about the impact of foreign ownership on firm level productivity and wages in the UK manufacturing industry for the 1989-1994 period, Conyon et al. (2002b) find that domestic acquisitions, namely horizontal acquisitions, are accompanied by a reduction in wages that are explained by the opportunity that acquisitions offer to renege on implicit labour contracts and to transfer surplus from the workforce. When they compare foreign to domestic acquisitions, they observe an increase in average wages after a foreign acquisition.

The positive effect of foreign takeovers on wages may be explained by the possession and transfer of a firm specific asset that enhances productivity and profitability for these firms. If foreign firms are more productive and if the efficient use of the firm specific asset requires productive workers, then we may observe higher wages after the transfer of the firm specific asset to the target firm. It may also occur that foreign firms offer non-competitive wages that increase productivity and profitability in order to reduce labour turnover, motivate employees, enhance loyalty and select highly skilled workers (Girma and Görg, 2007; Bandick, 2011). This line of reasoning is also present in Oldford and Otchere (2016) in a sense that not only will higher productivity generate higher wages, but also higher wages may be paid to the remaining employees in order to achieve increased productivity.

Another explanation is that the change in ownership may alter the industrial relations practices, so these changes may have effects on wages. We may observe that the wage level in the foreign affiliate is linked to the parent company, or that foreign firms pay higher wages than domestic firms in order to avoid industrial relations disputes. Moreover, the authors consider that higher wages may also be expected when successful work practices or new arrangements are transferred to foreign subsidiaries. Thus, to implement these practices or arrangements effectively, workers are compensated with higher wages.

In order to identify the causal effect of foreign acquisitions on wages, Girma and Görg (2007) investigate the impact on wages of the takeover of a domestic establishment by foreign owners and observe that the post-acquisition wage effect depends on the nationality of the foreign acquirer and the skill group of workers. They find a wage increase, on average, for skilled and unskilled workers for US firms. However, these effects are not observable in the case of EU firms.

Huttunen (2007) shares the same ideas as Girma and Görg (2007) in terms of the theoretical explanations for higher wages paid by foreign-owned firms, nonetheless the author points out that these firms employ qualified workers in comparison to domestic firms, thus this represents a reasonable explanation for a wage premium. In her study on the effect of foreign acquisition on wages in Finland, she finds that foreign acquisition has a positive effect on wages for all skill groups; however, the effect becomes more evident as the level of schooling increases. She also observes that the effect is not immediate and it is observed within 1 to 3 years after the acquisition. According to the author, this delay may be due to several reasons, for instance foreign firms implement more training, thus wages in plants acquired by foreign-owned firms increase only some years after the acquisition and the increase in wages is higher for highly educated workers. Another reason is related to some organizational changes that may occur in the firm that require time to be implemented. It may also occur that changes in average wages result from changes in the employment composition of the workforce, which creates adjustment costs, therefore the changes are not immediate. Finally, the author also considers that measurement problems may create uncertainty about the right time for the acquisition.

3.2.2.2. Evidence from linked employer-employee data

It is, however, not clear if the increase in wages after a foreign acquisition is due to worker reallocation and changes in the firm´s human capital or due to increases in labour productivity and this is explained by the difficulty in obtaining information about firms and workers over time (Almeida, 2007). Aiming at analysing the foreign wage premium that is documented by the literature, the author is also interested in the effects of acquisitions on labour reallocation, as ownership changes are associated with the reallocation of resources to efficient uses.

The results show that foreign acquisitions have small effects on human capital and on average wages of the acquired firms. Thus, foreign ownership does not improve the labour market outcomes, as foreign ownership may be motivated by some unobservable characteristics as education and wages. The differences between foreign and domestic firms result from a selection effect, thus foreign firms select domestic firms to acquire that have a more educated workforce and pay higher wages.

In line with these ideas, Heyman et al. (2007) observe a small foreign wage premium. Their comparison of foreign-owned firms with domestic firms for the Swedish private sector suggests that foreign takeovers have no positive effect on wages. When analysing at the individual level the foreign ownership premium disappears, thus, according to the authors, firm level analysis tends to

overestimate the foreign wage premium, so for an individual worker we can expect that a foreign acquisition will result in a reduction of wage growth. Similar conclusions for Portugal are obtained by Martins (2004) who considers that the overestimation of the commonly documented wage premium is due to the lack of a good comparison between domestic and foreign firms; and to the workers' unobserved heterogeneity.

Martins and Esteves (2008) in their study about the Brazilian labour market find that both types of acquisitions (domestic to foreign or *vice versa*) do not tend to affect wages significantly. When considering the wage implications of worker mobility, they also find that there are different impacts according to the type of acquisition, thus movers from foreign to domestic firms suffer larger wage cuts, and movers from domestic to foreign firms observe lower wage cuts or an increase in their pay.

In another study, Heyman et al. (2011) examine the impact of cross-border acquisitions on intra-firm wage dispersion for Swedish firms. Their results show that multinational operations do not affect wage dispersion, but it is the acquisition itself that affects wage dispersion. They also find that the positive effects are mostly concentrated on managers, namely CEOs, and that wages for other high-skilled workers are not affected. For medium and low skilled workers, they observe a negative effect of acquisition on wages, so there is an increase in wage dispersion.

Both Girma and Gorg (2007) and Heyman et al. (2011) assume that skilled labour is important and a scarce production factor, since skills are required to implement the transformations of the acquisition process. Therefore, wages will increase for high-skilled workers and remain constant for other types of workers. The authors also assume that the bargaining process associated with foreign ownership may contribute to wage dispersion, as skilled workers will be in a better position than unskilled workers.

In spite of the recognition of the wage differentials between foreign and domestically-owned firms and the existence of a foreign wage premium, it is not very evident if foreign firms pay higher wages to identical workers, thus it is important to change the unit of observation from the firm or plant level to the individual level. (Heyman et al., 2007; Oberhofer et al., 2012; Hijzen et al., 2013). Furthermore, Hijzen et al. (2013) observe that, at least in developed countries, foreign takeovers have a small positive effect or even a negative effect on individual wages. They present a cross-country study that includes Portugal and analyse the effects of foreign ownership on wages, employment and worker turnover rates. They find that, notwithstanding the overestimation of the foreign wage premium, there is a positive wage effect of foreign takeovers and that the wage effects associated with worker movements from domestic to foreign firms are also important.

3.3. Data

The analysis draws on a large matched employer-employee dataset known as *Quadros de Pessoal.* This is an annual compulsory survey run by the Ministry of Employment and Social Security that collects information on all firms located in Portugal with wage-earners. Records are available at the firm and plant level as well as at the worker level. The firm variable includes information on location, industry, sales, legal setting, year of constitution, share of the firm's equity owned by foreign parties, number of establishments and number of employees. At the establishment level it comprises information on location, industry and number of workers, among others. The set of workers' characteristics includes age, education, tenure, wages, hours worked and occupation.

To assess the impacts of ownership change on workers, we have used longitudinal data on firms and their employees from 1985 to 2007[3]. The dataset is restricted to 2007 as the Financial Crisis took place in 2008. The existence of unique (time-invariant) identifiers allows for matching firms and workers in each year and it also allows us to follow them over time, so it is possible to identify the banking entities and the workers of those firms.

The entities in our sample were restricted to those operating in "other monetary intermediation" (code 65120), according to the Portuguese Classification of Economic Activities – CAE–rev 2.1 (1995 version) and they include all monetary institutions, excluding the Central Bank[4].

After de creation of the main dataset it was important to identify all domestic acquisitions. The identification of domestic acquisitions is possible through the use of data collected on an annual basis by the *Associação Portuguesa de Bancos* (APB) in their *Boletins Informativos.* This dataset contains information on all banks in Portugal and reports the changes that took place in the banking sector. Besides accounting information, the dataset also reveals information on the firm (such as age, ownership, size, number of employees and branches and localization) and on employees' characteristics (qualifications, type of activity and occupation in each bank). Another important fact is that, every year, the *Boletim Informativo* presents a synthesis of the evolution in the banking sector in comparison to the previous year, mentioning which banks entered or exited the banking sector or which ones were involved in the process of M&A, so it allows us to find those entities in the *Quadros de Pessoal*, by matching some information with that obtained from the APB. We have also identified all the entities that were not engaged in those processes. Table 3.1 highlights the major

[3] Data on workers is not available for 1990 and 2001.

[4] Three revisions of the CAE have occurred between 1985 and 2007. The methodology for CAE uniformization and the entities included on "other monetary intermediation" are described in Appendix A (Table A.1.1 and Table A.1.2).

transformations occurred in the banking sector of the banks listed in the *Boletins Informativos*, between 1993 and 2006[5]. The remaining banks that were not subject to M&A transformations are displayed in the Appendix B (Table B.1).

The *Boletins Informativos* present information on share capital (*capital social*) as well as *Quadros de Pessoal*, thus it was possible to match the information and identify the entities. The information provided by the APB is only available from 1993 onwards, so it was possible to compare the evolution of this variable in *Quadros de Pessoal* and in the *Boletins Informativos* throughout the period under analysis. The existing information allowed the bank's identification and, in the cases where the comparison was uncertain, a third source of information was used. The information contained in the "Information Disclosure System" of the *Comissão do Mercado de Valores Mobiliários (CMVM)* was valuable, since it was possible to find information on the registries of the entities and institutions completed since the second quarter of the year 2000. In a few cases it was necessary to use this source of information.

Table 3.1: Major banking transformations

Credit institution	Period
Acquisition of Banco Fonsecas & Burnay by Banco Português de Investimento.	1991
Acquisition of Banco Português do Atlântico by Banco Comercial Português.	1995
Acquisition of Banco Fomento do Exterior and Banco Borges & Irmão by Banco Português de Investimento.	1996
Merger of Banco Fonsecas & Burnay, Banco Fomento do Exterior, Banco Borges & Irmão and Banco Universo into Banco BPI.	1998
Merger of Banco Argentaria into Banco Bilbao Viscaya.	2000
Merger of Banco Nacional Ultramarino into Caixa Geral de Depósitos.	2001
Merger of Banco Mello, Banco Mello Imobiliário and Banco Português do Atlântico into Banco Comercial Português.	2001
Merger of Banco Pinto & Sotto Mayor into Banco Comercial Português.	2001
Merger of Credit Lyonnais Portugal into Banco Bilbao Viscaya Argentaria	2001
Acquisition of Banco Nacional de Crédito by Banco Popular Español.	2003
Merger of Banco Expresso Atlântico and Credibanco into Banco Comercial Português.	2004
Merger of Banco Totta & Açores and Banco Santander Portugal into Crédito Predial Português.	2004
Merger of Banco Internacional de Crédito into Banco Espírito Santo.	2005

Source: *Associação Portuguesa de Bancos.*

Note: For every firm subject to a M&A, information on variables like share capital, number of employees and branches and localization were collected. This data allowed us to find those entities in *Quadros de Pessoal* by matching some information with that obtained from the APB. Share capital was used as the primary matching variable due to its precise nature.

In our final dataset we identify almost all the entities that are listed in Table 3.1 and Table B.1. The merged dataset with 914 754 observations contained all the banks, including those that only appear in the *Quadros de Pessoal* dataset and those that only appear in the APB dataset. It was

[5] The year 2007 was not considered as no important transformations for our analysis were reported in that year.

possible to identify through the matching process almost 85% of the entities, representing 774 575 worker-year observations.

After checking and clearing for inconsistencies, we only kept one observation per worker in each year, which resulted in an unbalanced panel with 747 921 observations (workers/years) and a total of 118 194 workers. Table 3.2 presents information on the number of banks and the number of bank employees from 1993 until 2007 for the acquirer and acquired entities and for all entities, including those not involved in M&A.

Table 3.2: Balance of the Panel (1993 – 2007)

	All		Acquirers		Acquired	
Year	Banks	Workers	Banks	Workers	Banks	Workers
1993	35	49 205	4	10 943	16	34 469
1994	39	58 812	6	21 937	16	32 361
1995	40	60 094	6	22 720	16	32 089
1996	40	60 056	6	22 648	16	31 947
1997	40	56 037	4	20 441	15	29 538
1998	38	54 953	5	20 159	14	28 295
1999	41	56 091	5	21 171	14	28 020
2000	40	54 047	6	24 584	10	21 615
2001	n/a	n/a	n/a	n/a	n/a	n/a
2002	40	50 013	7	27 618	7	13 509
2003	40	48 767	7	32 897	6	6 813
2004	39	48 306	7	32 579	5	6 314
2005	36	48 194	6	36 235	2	1 901
2006	33	50 703	6	38 594	1	1 143
2007	33	52 643	6	39 663	1	1 183

Source: computations from the author based on *Quadros de Pessoal*, 1993 – 2007

Notes: The number of acquired and acquirer banks and their respective number of employees are reported for the entire period (1993-2007) and do not correspond to the number of acquisitions in each year. For example, in 1993 we identify 16 banks that participated in M&A, however the acquisitions have occurred throughout the period of analysis; in the same way we observe that in the same year, 4 banks were identified as acquirers. The reduction of acquired banks can be explained by the integration processes that occurred after the M&A process, in which some banks were integrated into other banks.

The banks were categorized according to their participation or not in M&A processes. The workforce engaged in these processes represents, approximately, 86% of our sample against 14% that correspond to those that did not participate in M&A.

Table 3.3 provides information on the characteristics of employees from acquirer, acquired firms and non-merging firms. In terms of size, acquirer firms are larger. Non-merging firms present significant differences in terms of size and compensation. In fact, they are smaller and pay more to

their employees. They also have younger and more educated workers when compared to merging firms.

Table 3.3: Summary statistics for acquirer, acquired and non-merging firms

Variable	M&A		Not M&A
	Acquirer	Acquired	
Number of establishments			
Mean	413.0	152.4	32.7
Std. Dev.	*298.5*	*123.3*	*61.78*
Firm employees			
Mean	4733.0	2307.0	362.8
Std. Dev.	*3778.0*	*1899.0*	*587.7*
Monthly wage (real)			
Mean (euro)	836.0	785.7	1201.0
Std. Dev.	*39.88*	*99.21*	*465.0*
Total compensation (real)			
Mean (euro)	1307.0	1195.0	1607.0
Std. Dev.	*160.0*	*175.8*	*521.3*
Schooling (years)			
Mean	13.0	11.7	13.8
Std. Dev.	*1.1*	*1.3*	*1.4*
Age			
Mean	37.2	39.2	35.3
Std. Dev.	*4.1*	*4.9*	*3.1*
Tenure (years)			
Mean	9.8	11.3	5.4
Std. Dev.	*4.8*	*6.5*	*3.6*
Banks	8	16	27

Source*:* computations from the author based on *Quadros de Pessoal*, 1993 – 2007

Notes*:* (1) Monthly wage corresponds to base salary and it is measured in real terms (base year = 1993); Total compensation is measured as the monthly wage plus other remunerations received on a regular and irregular basis, in real terms (base year = 1993). (2) Statistics are reported according to the categorization of banks in terms of participation or not in M&A processes for the entire period (1993-2007) and do not rely on the year of acquisition.

The distribution of the sample by levels of education is presented in Table 3.4. In a more detailed analysis, we can observe that the highest levels of education are found in non-merging firms, but when comparing acquirers with acquired firms the first present a more educated workforce. Table 3.4 also presents information on qualifications and suggests that non-merging firms in comparison to merging firms have more "top executives", however, merging firms, namely acquirers, are superior in terms of "intermediary executives", "supervisors" and "highly skilled workers".

Table 3.4: Panel characteristics by education and qualification levels (workers from acquirers, acquired and non-merging firms)

	M&A		Not M&A	All
Variable	Acquirer	Acquired		
Education Level				
Less than primary school	0.02%	0.36%	0.11%	0.15%
Primary school	1.59%	4.60%	1.89%	2.72%
Preparatory school	5.41%	7.84%	1.64%	5.75%
Lower secondary school	19.46%	31.60%	14.13%	23.07%
Secondary school	45.41%	36.89%	46.14%	42.44%
Upper secondary school	3.92%	2.96%	4.90%	3.72%
College	24.19%	15.75%	31.18%	22.15%
Qualification Level				
Top Executives	8.09%	6.51%	14.68%	8.46%
Intermediary executives	12.41%	9.77%	11.69%	11.35%
Supervisors	3.12%	2.33%	2.83%	2.79%
Highly skilled workers	67.13%	69.85%	59.01%	66.95%
Semi-skilled and unskilled workers	4.42%	3.79%	7.42%	4.62%
Apprentices	0.00%	0.00%	0.18%	0.03%
Observations	372 189	269 197	106 525	747 921

Source*:* computations from the author based on *Quadros de Pessoal*, 1993 – 2007

Note: Statistics are reported according to the categorization of banks in terms of participation or not in M&A processes for the entire period (1993-2007) and do not rely on the year of acquisition.

Table 3.5 computes some statistics for three levels of a worker's qualification: "high" (top and intermediary executives), "medium" (supervisors and highly skilled and skilled professionals), and "low" (semi-skilled and unskilled workers, and apprentices) for merging and non-merging firms. We observe that non-merging firms pay more, particularly to "high" and "medium" qualification levels, they have a younger workforce and a shorter employment relation through time with their employees. Comparing acquirer to acquired firms, acquirer firms, in general, pay more. However, workers of acquired banks with low qualifications are worst remunerated than their counterparts in the acquirer firms.

Table 3.5: Sample means, by qualification levels (workers from acquirers, acquired and non-merging firms)

	M&A						Not M&A			All		
	Acquirer			Acquired								
Variable	QUAL-L	QUAL-M	QUAL-H	QUAL-L	QUAL-M	QUAL-H	QUAL-L	QUAL-M	QUAL-H	QUAL-L	QUAL-M	QUAL-H
Monthly wage (real)												
Mean (euro)	591.6	756.7	1242.6	409.1	696.8	1135.1	612.6	746.4	1489.5	543.0	733.1	1257.6
Std. Dev.	*175.8*	*201.9*	*614.3*	*175.5*	*168.9*	*520.6*	*291.4*	*341.3*	*1158.1*	*225.8*	*215.7*	*737.1*
Total compensation (real)												
Mean (euro)	808.5	1093.6	1996.5	581.1	1004.5	1944.4	859.3	1047.0	2199.9	753.6	1054.5	2019.6
Std. Dev.	*314.8*	*384.6*	*1567.9*	*287.2*	*454.9*	*1074.8*	*419.0*	*560.1*	*2331.3*	*353.3*	*438.8*	*1626.3*
Schooling (years)												
Mean	9.1	12.1	13.5	5.1	10.8	12.6	9.8	13	14.0	8.1	11.7	13.3
Std. Dev.	*3.4*	*3.2*	*3.3*	*2.3*	*3.0*	*3.4*	*3.3*	*3.0*	*3.1*	*3.6*	*3.2*	*3.3*
Age												
Mean	42.5	38.5	43.4	46.6	41.2	45.7	38.5	34.5	40.7	42.8	39.0	43.5
Std. Dev.	*9.8*	*9.6*	*8.2*	*8.5*	*9.8*	*9.0*	*11.0*	*8.5*	*8.8*	*10.1*	*9.8*	*8.7*
Tenure (years)												
Mean	15.2	11.8	14.0	16.3	15.1	17.2	11.0	7.6	9.6	14.6	12.5	14.1
Std. Dev.	*8.5*	*9.0*	*9.1*	*6.1*	*9.2*	*10.6*	*9.2*	*7.5*	*8.8*	*8.3*	*9.2*	*9.8*
Observations	16 449	261 469	76 300	10 193	194 321	43 826	8 101	65 877	28 081	34 733	521 669	148 211

Source*:* computations from the author based on *Quadros de Pessoal*, 1993 – 2007

Notes*:* (1) Monthly wage corresponds to base salary and it is measured in real terms (base year = 1993); Total compensation is measured as the monthly wage plus other remunerations received on a regular and irregular basis, in real terms (base year = 1993). (2) Qualifications levels: QUAL-L: Semi-skilled and unskilled workers, and apprentices; QUAL-M: Supervisors and highly skilled and skilled professionals; QUAL-H: Top executives and intermediary executives. (3) Statistics are reported according to the categorization of banks in terms of participation or not in M&A processes for the entire period (1993-2007) and do not rely on the year of acquisition.

If we consider different types of acquisitions, Table 3.6 presents the sample means for domestic and foreign acquisitions. We observe that firms that were engaged in foreign acquisitions present a higher compensation level. We also note that workers from foreign acquisitions are younger, more educated and register a shorter relation with their employer in terms of tenure.

Table 3.6: Sample means, by type of acquisition

Variable	Domestic	Foreign
Number of establishments		
Mean	184.4	118.5
Std. Dev.	*125.3*	*110.2*
Firm employees		
Mean	2903.0	1528
Std. Dev.	*1939.0*	*1534*
Monthly wage (real)		
Mean (euro)	759.6	840.9
Std. Dev.	*59.34*	*153.0*
Total compensation (real)		
Mean (euro)	1142	1320.0
Std. Dev.	*137.4*	*211.7*
Schooling (years)		
Mean	11.5	12.4
Std. Dev.	*1.4*	*1.2*
Age		
Mean	40.3	37.6
Std. Dev.	*5.6*	*3.2*
Tenure (years)		
Mean	12.9	9.8
Std. Dev.	*6.8*	*5.2*
Observations	188 774	78 383
Number of banks	10	5

Source*:* computations from the author based on *Quadros de Pessoal*, 1993 – 2007
Notes*:* (1) Monthly wage corresponds to base salary and it is measured in real terms (base year = 1993); Total compensation is measured as the monthly wage plus other remunerations received on a regular and irregular basis, in real terms (base year = 1993). (2) "Domestic" refers to a domestic acquisition; "Foreign" refers to a foreign acquisition – domestic bank acquired by a foreign bank or foreign bank acquired by another foreign bank. (3) Statistics are reported according to the participation of banks in M&A processes for the entire period (1993-2007) and do not rely on the year of acquisition.

Table 3.7 presents summary statistics for variables relating to size and compensation for acquired firms in the years before and following the acquisition. We observe that after the acquisition they increase in dimension, something that is expected considering that M&A constitutes an alternative to internal growth. In terms of compensation, we observe that while monthly wages tend to decrease, the total compensation presents a slight increase.

Table 3.7: Summary statistics for acquired firms

Variable	T= –1	T=0	T=1	T=2	T=3
Number of establishments					
Mean	119.79	124.27	148.33	239.86	263.00
Std. Dev.	*110.02*	*102.75*	*73.21*	*119.65*	*145.82*
Firm employees					
Mean	1788.64	1810.27	2330.83	2955.14	2818
Std. Dev.	*1733.41*	*1642.87*	*1584.90*	*1916.14*	*1944.89*
Monthly wage (real)					
Mean (euro)	795.18	804.96	806.63	771.01	776.92
Std. Dev.	*149.55*	*198.61*	*68.90*	*51.48*	*57.10*
Total compensation (real)					
Mean (euro)	1173.93	1215.82	1189.50	1179.44	1244.08
Std. Dev.	*237.95*	*263.83*	*151.99*	*111.44*	213.25
Observations	24 551	26 664	13 787	20 094	19 347
Banks	14	15	6	7	7

Source: computations from the author based on *Quadros de Pessoal*, 1993 – 2007.
Notes: Monthly wage corresponds to base salary and it is measured in real terms (base year = 1993); Total compensation is measured as the monthly wage plus other remunerations received on a regular and irregular basis, in real terms (base year = 1993) and do not rely on the year of acquisition.

3.4. Empirical methodology

Our empirical analysis follows the literature on employment effects of M&A. As pointed out by Oberhofer (2013), the impacts of M&A on wages and employment are modelled as a function of some explanatory variables for firms and individuals and a dummy variable that captures whether a firm or an individual experienced an ownership change. In our case, we have added to the wage equation worker and bank fixed effects.

To analyse the impact of M&A on wages we estimate the following model:

$$w_{ijt} = \boldsymbol{X}_{it}\beta_1 + \boldsymbol{Z}_{jt}\beta_2 + \beta_3 M_{it} + \beta_4 A_{it} + \alpha_i + \gamma_j + \mu_t + \varepsilon_{ijt} \quad (3.1)$$

where w_{ijt} represents the logarithm of the real total wage of worker *i* in year *t*. Total wages are computed as the monthly wage plus other payments received on a regular and irregular basis in real terms (1993 prices), using the Consumer Price Index from the *Instituto Nacional de Estatística* (INE). X is a vector of a worker's observable characteristics which include gender, years of schooling, tenure and experience and their squares.

Z is a vector of firm characteristics which refers to firm size, which we proxy by the logarithm of the number of workers. We may expect larger firms to pay more (Oi and Idson, 1999a; Oi and Idson, 1999b; Brown and Medoff, 1989) as workers are more productive in larger firms or, according to other theoretical explanations, larger firms are able to pay higher wages or hire higher quality workers.

M_{it} is a dummy variable that is equal to one if the worker experiences a M&A in year t and is equal to 0 if the worker did not participate in a M&A operation. The individual firm and time effects are captured by α_i, γ_j and μ_t, respectively, and ε_{ijt} is the error term.

We first examine the impact of M&A on wages and then proceed to analyse the impact of M&A on workers of acquired firms that represents our treated group. In order to do that, we define A_{it} as a dummy variable equal to one if the worker was employed in an acquired firm (after the M&A) and value zero if the worker was in a period before the M&A or not subject to M&A. This variable is the main variable of interest as it allows us to assess the effect of average treatment (acquisition).

We depart from a simplest specification using a pooled data model assuming that all coefficients are constant across time and units and that the error term captures the remaining differences between them, however, in this model the unobserved individual and firm heterogeneities are captured by the error term, which may imply a correlation between the error term and the explanatory variables.

The fixed effects model allows for the control of unobserved time-invariant heterogeneities that may be correlated with the explanatory variable A_{it}, therefore, we can avoid the omitted variable bias. The unobserved individual characteristics may be related with the workers' skills or abilities and affects their wages in the same way, no matter the firm where they are employed; the unobserved firm effects may reflect the firm's wage policy or management policies and capture the characteristics of the firm, which similarly affects its workers. The inclusion of time effects control for macroeconomic shocks that affect all the firms and their workers in the same way.

In our model there are three fixed effects: worker fixed effect α_i, firm fixed effect γ_j and year fixed effect μ_t. According to Cornelissen (2006, 2008) the model can be estimated by including one of the effects (the firm effect) as dummy variables, and removing the other effect (the worker effect) using the within transformation or the fixed effects transformation. The third effect (time effect) does not represent a major concern so it can also be incorporated as dummy variables. This method is equivalent to "fixed effects least squares dummy variables regression" (FEiLSDVj) proposed by Andrews et al. (2006), which combines the classical fixed effects (FE) model and the least squares dummy variable model (LSDV) as it sweeps out one effect by the fixed effects transformation and includes the other effect as dummy variables.

If we are not interested in estimating the unobserved effects of workers and firms, we can consider the combined individual and firm fixed effects and follow the spell fixed effects method, or FE(s), presented in Andrews et al. (2006) and adopted by Graham et al. (2012) in their study about the impact of managerial attributes on executive compensation, where they investigate the role of firm

and manager unobservable characteristics. This method creates a dummy variable, V_s, that represents a "spell" and it is a unique individual-firm combination, so it is possible to obtain consistent estimates of the parameters by time-demeaning within each spell. Equation (3.1) can be rewritten as

$$w_{ijt} = \boldsymbol{X}_{it}\beta_1 + \boldsymbol{Z}_{jt}\beta_2 + \beta_3 M_{it} + \beta_4 A_{it} + V_s + \mu_t + \varepsilon_{ijt} \quad (3.2)$$

The model is thus reduced to a two-way fixed effects model and it can be estimated by standard fixed effects approaches, as the within-group fixed effects and the least squares dummy variable approach (Graham et al., 2012)[1]. Notwithstanding that, this approach allows for the control of the influence of individual and firm effects, it is not possible to separate individual from firm effects.

In order to assess the wage impact differentials by different types of workers, we have included in our baseline equation, several interactions terms between the variable A_{it} and the worker qualification level (high, medium and low), Q_{it}. The interaction between these two variables, $A_{it}Q_{it}$, will capture the impact of M&A on individual wages for different qualification levels

$$w_{ijt} = \boldsymbol{X}_{it}\beta_1 + \boldsymbol{Z}_{jt}\beta_2 + \beta_3 M_{it} + \sum_{q=1}^{Q} \beta_{4q} A_{it}Q_{it} + \alpha_i + \gamma_j + \mu_t + \varepsilon_{ijt} \quad (3.3)$$

We also decompose the M&A wage impact differential between several types of acquisitions – domestic and foreign – and consider the following wage equation,

$$w_{ijt} = \boldsymbol{X}_{it}\beta_1 + \boldsymbol{Z}_{jt}\beta_2 + \beta_3 M_{it} + \beta_4 dom_{it}A_{it} + \beta_5 for_{it}A_{it} + \alpha_i + \gamma_j + \mu_t + \varepsilon_{ijt} \quad (3.4)$$

in which all the notation has the same meaning as in equations (3.1) and (3.2), $dom_{it}A_{it}$ is a dummy variable taking value one if the worker takes part of a domestic acquisition and is at the firm after the M&A ($dom_{it}A_{it} = 1$) and 0 if the worker is observed in a period before the M&A ($dom_{it}A_{it} = 0$); $for_{it}A_{it}$ is a dummy variable if the worker takes part of a foreign acquisition and is at the firm after the M&A ($for_{it}A_{it} = 1$) and 0 if the worker is observed in a period before the M&A ($for_{it}A_{it} = 0$).

[1] This method is presented by Abowd et al. (1999) as the consistent method.

3.5. Empirical results

3.5.1. Wages in acquired banks

Not only do the results vary according to the specification adopted, but also according to the level of unobserved heterogeneity that is considered. In the following analysis, we will mainly explore the results obtained from the fixed effects and the spell specifications.

We observe from Table 3.8 that larger firms pay more and that more educated and more experienced workers have higher wages. These results present the expected effects as suggested by the positive sign for education, on average workers who increase their education through labour working age, each additional year of education increases wages by 1%. Regarding experience, a non-linear impact on wages is observed, suggesting decreasing marginal returns.

Table 3.8: Impact of M&A on wages

Dependent Variable: Logarithm of the real total wage						
Variable	OLS-1	OLS-2	OLS-3	FE-1	FE-2	FE-3
M&A	-.090***	-.066***	-.162***	.057***	.021***	.035***
	(.002)	(.002)	(.006)	(.001)	(.003)	(.005)
Number of workers (log)	-.026***	-.027***	-.077***	-.010***	.027***	.027***
	(.001)	(.001)	(.003)	(.001)	(.001)	(.002)
Male	.137***	.143***	.150***	–	–	–
	(.002)	(.002)	(.002)			
Education (years)	.080***	.077***	.076***	.014***	.014***	.010***
	(.0005)	(.0005)	(.0005)	(.001)	(.001)	(.001)
Tenure (years)	-.015***	-.014***	-.014***	-.007***	-.007***	-.004***
	(.0004)	(.0004)	(.0005)	(.0002)	(.0002)	(.0003)
Tenure^2	.0004***	.0004***	.0004***	.0001***	.0001***	.00002***
	(.0000)	(.0000)	(.0000)	(.0000)	(.0000)	(.0000)
Experience (years)	.055***	.054***	.053***	.027***	.025***	.020***
	(.0004)	(.0004)	(.0004)	(.001)	(.001)	(.001)
Experience^2/100	-.067***	-.068***	-.067***	-.041***	-.035***	-.030***
	(.001)	(.001)	(.001)	(.0004)	(.0004)	(.001)
Year effects	No	Yes	Yes	Yes	Yes	Yes
Firm effects	No	No	Yes	No	Yes	Yes
Observations	741 408	741 408	741 408	741 408	741 408	741 408
Groups				117 580	117 580	150 695

Source*:* computations from the author based on *Quadros de Pessoal*, 1993 – 2007.

Notes: (1) M&A is a dummy variable equal to one if the worker experiences a M&A and 0 if the worker did not participate in a M&A operation. (2) FE-3 is a spell fixed effects regression, including both individual and firm effects. (4) Robust standard errors in brackets. (5) * significant at 10%; ** significant at 5%; *** significant at 1%.

Controlling for worker and firm observable characteristics and analysing the impact of M&A on wages, the pooled data model presents a wage decrease of 9%, but when considering time and firm effects the negative wage impact of M&A increases to nearly -16%. The estimation with worker fixed effects suggests a positive effect on wages, but when we control for both unobserved individual and firm level differences, we find a less but still positive wage effect of 2% and 4%. These results correspond to the fixed effects method and to the spell method, respectively.

Assuming that some type of endogeneity may be a possible explanation for the signal change in our previous results, we may reformulate our analysis and treat that endogeneity as a case of omitted variables. For instance, one could argue that a worker's ability is an omitted variable, then

$$wage = \beta_0 + \beta_1 M\&A + \beta_2 Ability + \varepsilon \tag{3.5}$$

and also,

$$wage = \hat{\beta}_0 + \hat{\beta}_{1OLS} M\&A + \varepsilon, \qquad \text{with } \hat{\beta}_{OLS} < 0 \tag{3.6}$$

If $Ability$ is unobserved, then the formula for omitted variable bias in linear regression is:

$$\operatorname{plim} \hat{\beta}_{1OLS} = \beta_1 + \beta_2 \frac{Cov(Ability, M\&A)}{Var(M\&A)} \tag{3.7}$$

Therefore, the bias is proportional to the correlation of $Ability$ and $M\&A$ and to the effect of $Ability$ (the omitted variable) on $wage$. Taking the predicted fixed effect from the fixed effects and spell specifications, we observe a negative correlation between the fixed effects and M&A (-0.0996 and -0.3453, respectively).

This result signals an interesting finding, in a way, we may relate the fixed effects with the propensity to be acquired, as banks with lower worker fixed effects are more prone to be acquired in a M&A. Thus, it may be the case that for banks with workers that are not as productive as identical workers from other banks, present conditions that make them more susceptible to take part of a restructuring process.

When analysing the effects of M&A on wages after the M&A, we observe from Table 3.9, and controlling for worker and firm characteristics, that the pooled data model presents a wage decrease of about 9.5%, but when considering time and firm effects negative effect of M&A on wages is approximately 1.6%. Controlling for both unobserved individual and firm level differences, the results suggest a positive effects on wages of almost 4%. For workers of acquired banks it is important to note

that the variable $After$ suggest negative effect, thus reflecting that in spite of the positive effect that can be expected from a M&A, this effect will depend on the type of workers. In this case, for workers of acquired banks the positive impact will be lower. We observe also that workers with more years of schooling and experience earn more and that firm size has a positive effect on wage for workers employed in acquired firms.

Considering that the effect of M&A may not occur immediately, we estimate the impact in the following years after the integration. In fact it is observed that the M&A has a truly positive effect for the first year after the acquisition, which means that workers observe an increase in wages of nearly 4% and 5%, depending on the fixed effects (FE-4) or spell specification (FE-5).

Notwithstanding the positive effect in the first year of the acquisition, we observe that for the subsequent years this positive effect is reduced and this reduction is more pronounced in the third year after the M&A. For workers of acquired banks it is observed that, in the third year after the acquisition, the positive effect is only 0.3% and 1.9% for the fixed effects or spell specification (FE-5), respectively. This result may suggest that a time dimension is important, as pointed out by Huttunen (2007), when she considers that there are adjustment costs that must be considered and that are related to hiring and firing workers and for this reason the effect on wages is not immediate. Figure 3.1 depicts a clear picture of the effects of M&A over time.

If we consider that inefficient banks are more prone to be acquired, the apparent increase in wages is reduced over time after the acquisition, signalling the effects of a restructuring process that occurs gradually.

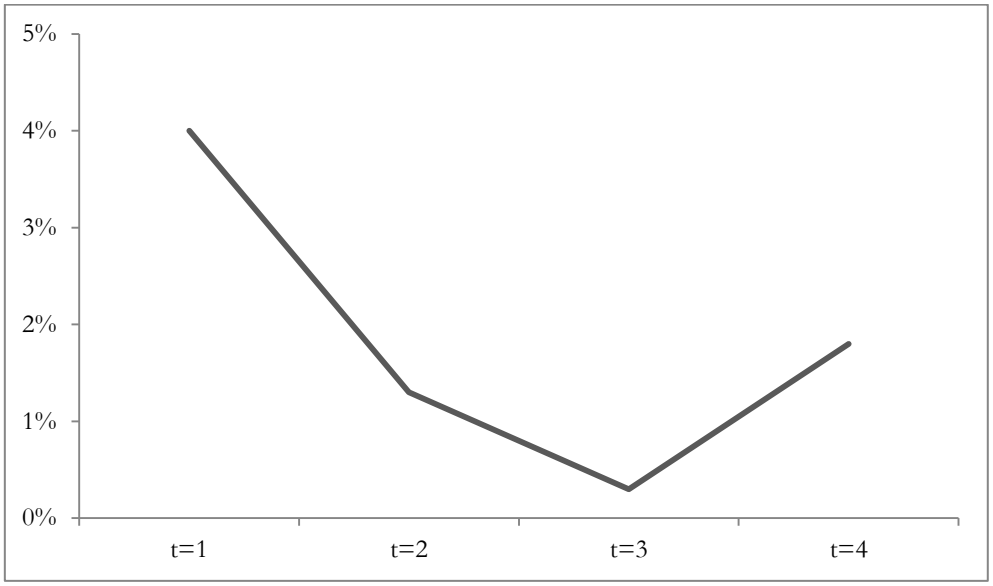
Table 3.9: Impact of M&A on wages

Dependent Variable: Logarithm of the real total wage								
Variable	OLS-1	OLS-2	OLS-3	FE-1	FE-2	FE-3	FE-4	FE-5
After	.013***	-.015***	-.014***	-.014***	-.009***	-.008***	–	–
	(.002)	(.002)	(.002)	(.001)	(.001)	(.002)		
M&A	-.095***	-.059***	-.158***	.066***	.024***	.038***	.028***	.042***
	(.002)	(.003)	(.006)	(.001)	(.001)	(.005)	(.005)	(.005)
Number of workers (log)	-.027***	-.027***	-.077***	-.009***	.026***	.027***	.026***	.027***
	(.001)	(.001)	(.003)	(.001)	(.001)	(.002)	(.002)	(.002)
Male	.137***	.143***	.150***	–	–	–	–	–
	(.002)	(.002)	(.002)					
Education (years)	.079***	.077***	.076***	.015***	.014***	.010***	.014***	.010***
	(.0005)	(.0005)	(.0004)	(.001)	(.001)	(.001)	(.001)	(.001)
Tenure (years)	-.015***	-.014***	-.014***	-.008***	-.007***	-.004***	-.007***	-.004***
	(.0004)	(.0004)	(.0004)	(.0002)	(.0002)	(.0003)	(.0003)	(.0003)
Tenure^2	.0004***	.0004***	.0004***	.0001***	.0001***	.00002***	.0001***	.00002***
	(.0000)	(.0000)	(.0000)	(.0000)	(.0000)	(.0000)	(.0000)	(.0000)
Experience (years)	.055***	.054***	.053***	.027***	.025***	.020***	.025***	.020***
	(.0004)	(.0004)	(.0004)	(.001)	(.001)	(.001)	(.001)	(.001)
Effect at t=1							.012***	.010***
							(.002)	(.002)
Effect at t=2							-.015***	-.015***
							(.002)	(.002)
Effect at t=3							-.025***	-.023***
							(.002)	(.002)
Effect at t=4							-.010***	-.008***
							(.002)	(.002)
Year effects	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	No	No	Yes	No	Yes	Yes	Yes	Yes
Observations	741 408	741 408	741 408	741 408	741 408	741 408	741 408	741 408
Groups				117 580	117 580	150 695	117 580	150 695

Source*:* computations from the author based on *Quadros de Pessoal*, 1993 – 2007.

Notes: (1) M&A is a dummy variable equal to one if the worker experiences a M&A and 0 if the worker did not participate in a M&A operation. (2) After is a dummy variable taking value 1 if the worker was employed in an acquired firm (after the M&A) and value zero if the worker was in a period before the M&A or not subject to M&A. (3) FE-4 and FE-5 assess the impact of M&A on wages at time t=1, t=2, t=3 and t=4 (one, two, three and four years after the M&A, respectively). (4) FE-3 and FE-5 are spell fixed effects regressions including both individual and firm effects). (5) Robust standard errors in brackets. (6) * significant at 10%; ** significant at 5%; ***significant at 1%.

Figure 3.1: Effects of M&A over time



Source: computations from the author based on *Quadros de Pessoal*, 1993 – 2007.
Notes: (1) Effects of M&A on wages at time t=1, t=2, t=3 and t=4 (one, two, three and four years after the M&A, respectively). (2) Coefficients from FE-4 (Table 3.9) and significant at 1% level.

3.5.2. Wage impact comparison between high-medium-low qualified workers

As was previously mentioned, M&A can be used to break implicit contracts with employees at the acquired firm, laying off workers or reducing their wages. However, it may be the case that this mechanism, or even the effects of these processes, may not be the same depending on the type of workers under consideration.

In this section, we assess the wage impacts of M&A by qualification levels. We consider three levels of a worker's qualification: "high" (top and intermediary executives), "medium" (supervisors and highly skilled and skilled professionals) and "low" (semi-skilled and unskilled workers, and apprentices) for merging and non-merging firms.

The analysis of M&A effects on wages for different levels of qualifications presents different conclusions. According to Table 3.10, for workers of acquired banks, we can expect a reduction of the positive effect for almost all levels of qualification. The only exception is observed in our fixed effects specification, for those with high qualifications (top and intermediary executives), however, a slightly increase of the positive effect of near 0.6.

It seems that the M&A processes are less favourable for workers of acquired banks, especially for lower levels of qualification, however, they have a slightly positive effect on highly qualified workers, who may earn more when participating in M&A.

In this analysis, we have excluded from the sample those individuals whose information regarding qualification was not available. As a robustness check, we estimate the same regressions including those individuals and considering their qualification as "non-defined", as reported by *Quadros de Pessoal*. The results are presented in Table B.2 from Appendix B.

Table 3.10: Wage impacts of M&A on workers of acquired banks (by qualification levels)

	FE estimation	Spell estimation
M&A	.027***	.040***
	(.005)	(.005)
QUAL-L	-.029***	-.016***
	(.005)	(.005)
QUAL-M	-.012***	-.008***
	(.002)	(.002)
QUAL-H	.006**	-.017***
	(.003)	(.003)
Year effects	Yes	Yes
Firm effects	Yes	Yes
Observations	699266	699266
Groups	115576	146628

Source*:* computations from the author based on *Quadros de Pessoal*, 1993 – 2007.
Notes: (1) M&A is a dummy variable equal to one if the worker experiences a M&A and 0 if the worker did not participate in a M&A operation. (2) Qualifications levels: QUAL-L: Semi-skilled and unskilled workers, and apprentices; QUAL-M: Supervisors and highly skilled and skilled professionals; QUAL-H: Top executives and intermediary executives. (3) Individuals regarding whom information about qualification is not available were excluded. (4)*significant at 10%; **significant at 5%; ***significant at 1%

3.5.3. Wage impact comparison between domestic and foreign M&A

In order to decompose the M&A effect according to the type of acquisition – domestic or foreign – we observe from Table 3.11 that the type of acquisition seems to influence the wage impact differentials. For workers of acquired banks, domestic acquisitions tend to have a positive effect on wages of 5.9% and 8%, according to the fixed effects and spell specification, respectively. When analysing the impact for workers that participate in foreign acquisitions, we observe a negative effect of these processes on wages as workers of acquired banks observe a decrease in the expected positive effect of a M&A of almost 5.1 and 5.6 percentage points, according to the fixed effects and spell specification, respectively.

Table 3.11: Wage impacts of M&A on workers of acquired banks (domestic and foreign acquisitions)

	FE estimation	Spell estimation
M&A	.038***	.055***
	(.005)	(.005)
Domestic	.021***	.025***
	(.001)	(.002)
Foreign	-.051***	-.056***
	(.003)	(.003)
Year effects	Yes	Yes
Firm effects	Yes	Yes
Observations	741408	741408
Groups	117580	150695

Source*:* computations from the author based on *Quadros de Pessoal*, 1993 – 2007.
Notes: (1) M&A is a dummy variable equal to one if the worker experiences a M&A and 0 if the worker did not participate in a M&A operation. (2) To classify a bank as a foreign entity we consider in our analysis a 50% threshold of foreign participation. (3) *significant at 10%; ** significant at 5%; ***significant at 1%

The type of acquisition seems to influence the wage impact differentials. Domestic acquisitions tend to have a positive effect on wages. In the case of foreign acquisitions, we observe a negative effect on a worker's wages. These negative effects are in line with those obtained by Heyman et al. (2007) in their fixed effects estimations for Swedish firms, which suggest a negative impact from foreign acquisitions. Notwithstanding the recognition of a foreign wage premium, the analysis at the individual level does not support the existence of a wage increase. Therefore, it may be the case that the individual analysis does not overstate the foreign wage premium. Similar conclusions are obtained by Martins (2004) and Martins and Esteves (2008) who find that foreign acquisitions have no positive effect on wages or do not have a significant effect on wages.

3.6. Discussion and Final Remarks

This paper investigates the impact of M&A on the wages of workers from acquired firms during the 1993-2007 period. We have provided new evidence on the impact of these operations on wages by using detailed Portuguese data from *Quadros de Pessoal*.

We depart from a simplest specification that establishes a relationship between pay and some determinants that have been recognized as important in determining wage levels. The heterogeneities among individuals and firms could result from differences in workers' skills or abilities and in the firm's wage policy or management policies, so it is important to account for these unobserved characteristics. We observe that the inclusion of these individual and firm characteristics alters the magnitude of other explanatory variables.

The results suggest a positive effect of M&A on wages; however, for workers that have participated in M&A, after the operation, and that have been acquired it seems that M&A has a detrimental effect on wages. The inclusion of firm dummies in the fixed effects and spell specifications may pick up a variety of effects, such as organizational effects or management practices that may influence wages. Moreover, the inclusion of firm and worker effects, as well as the combination of these two effects, does not separately identify firm and individual effects and we cannot isolate them. To separate these effects, it is important to restrict our sample to a panel of workers that move between firms. Abowd et al. (2002) identify these effects using the fixed effects approach, creating groups of connected workers and firms.

As Ferreira (2009) points out, the within-groups fixed effects approach permits the elimination of the unobserved worker, firm and match heterogeneity. However, the impossibility to separately identify all the time-invariant unobserved effects constitutes a limitation, as the mobility of workers could happen non-randomly. This may explain the difference in wage effects, as the job mobility may be related to the match between workers and firms, thus a good match would be positively reflected on wages. In this case, successful matches could lead to increased earnings, while bad matches could lead to a decrease in earnings or even to a worker's dismissal.

Controlling for both unobserved individual and firm level differences, the results suggest a positive effect of M&A on wages of almost 4%. Positive wage effects for workers of acquired banks is in accordance with the results obtained by Conyon et al. (2004), McGuckin and Nguyen (2001), Kubo and Saito (2012) as well as Amess et al. (2014), who observe a wage increase that can be explained by labour efficiency gains. For workers of acquired banks, after the M&A, the results suggest that the wage premium related to a M&A is not so manifest as the positive impact will be lower. We observe also that workers with more years of schooling and experience earn more and that firm size has a positive effect on wage for workers employed in acquired firms.

The inclusion of the time dimension seems to be important. We observe a positive effect of M&A for workers of acquired banks in the first year of the acquisition. However, we observe also that for the subsequent years this positive effect is reduced and this reduction is more pronounced in the third year after the M&A. For workers of acquired banks it is observed that, in the third year after the acquisition, the positive effect is only 0.3% and 1.9% for the fixed effects or spell specification (FE-5), respectively.

This may reflect an adjustment process related to the M&A, thus, in spite of the expected positive effect of M&A on wages, when we observe workers that were subject to an acquisition

process in the following years after the operation, the expected M&A wage premium disappears, thus validating the hypothesis that M&A serve as a mechanism of restructuring. If banks that are less efficient tend to be acquired, the apparent increase in wages is reduced over time after the acquisition, signalling the effects of a restructuring process that occurs gradually.

The positive relationship between pay and size is well demonstrated by our results, which suggest that larger firms pay more. Education and experience are also important in determining wages. The analysis of the M&A wage effects on different levels of qualification, lead us to conclude that the effects differ. For workers that have been acquired the positive effects are not so large as the acquisition itself reduces the expected positive effect on wages, however for highly qualified workers, using our fixed effects specification, we observe an incremental positive effect on wages. Thus, as Siegel et al. (2009) suggest, there is a positive relation between earnings and the quality of human capital, namely in what concerns experience and the percentage of workers with high qualifications. Therefore, we may expect that M&A promote a quality improvement of human capital or it may be the case that there is a wage premium for highly skilled workers.

Considering that M&A may constitute a mechanism of restructuring, especially for inefficient banks, the effects of M&A may differ according to the type of workers, thus, in line with Smeets et al. (2016), the restructuring process may be negatively reflected on workers with less firm-specific human capital and be positive for highly skilled workers.

We also find that M&A may produce different effects on employees' wages according to the type of operation we are analysing. Domestic acquisitions tend to have a positive effect on wages, but when analysing the impact for workers of foreign acquisitions, the results do not support the existence of a foreign wage premium.

There are some questions that deserve further development. First, it may be important to assess, in more detail, the effects of acquisitions on highly skilled workers for whom we have obtained a positive effect in comparison to other levels. In doing so, it may also be interesting to try to assess the employment effects, in terms of mobility, for this type of workers.

Chapter 4

Financialization, Corporate Governance and Employee Pay: A Firm Level Analysis

4.1. Introduction

Financial markets have witnessed significant transformations and at the same time, they have become an important subsector of the economy. Thus, a well-functioning financial system will be determinant for economic development. In this context, the role of banks within the financial system is crucial, as their functioning affects the economy in several ways. This paper considers that financialization has changed the landscape of corporate governance in the banking sector.

Several studies have been focused on analysing the increasing role of financial markets and a considerable progress has been made in assessing the macroeconomic changes associated to financialization. However, relatively little work has been developed at the microeconomic level, therefore our main contribution is to analyse the significance of some dynamics that emerged from financialization and which are recognized by the literature, as the maximization of shareholder value and the reduction in the bargaining power of labour and to link these trends with changes in labour pay at the firm level.

The paper contributes to the literature on wages in the banking sector, establishing a relation between the banks' capital structure and average wages. The goal of this research is comparable to that of Bertay and Uras (2016) in that both studies consider the link between finance and the labour market, with a special focus on the relation between leverage and employee pay. However, our study focuses on the strategic use of the capital structure of banks, whereas Bertay and Uras (2016) put more weight on the monitoring and institutional quality of countries.

Therefore, the objective of the study is to examine how average wages are affected by leverage, focusing on the strategic use of banks' capital structure. The underlying assumption is that banks may use leverage strategically in order to renegotiate labour contracts and to impose the reduction of wages. In addition, in this paper, we consider their organizational structure considering the differentiation between stakeholder-oriented banks and shareholder-oriented banks.

The present study examines a panel of European banks for the 1987-2015 period. The banking sector has suffered several transformations in corporate governance and in the banking management models, simultaneously, the importance of this subsector in the economy is clear at the point that banking instability is rapidly reflected in the real economy.

We depart from a baseline OLS regression, however in order to consider the occurrence of potential endogeneity, first, we re-estimate our model using the first lags of the explanatory variables; second, we employ a conventional instrumental variable analysis and a novel identification strategy exploiting heteroscedasticity proposed by Lewbel (2012). In addition, to take advantage of the panel structure of our data, we also apply a fixed effects panel data model. We find that banks may use their capital structure strategically since leverage has a negative effect on average wages.

Since the effect of leverage may depend on individual bank risk, we use z-score. This widely used measure of bank risk presents an estimate of a bank's probability of insolvency. In this sense, we examine the effect of leverage for distressed banks and find that notwithstanding, that leverage is negatively and statistically significant, when relating to average wages. The results do not present evidence that the effect of leverage on average wages differ according to the type of bank.

We also highlight the potential non-linear relationship between leverage and average wages. In this sense, we assess if the effect of leverage may differ according to different levels of leverage.

The remainder of the paper is organized as follows: Section 4.2 reviews the relevant literature that motivates our study. The following section focuses on the data and the description of the sample and it also presents the descriptive statistics for some of the variables used. Section 4.4 presents the empirical model estimation strategy. The empirical results are reported in Sections 4.5 and 4.6. Finally, Section 4.7 presents the main conclusions.

4.2. Literature review

4.2.1. Financialization, corporate governance and labour share

The increasing role of finance has established a common perception of the "increasing role of financial activities, financial markets, financial actors and financial institutions in the operation of the domestic and international economies" (Epstein, 2005: 3). Its impacts on the economic system can be summarized in the growing importance of financial activity over real activity, which originates a transfer from the real to the financial sector and an increase of income inequality and wage stagnation (Palley, 2007). As Giovannoni (2014) points out, the term financialization is an expression of the importance of the financial sector and it can be stated not only by the increasing role of financial markets and institutions, but also by "shareholder value orientation, increasing household debt, changes in attitudes of individuals, increasing incomes from financial activities, increasing frequency of financial crises, and increasing capital mobility" (Stockhammer, 2010: 2).

Financialization has been referred as one of the drivers for the decline in labour share, however the way it affects the wage share can be presented in several but not independent ways. As stated by Giovannoni (2014), globalization and deregulation in financial markets has allowed firms to become less dependent of national opportunities of investment and domestic hiring. Thus, they have improved their bargaining position at the expense of employees. Another way in which financialization may affect wage share is by increasing the decline in wage share, which is already observed and explained by structural changes such as the increase in trade, globalization, technological change or the increase in the CEOs' pay, among others. Moreover, the rise of the shareholder-oriented corporate governance has put limitations in the occurrence of agency problems between managers and shareholders. Finally, other factors that influence price mark-up have contributed towards the increase in profit share in detriment of wage share. Those factors are related with the increase in mark-up in the financial sector, contributing towards the reduction of labour share and the reduction of the workers' bargaining positions.

Bearing in mind the limited empirical work on the influence of financialization on income distribution, Dünhaupt (2012) considers in her work the linkage between financialization and the distribution of income and tries to assess its relation with the decrease in labour share. Therefore, as is pointed out by the author, liberalization and deregulation have contributed to the increasing importance of shareholder value, as remuneration is more aligned to performance, additionally, managerial pay has also increased. So, we may expect that financialization contributes to the

decrease in labour share. As remuneration is more aligned to the concept of shareholder value, ordinary employees need to deal with an efficiency improvement strategy of the firm, that can lead to restructuring and which can be negative for workers since they may incur in a reduction of their share of income, as real wages decline.

A shareholder value maximization strategy is also presented by Darcillon (2012) as an explanation for the erosion on the workers' bargaining power. Notwithstanding, the workers that remain at the firm, may benefit from pay increases, the same is not true for those directly affected by measures to reduce workforce or to increase labour market flexibility. This value creating strategy is also considered by Azmat et al. (2012) as maximizing shareholder value and it may mitigate some agency problems that motivate managers to obtain private benefits as job protection or "empire building".

According to Palley (2007), financialization has brought changes[1] that cannot be disentangled from the evolution that occurred in the financial sector, so among others, financialization has changed corporate behaviour and has contributed to a new business model based on shareholder value (Clarke, 2014). The shareholder value orientation and the alignment of management compensation with shareholder interests, has put into question the pressure of financial markets on dividend payments or stock purchases and its relation to mark-up. The existence of a market for corporate control has put into question the disciplinary device of M&A and by doing so, financial markets have worked towards aligning managers/shareholder interests. This focus on the relationship between firms and financial markets, as the author points out, has been used to rationalize top management pay increase and to justify the rise in takeover operations. Palley (2007: 15) also refers to the adoption of "a cult of debt finance" since there are tax benefits relating to increased debt; other explanations for this trend are related with the reduction of the workers' bargaining power as managers may use debt strategically to reduce a firm's free cash flow and by doing so wage reduction may occur.

Dünhaupt (2011, 2014) focuses on the concept of shareholder value orientation and its relation to financialization for the explanation of income inequality. As pointed out by the author, an increasing movement of compensation of corporate officers may be observed, while ordinary workers have seen their wages stagnate or even decline. The maximization of shareholder value constitutes an explanation for wage dispersion and for the rise in executive compensation as an

[1] Besides corporate behaviour, Palley (2007) also refers to the structure and operation of financial markets and to economic policy as important changes that have been brought by interests of the financial sector.

alignment of manager/shareholder interests is observed, which, in practice, reflects that compensation packages are aligned to stock price movements and to performance indicators (Dünhaupt, 2014). However, as the author points out, the financialization and the increasing focus on shareholder value orientation has contributed to wage dispersion as it is observed that, in spite the rise in the managers' income, ordinary workers suffer from a decrease or even a stagnation of their wages, making them more vulnerable. This is also pointed out by Stockhammer (2005) who refers that the increase in efficiency under the pursuing of the creation of shareholder value is positive; however, this will put into conflict employment and growth as shareholders will earn at the expense of workers.

It may also be observed, that the adoption of a shareholder value maximization strategy may put the focus on high stock prices, which can be obtained by downsizing and restructuring, which results in the dismissal of employees. Therefore, downsizing constitutes a negative consequence of shareholder value orientation (Dunhaupt, 2012; Stockhammer, 2005). Moreover, high stock prices can also be obtained through the substitution of equity by debt, which increases the return on equity thus benefiting higher income segments. As a result of the rise in financial payments, there is a redistribution of income with a detrimental effect in the wage share (Dünhaupt, 2012, 2013; Hanka, 1998; and Hein and Shoder, 2011).

As Lazonick and O'Sullivan (2000: 18) argue, a shift from a "retain and reinvest" to a "downsize and distribute" strategic orientation was observed, and this will imply a size reduction in terms of employment, in order to increase the return on equity. This idea is also present in Fligstein and Shin (2007) who argue that the maximization of shareholder value focuses on the increase of returns on assets, since for managers what matters is to ensure higher profits for shareholders, without bearing in mind the worker's interests. The pressure of the financial community towards shareholder value maximization strategies has resulted in the reorganization of firms with strategic decisions on facilities, employment and technology.

Financialization has contributed towards the reduction in the bargaining power of labour[2], as firms may use strategically their capital structure. According to Perotti and Spier (1993), firms could use leverage strategically in order to renegotiate labour contracts and to impose the reduction of wages. By retiring equity through a junior debt issue, shareholders can threaten not to undertake

[2] According to Dünhaupt (2013), M&A have contributed to the downsizing of firms and this transformation has been accompanied by a reduction in the bargaining position of workers. In line with this, there is also the idea presented by Darcillon (2012), based on Black et al. (2007), according to whom, M&A operations by its restructuring nature permit the break of long term employment commitments and by doing so we may observe a reduction in job tenure. Thus, M&A constitute a way for the equity market to influence labour market flexibility. These operations may serve as a restructuring mechanism, thus facilitating the transfer of income from labour to capital by wage cuts or dismissals (Black et al., 2007, 2008).

new investments, thereby putting pressure on the workers. Thus, it is expected that in such circumstances, firms with high leverage are associated with a lower employee pay.

The strategic use of leverage may serve as a disciplinary mechanism, especially when firms with higher free cash flows are likely to increase employee benefits, even if these benefits are not creating value for shareholders, thus the increase of debt may prevent managers from diverting free cash flow to overinvest in employee benefits, and by doing so it may result in a negative relation between leverage and employee benefits (Bae et al., 2011; Hanka, 1998; Jensen, 1986).

This relation is not observed in the theoretical model presented by Berk et al. (2010), according to whom higher leveraged firms will pay higher wages to their employees and by doing so it is expected to compensate workers for the unemployment costs that they may face in case of bankruptcy. This contrasting theory however does not contradict what is referred by Perotti and Spier (1993). In this context, firms can reduce the probability of unionization by paying a wage premium to their employees (Berk et al., 2010, and Bronars and Deere, 1991).

As Chemmanur et al. (2013) point out and according to Perotti and Spier (1993), if workers anticipate that firms will use leverage strategically to renegotiate their wages, they will demand higher wages in order to compensate that potential risk. This hypothesis is also referred by Bae et al. (2011) according to whom, distressed firms could have incentives to increase cash flows by cutting costs relating to employee benefits, so it is expected that rational employees will demand higher wages. Thus, in line with Maksimovic and Titman (1991), reputable firms that are committed to providing better employee benefits, need to have lower debt ratios, so in this sense we may expect that reputable and safe firms may guarantee employee benefits or even higher wages.

To reduce bargaining power and the probability of unionization, firms may also pay higher wages to their workers in order to discourage the occurrence of union formation. This strategy may serve to increase shareholder wealth through the increase in labour costs, as profits are higher than in the presence of a union formation (Bronars and Deere, 1991). In fact, firms may support higher costs by paying a higher wage, but this higher wage will be not as much as the union wage. However, shareholders prefer to reduce bargaining power by using debt to limit the effect of unionization, thus diverting cash flows from workers to shareholders.

Another important issue is that the use of leverage as a bargaining tool may differ according to the firm. Therefore, safe firms (that do not face a significant probability of distress) will not be able to use leverage as a bargaining tool to reduce employee wages (Perotti and Spier, 1993; Chemmanur et al., 2013). The authors conclude that leverage has a positive and significant effect

on average employee pay and that the incremental labour costs related to an increase in leverage, are large enough to offset the tax benefits that are related with that increase, thus the increase in labour costs may limit the use of debt and influence capital structure decisions. They also observe that this positive effect is more evident for safe firms, suggesting that for safe firms the disciplining effects are not as prevalent as for distressed firms, where the positive relation between leverage and employee pay is negative though not significant. As the authors suggest, even in cases where firms compensate employees for their human capital risk due to higher leverage, it may be observed that *ex post* firms may use leverage as a bargaining tool to reduce employee wages, thus offsetting the previous effect.

4.2.2. Banking governance and stability

Several transformations were determinant for the emergence of new business models in banking. The changing environment in which banking institutions operate, has experienced a deep change marked by the financialization of the economy (Azkunaga et al., 2013; Llewellyn, 2013). It is well known that the financialization process reflects the increase in importance of the financial sector, however, for banking this phenomenon has important consequences in the way in which corporate governance is performed and in the banking management models that are implemented.

Azkunaga et al. (2013) present four arguments that justify the special nature of financial services, thus it is important to adapt the general rules of corporate governance to the specificities that affect their governance. First, there are opposite interests in terms of risk preferences between stakeholders (it can be expected that some stakeholders like depositors or other creditors are more risk adverse than shareholders). However, if, and according to contract theory, managers are obliged to satisfy shareholders' interests, then it is expected that they would not attend to other stakeholders' interests. Secondly, managers' decisions and actions have effects on depositors and other contributors, thus it may be the case that some occurrences (good or bad) may affect the whole economy in a hasty way. Thirdly, some risks, namely those that affect liquidity or reputation, are more evident in the financial sector in comparison to other sectors. Finally, the government intervention that may take place in case of the occurrence of a problem, may distort the incentives of different participants in the banking business, as these interventions are expected to support the entities that are going through the problem.

Moreover, in line with Cibils and Allami (2013) and Lapavitsas (2009), the transformations promoted by financialization are not restricted to non-financial corporations, they are also obvious for banks as their profits shifted from production to circulation, since financial sector profits are extracted from worker salaries, this is what Lapavitsas (2009) calls financial expropriation.

As Llewellyn (2013: 335) points out the financialization process has created conditions for an over-expansion of the banking activity that is observable in several dimensions, such as: the increasing role of banks in financial intermediation; the rapid increase of the banking sector's assets relative to GDP; the magnitude and growth of the financial sector in the economy; the increase in trade volumes as well as in share profits of banks, among others.

In spite of the restructuring of corporations and the reduction of labour costs, the replacement of long-term growth strategies by short-term planning is observed, thus the shortening of the investments' time frame has given primacy to economic and financial indicators crucial for short-term profitability (Dünhaupt, 2011; Szunke, 2014). This short-term focus, based on shareholder value, has favoured performance and profitability indicators.

The increasing role of financialization can constitute a destabilizing factor for the banking sector. A growing information asymmetry is observed, which can foster the spread of rent-seeking which can lead to a breach of trust in the relations between buyer and seller of financial products. A process of asset securitization in order to improve indicators or even as a way to manage its credit risk, can also be observed. Szunke (2014) also mentions that financialization may enhance the banking sector's instability, as an increasing role of financial institutions and their incomes is observed, as well as, an increasing scale of their financial leverage activity.

Bank corporate governance presents some differences when compared to other companies and according to Westman (2009), there are some factors that explain this. First, there is an intrinsic relation between corporate governance and banking failure, as well as, market confidence. Poor corporate governance may be reflected on the stability of the financial system and this may be more dangerous if there is a lack of confidence in banks, which may lead to liquidity crises. Furthermore, banking activity is less transparent as it is difficult for outsiders to assess the true risk of bank assets and to monitor their operations and the stakeholders involved are wider. As several stakeholders are involved, it is difficult to account for a wide range of interests, notwithstanding the obligation of accountability to their shareholders and to attend to their interests in accordance with the corporate governance principles for banks recognized by the Basel Committee on Banking Supervision (BIS, 2015). Finally, the diversification to other activities, rather

than traditional banking, has contributed to the increase in risk. Therefore, an appropriate corporate governance system is crucial for the effective control of banking activities.

4.2.3. Development of hypothesis

In line with the ideas presented by Bae et al. (2011), Perotti and Spier (1993), Hanka (1988) and Jensen (1986) we consider that leverage may be used strategically by firms as a bargaining tool, thus it is expected that firms with more debt, pay lower wages. Firms with high debt may underinvest in employee benefits, which can be expressed in terms of wage reduction.

Moreover, following the ideas presented in Perotti and Spier (1993) we consider also that the effect of leverage will differ according to the firm, namely the negative effect of leverage will be manifest in distressed banks. In this sense, the workers' bargaining power is reduced as they are more willing to accept lower wages, if the firm presents a potential risk of default. Thus, distressed firms are more prone to use leverage as a strategic device to renegotiate wages.

Based on this theoretical framework we test the following hypothesis:

H1: Firms with higher leverage will pay lower wages.

H2: The negative effect of leverage on employee wages increases with the probability of financial distress.

4.3. Data and summary statistics

In this study we examine a panel of European banks for the 1987-2015 period. We use data on all banks from 19 countries that are members of the Euro Area. Information from income statements and balance sheet information on individual banks is taken from Bankscope. The Bankscope database, provided by Bureau van Dijk, is a unique collection of micro-level banking information for different countries. It comprises information on detailed financials which are presented in multiple formats, including the universal format to compare banks globally. All data is reported in Euro and adjusted by price consumer index inflation in each country.

The original database includes 123,975 observations and 4,275 banks. After checking and clearing for inconsistencies and dropping all banks that are categorized as "Central banks", "Specialized governmental credit institutions" and "Multi-lateral governmental banks", we ended up with 121,161 observations and 4,184 banks. Table 4.1 reports the distribution of observations and banks across countries.

Table 4.2 provides a summary of the statistics of the variables used in our analysis. Panel A contains the statistics using the original dataset, while Panel B contains the variables trimmed at the 1st and 99th percentiles in order to control for the influence of outliers.

For the trimmed sample (panel B) we observe that the mean of average employee pay is 94,430 euros. The 1% and 99% cut-off is 16,660 euros and 202,330 euros, respectively. The mean of return on average assets is 0.47%.

Table 4.1: Sample

Country	Total number of observations	Total number of banks
Austria	10173	352
Belgium	2537	88
Cyprus	953	33
Estonia	319	11
Finland	1740	60
France	12137	420
Germany	53429	1844
Greece	464	16
Ireland	1939	67
Italy	18502	638
Latvia	580	20
Lithuania	290	10
Luxembourg	3619	125
Malta	637	22
Netherlands	2690	93
Portugal	4227	146
Slovakia	667	23
Slovenia	725	25
Spain	5533	191
Total	121161	4184
of which:		
Bank holdings & Holding companies	2689	93
Clearing & Custody Institutions	636	22
Commercial banks	22208	768
Cooperative banks	47705	1645
Finance companies	8732	302
Group finance companies	372	13
Investment & Trust corporations	1159	40
Investment banks	3761	130
Micro-financing institutions	58	2
Other non-banking credit institutions	1502	52
Private banking/Asset management companies	2890	100
Real Estate & Mortgage banks	3428	119
Savings banks	24371	841
Securities firms	1650	57

Source: Computations from the author based on Bankscope (2015)

Notes: See Appendix C, Table C.2, for the definition of the different types of bank specializations according to Bankscope.

Table 4.2: Descriptive Statistics

(In thousand euros, unless otherwise expressed)

Panel A: Original dataset

Variable	N	Mean	St. Dev.	Min.	Max.	1st percentile	10th percentile	50th percentile	90th percentile	99th percentile
Personnel expenses	53079	70,842.15	574,280.64	5.40	16,090,000	300.00	1,300	7,285.35	59,400	1,154,400
Average personnel expenses	39860	94.43	2,022.43	0.03	214,900	16.66	38.89	54.84	91.84	202.33
Return on average assets – ROAA (%)	55005	0.57	6.09	-348.07	676.15	-3.77	0.03	0.29	1.15	8.56
Interest coverage ratio (%)	54945	0.96	8.40	-189.93	1,035.78	-4.38	0.02	0.65	1.73	11.38
Regulatory tier one capital (%)	14852	15.77	15.61	-101.30	689.10	5.43	8.30	12.97	23.65	62.90
Liabilities to total assets (%)	55222	90.12	12.84	-38.02	350.62	18.80	84.56	93.40	96.29	99.18
Total assets	55247	9,470,601	7.83e+07	18.30	2.59e+09	14,700	89,400	579,500	7,109,500	1.62e+08
Business diversification	54447	30.76	34.90	-950.00	934.23	-27.23	12.50	25.34	64.29	104.35
Employee productivity	40167	42.18	3271.53	-426550	194000	-200.00	1.36	10.98	74.24	914.29

Panel B: Trimmed dataset

Personnel expenses	53,079	70,842.15	574,280.64	5.40	16,090,000	300	1,300	7,285.35	59,400	1,154,400
Average personnel expenses	39,860	94.43	2,022.43	0.03	214,900	16.66	38.89	54.84	91.84	202.33
Return on average assets – ROAA (%)	53,905	0.47	0.90	-3.77	8.56	-1.73	0.04	0.29	1.09	4.55
Interest coverage ratio (%)	53,846	0.81	1.19	-4.38	11.37	-2.12	0.04	0.65	1.65	5.92
Regulatory tier one capital (%)	14,557	14.86	7.38	5.43	62.90	6.20	8.44	12.97	23.00	45.74
Liabilities to total assets (%)	54,118	90.83	9.65	18.80	99.18	38.46	85.27	93.40	96.21	98.39
Total assets	54,145	3,497,880	1.20e+07	14,700	1.62e+08	27,100	95,400	579,400	6,282,100	6.27e+07
Business diversification	53,359	30.78	21.35	-27.23	104.35	-7.41	13.30	25.34	60.78	99.89
Employee productivity	39,370	30.10	77.09	-200.00	914.29	-81.81	1.74	10.98	68.97	417.57

Source: Computations from the author based on Bankscope (2015).

The interest coverage ratio, the regulatory tier one capital and the liabilities to total assets have a mean of 0.81%, 14.86%, and 90.83%, and a median of 0.65%, 12.97%, and 93.40%, respectively.

We have also observed, that the mean of net income to gross revenue which expresses our business diversification variable is 31% and that the average contribution of labour to net earnings is about 30%. Total assets have a wide range, from approximately 15 million euros to 162,000 million euros.

4.4. Empirical model

4.4.1. Estimation strategy

Focusing on financialization and changes in corporate governance, we estimate the effect of firm leverage on wages. The baseline specification is given by:

$$EP_{i,c,t} = \beta_0 + \beta_1 Leverage_{ict} + \beta_2 Shareholder\ value_{ict} + \beta_3 Size_{ict} + \\ + \beta_4\, Business\ Diversification_{ict} + \beta_5 Employee\ Productivity_{ict} + \gamma_{ct} + \varepsilon_{ict} \qquad (4.1)$$

where $EP_{i,c,t}$ is the logarithm of average employee pay of firm *i*, in country *c*, at time (year) *t*, and it is calculated as the natural logarithm of average labour expenses.

The firms' leverage is related to financialization, as firms may use debt as a bargaining tool. Three alternative measures are used in our specification: first, regulatory tier one capital ratio which includes all capital that is defined as Tier 1 by the regulator and it comprises regulatory tier 1 capital, divided by risk weighted assets. It measures whether the pool of permanent funds available to the bank is sufficient to neutralize the risks. Second, the ratio of liabilities to total assets examines how much of a firm's assets are made of liabilities, as this ratio shows how leveraged the company is with debt, thus firms with higher liabilities to total assets ratios should have high financing and debt service costs, than firms with lower ratios.

As a third measure of leverage, we have also included the interest coverage ratio, constructed as the ratio of earnings before interests and taxes (EBIT) to interests' expense. The inclusion of the interest coverage ratio tries to consider that leverage may be seen as a means of transferring control from shareholders to bondholders (Rajan and Zingales, 1995), so a flow measure would be more appropriate to assess if the firm is able to meet its fixed payments and to measure the impact of the debt on the riskiness of the firm. A high interest coverage ratio, in terms of profitability, indicates that the firm will be capable of paying interests owed, even in difficult times. A low ratio indicates that a

small decrease in income will put the firm at risk, as it will not be able to pay the interests which are owed (Bierman, 2003: 83).

We consider profitability as a measure of value creation and performance. A widely used performance indicator is the return on average assets (ROAA) that permits the identification of the returns generated from the bank's assets. This ratio expresses how profitable a company is, relative to its total assets and how efficient management is at using its assets to generate earnings. In view of a profit maximizing behaviour, a negative effect of these variables on employee pay is expected, as labour costs are inversely related to profit.

As larger firms tend to pay higher wages to their employees, we have considered the employer-size wage effect (Brown and Medoff, 1989) and we have included the bank-size measure as the natural logarithm of total assets, in order to consider the positive correlation between firm size and wages. In line with Schoar (2002), diversification may be seen as a value destroying strategy accompanied by rent dissipation, through higher wages to workers, thus we include business diversification, computed as non-interest income, divided by gross revenue. In order to control for the contribution of labour to the net earnings, we have also included employee productivity calculated as the logarithm of net income, divided by the number of employees. As has been referred by Koch and Scott (2015: 173), this indicator expresses the productivity and profitability of a bank´s workforce. In a value enhancing strategy, if workers participate on the firm's profitability, this will be positively reflected on their wages. Finally, the model includes country-time interaction dummies, γ_{ct}, to control for macroeconomic shocks specific to the country.

Some concerns may arise from the estimations above as, for instance, consider that wages are negotiated in the beginning of the year, thus to assess the effects of the explanatory variables on wages we need to take into account their lagged values. In order to consider this issue and to lower the potential endogeneity, we re-estimate our model using our explanatory variables lagged by one year.

The use of a panel dataset imposes some restrictions in our linear model, namely the assumption of independence among observations. Moreover, we can use the panel data structure and deal with panel data endogeneity. As banks are repeatedly observed along subsequent years, we control for time-invariant unobserved firm heterogeneity by including bank-specific effects, α_i, that will reveal, for instance, differences that may be reflected on wages or management policies, and we have also included, country-time interaction dummies, γ_{ct}, to control for macroeconomic shocks specific to the country.

$$EP_{i,c,t} = \beta_0 + \beta_1 Leverage_{ict-1} + \beta_2 Shareholder\ value_{ict-1} + \beta_3 Size_{ict-1} + \\ + \beta_4\, Business\ div_{ict-1} + \beta_5 Employee\ Productivity_{ict-1} + \alpha_i + \gamma_{ct} + \varepsilon_{ict} \quad (4.2)$$

4.4.2. Distressed versus non-distressed banks

The effects of leverage could be different for safe banks comparing to distressed banks, thus as Chemmanur et al. (2013) propose it would be interesting to disentangle the leverage effects on employee pay, according to the type of bank. For the prediction of bankruptcy, we use the Z-score as a measure of individual bank risk. Specifically, it indicates the number of standard deviations below the expected value of a bank's return on assets at which equity is depleted and the bank is insolvent (Boyd et al., 1993).

The Z-score has been frequently used to measure bank risk as it is related to the probability of a bank's insolvency (Bhagat et al., 2015; Demirgüç-Kunt and Huizinga, 2012; Hesse and Čihák, 2007; Köhler, 2015; Laeven and Levine, 2009). The simplicity of its application and the fact that it can be constructed by only using accounting data, are referred as the main advantages of this measure. Also, it is possible to compare the risk of default in different groups of institutions, however it does not represent a truly aggregate measure of financial stability as it does not take into consideration the potential effects of a bank's default into other banks. Nevertheless, the purpose is to evaluate each institution separately, in order to distinguish between those that could incur in a situation of financial distress, therefore, for this goal, the Z-score seems adequate.

The traditional concept of Z-score is defined as the ratio of the mean of return to assets (μ_{ROA}) plus the capital ratio (CAR), divided by the standard deviation of the return on assets (σ_{ROA}).

$$Z - score = \frac{\mu_{ROA} + CAR}{\sigma_{ROA}}, \quad (4.3)$$

If we define bank insolvency as a condition where $(CAR + ROA) \leq 0$, then we can obtain the individual bank's probability of insolvency as $p(ROA \leq -CAR)$. Thus, if ROA is a random variable with mean μ_{ROA} and finite variance σ^2_{ROA} an upper bound of the probability of insolvency can be estimated as

$$p(ROA \leq -CAR) \leq Z^{-2} \quad (4.4)$$

$$\text{where } Z \equiv \frac{\mu_{ROA} + CAR}{\sigma_{ROA}} > 0 \quad (4.5)$$

The Z-score obtained in expression (4) presents an appropriate estimate of a bank's probability of insolvency, as if μ is not normally distributed, and in accordance to Hannan and Hanweck (1988), Boyd et al. (1993) and Boyd and Runkle (1993), based on the Bienaymé-Tchebycheff inequality, Z is the inverse measure of the upper bound of the probability of insolvency.

In spite of its wide use on banking literature, its application as a time varying-measure in panel studies has contributed to the discussion about the best way for the construction of this measure. Lepetit and Strobel (2013) present a comparison of different approaches for the construction of Z-score measures. One of the presented approaches is the one adopted by Hesse and Čihák (2007), which was also implemented by Köhler (2015). According to Lepetit and Strobel (2013: 9) this approach allows the construction of time-varying Z-scores that are available over the full sample and it represents a clear and simple method, making Z-scores measures practical to implement in the banking and financial literature.

Following this approach our Z-score measure is defined as the ratio of the return to assets (ROA) plus the capital asset ratio (CAR) divided by the standard deviation of the return on assets $(SDROA)$ over the entire sample period,

$$Z_{it} = \frac{ROA_{it}+CAR_{it}}{SDROA_i}, \tag{4.6}$$

where ROA is the return on assets and CAR the ratio of total equity over total assets of bank in year t. $SDROA$ is a bank´s standard deviation from ROA. The standard deviation of returns is calculated for the entire sample period, to obtain a sufficiently long-term view of the risks faced by a given bank. A higher Z-score means that banks are more stable and present a lower probability of bankruptcy.

Table 4.3 presents descriptive statistics for the Z-score and its components for the full sample. A preliminary look at the z-scores suggests a high variability in the sample, with a z-score varying from -2.78 to 23573.36 with an average of 55.12.

Table 4.3: Descriptive statistics for the z-score and its components

	Mean	St. Dev.	Min.	Max.
ROA (%)	0.47	0.90	-348.07	8.56
CAR (%)	9.17	9.65	0.82	81.20
SDROA (%)	0.49	0.65	0.00	7.35
Z-score	55.12	200.65	-2.78	23,573.36

Source: Computations from the author based on Bankscope (2015).
Notes: The variables were trimmed at the 1st and 99th percentile.

In order to observe the subsample of distressed banks, we have defined distressed banks as those with z-scores that fall in the lowest 10 percent of the distribution[9]. For our sample, banks with a z-score below 8.96 are considered distressed. We have estimated our regression, including a dummy variable taking the value of one if the bank is distressed and zero if the bank is safe, and we have included an interaction term between the variables $Distress$ and $Leverage$. The interaction between these two variables will allow us to assess if there is any distinctive feature for distressed banks in the relation between leverage and employee pay.

$$EP_{i,c,t} = \beta_0 + \beta_2 Leverage_{ict}\beta_1 + Shareholder\ value_{ict} + \beta_3 Size_{ict} + \\ + \beta_4\, Business\ div_{ict} + \beta_5 Employee\ Productivity_{ict} + \beta_6 Distress_{ict} + \\ + \beta_7 Distress \times Leverage_{ict} + \gamma_{ct} + \varepsilon_{ict} \quad (4.7)$$

As reported in Subsection 4.4.1, we include the lagged values of the explanatory variables. Furthermore, we control for time-invariant unobserved heterogeneity, including bank-specific effects in our regression.

4.4.3. Instrumental Variable Analysis

Considering that leverage may be endogenous, in the sense that high wages can also imply low leverage, we address this potential reverse causality concern by employing an instrumental variable (IV) approach. Notwithstanding that this problem may already be partially out, by the use of lagged values in equation (4.2), we consider as suggested by Reed (2015) that replacing contemporaneous lagged variables with its lagged values, may not adequately address the problem associated with simultaneity, however the use of lagged values as instruments may be an effective estimation strategy. In this sense, the instrumental variables fixed effects estimation with two-stages least squares (IV2SLS) approach is applied.

Bearing in mind that there is a natural source of instruments in terms of predetermined variables (Wooldridge, 2009), the availability of information about previous realizations of the variables of interest provides potential instruments, and by doing so it is possible to isolate the effect of exogenous changes in leverage on wages, as the instruments are correlated with the explanatory variable, but they will not be correlated with the error term at time *t*, since they were generated at an earlier point

[9] In accordance with the International Monetary Fund (2013).

in time. In this context, the second and third lags of leverage are used as instruments for our endogenous variable, which in our case is the first lag of liabilities to total assets.

In order to assess the robustness of our IV estimates, we employ an alternative identification strategy proposed by Lewbel (2012)[10] for the construction of instruments as functions of the model's data.

To understand the basic framework of the method proposed by Lewbel (2012), consider Y_1 and Y_2 as observed endogenous variables, $\mathbf{X}$ as a vector of observed exogenous regressors, and $\varepsilon = (\varepsilon_1, \varepsilon_2)$ as unobserved error processes, where the structural model can be defined as

$$\begin{aligned} Y_1 &= \boldsymbol{X}'\beta_1 + Y_2\gamma_1 + \varepsilon_1 \\ Y_2 &= \boldsymbol{X}'\beta_2 + Y_1\gamma_2 + \varepsilon_2, \end{aligned} \tag{4.8}$$

Lewbel (2012) suggests that, in the presence of some heteroscedasticity, one can take a vector $\boldsymbol{Z}$ of observed exogenous variables and use $[Z - E(Z)]\varepsilon_2$ as an instrument if $cov(\boldsymbol{X}, \varepsilon_i^2) \neq 0, i = 1,2$ and $cov(\boldsymbol{Z}, \varepsilon_1\varepsilon_2) = 0$ and $\boldsymbol{Z}$ could be a subset of $\mathbf{X}$ or equal to $\mathbf{X}$. In this sense, no information outside the model is required. The generated instruments are constructed from the first-stage equation residuals, multiplied by each of the included exogenous variables in mean-centered form

$$Z_j = (X_j - \overline{X}_j)\hat{\varepsilon}, \tag{4.9}$$

where $\hat{\varepsilon}$ is the vector of residuals from the first-stage regression of each endogenous regressor on all regressors, including a constant vector.

Once the above set of instruments is obtained, it is possible to use two-stage least squares to estimate the IV regression, as a standard IV estimation. Moreover, Lewbel (2012) suggests that in cases where there is an external instrument it is possible to estimate by TSLS using the second and third lags of leverage (our instruments) and the generated instruments. In this case, there will be three sets of estimates: the traditional IV estimates, estimates using only generated instruments, and estimates using both generated and excluded instruments.

[10] This method is implemented by stata using the Stata module ivreg2h (Baum and Schaffer, 2012).

4.5. Empirical Results

4.5.1. Relation between leverage and employee pay

We depart from a baseline specification to estimate the effect of firm leverage on wages, in which we include variables that characterize firm size, business diversification and employee productivity, as well as variables that control for bank profitability and a set of dummies that control for macroeconomic shocks specific to the country. As previously mentioned, we use three alternative measures of leverage – regulatory tier one capital ratio, liabilities to total assets and interest coverage ratio.

In our baseline model, we start with OLS regressions of average employee pay for all the sample. Considering the endogeneity issue, and in an attempt to deal with it, we estimate our model using our explanatory variables lagged by one year. In addition, to control for heteroscedasticity and serial correlation between banks, the standard errors are robust and clustered at the bank level. The results from estimating equation (4.1) with lagged effects are reported in Table 4.4.

We find that profitability is inversely related to employee pay. This inverse relationship is expected, as the increase in labour costs will reduce profit, thus invalidating any profit-maximization strategy. Considering that our employee pay variable is by construction related to personnel costs, this relation is manifest.

The positive coefficient for business diversification reflects that employee pay is positively related to firm's diversification, thus workers benefit from this strategy. It is also observed that productivity affects average wages positively. The effect suggested by the literature that larger firms tend to pay more to their employees is not clear in all the specifications, a significant but negative effect is observed in column (1) for the specification that uses the interest coverage ratio.

The coefficients for the two alternative measures of leverage – regulatory tier one capital and liabilities to total assets – suggest a negative relation between leverage and employee pay. It is observed that banks with lower leverage, pay higher wages. For the interest coverage ratio, the results suggest that there is a positive effect of leverage on average wages for a significance level of 10%.

Table 4.4: Ordinary Least Square regressions of average employee pay (with lagged effects)

Dependent variable: Logarithm of average employee pay			
Variable	(1)	(2)	(3)
Interest coverage ratio (t-1)	-1.167*		
	(0.598)		
Regulatory tier one capital (t-1)		0.301***	
		(0.075)	
Liabilities to total assets (t-1)			-0.411***
			(0.082)
Return on average assets (t-1)	-4.246***	-10.430***	-6.969***
	(1.177)	(2.089)	(1.153)
Total assets (t-1)	-0.006**	0.004	-0.003
	(0.003)	(0.004)	(0.003)
Business diversification (t-1)	0.497***	0.424***	0.485***
	(0.037)	(0.056)	(0.038)
Employee productivity (t-1)	0.134***	0.128***	0.133***
	(0.007)	(0.011)	(0.007)
Constant	3.645***	3.462***	3.974***
	(0.076)	(0.098)	(0.102)
Observations	29,971	9,397	29,898
R-squared	0.576	0.624	0.579
RMSE	0.242	0.218	0.239
F-stat	22155	13463	5652
Prob>F	0.000	0.000	0.000

Source: Computations from the author.

Notes: (1) The regression includes country-time interaction dummies to control for macroeconomic shocks specific to the country. (2) All explanatory variables were trimmed at the 1st and 99th percentiles. (3) Robust standard errors in brackets, clustered at the firm level. (4) *significant at 10%; **significant at 5%; ***significant at 1%.

Controlling for both bank and year effects and with the explanatory variables lagged by one year, we observe from Table 4.5 that, as expected, when we control for unobserved heterogeneity, the wage variation explained by the regressors is reduced. Specifically, it is observed that employee pay is positively related to the firm's employee productivity and that profitability is inversely related with employee average wage. Moreover, there is no evidence of a size-wage premium effect, as the coefficient of total assets suggests a negative effect of size on wages. With respect to business diversification its coefficient is insignificant throughout the specifications.

We observe that leverage is statistically significant, thus suggesting a negative relation between leverage and average wages, but only when considering the specification that uses liabilities to total assets as a measure of leverage, as observed in column (3).

Table 4.5: Fixed effects regressions of average employee pay (with lagged effects)

Dependent variable: Logarithm of average employee pay			
Variable	(1)	(2)	(3)
Interest coverage ratio (t-1)	0.325		
	(0.260)		
Regulatory tier one capital (t-1)		0.045	
		(0.111)	
Liabilities to total assets (t-1)			-0.230***
			(0.066)
Return on average assets (t-1)	-2.259***	-1.876	-2.526***
	(0.670)	(1.520)	(0.758)
Total assets (t-1)	-0.038***	-0.011	-0.024***
	(0.008)	(0.021)	(0.008)
Business diversification (t-1)	0.038	-0.011	0.041
	(0.028)	(0.042)	(0.028)
Employee productivity (t-1)	0.030***	0.025***	0.031***
	(0.005)	(0.007)	(0.005)
Constant	4.593***	4.286***	4.608***
	(0.112)	(0.279)	(0.111)
Observations	29,971	9,397	29,898
R-squared	0.361	0.409	0.362
F-stat	340.2	2.399e+06	160.5
Prob>F	0.000	0.000	0.000
Banks	3,471	2,499	3,460

Source: Computations from the author.

Notes: (1) The regression includes country-time interaction dummies to control for macroeconomic shocks specific to the country. (2) All explanatory variables were trimmed at the 1st and 99th percentiles. (3) Robust standard errors in brackets, clustered at the firm level. (4) *significant at 10%; **significant at 5%; ***significant at 1%.

4.5.2. Distressed versus non-distressed banks

Table 4.6 reports the results from estimating equation (4.7). Taking into consideration that our variable of interest is the interaction between $Distress$ and $Leverage$, the estimations with the explanatory variables lagged by one year, suggest that for banks financially distressed, the magnitude of the effect of leverage is not different in comparison to non-distressed banks, except for the case of the specification that uses the regulatory tier one capital as a measure of leverage, whose coefficient for the interaction term is positive but only at a 10% level of significance, thus suggesting that the negative effect of leverage on wages can be more pronounced for distressed firms.

The estimations of our fixed effects model with the explanatory variables lagged by one year are presented in Table 4.7. From the results, we can conclude that there are no differences on the effects of leverage on average wages for distressed banks and safe banks.

Table 4.6: Ordinary Least Square regressions of average employee pay for distressed banks (with lagged effects)

Dependent variable: Logarithm of average employee pay			
Variable	(1)	(2)	(3)
Interest coverage ratio (t-1)	-1.260**		
	(0.603)		
Regulatory tier one capital (t-1)		0.299***	
		(0.070)	
Liabilities to total assets (t-1)			-0.448***
			(0.083)
Distress	0.074***	-0.008	0.201
	(0.022)	(0.046)	(0.331)
Distress* Interest coverage ratio (t-1)	0.864		
	(1.818)		
Distress*Regulatory tier one capital (t-1)		0.685*	
		(0.353)	
Distress*Liabilities to total assets (t-1)			-0.109
			(0.355)
Return on average assets (t-1)	-5.960***	-11.944***	-8.627***
	(1.209)	(2.170)	(1.185)
Total assets (t-1)	-0.008***	0.003	-0.004
	(0.003)	(0.004)	(0.003)
Business diversification (t-1)	0.474***	0.388***	0.459***
	(0.037)	(0.056)	(0.037)
Employee productivity (t-1)	0.136***	0.131***	0.135***
	(0.007)	(0.011)	(0.007)
Constant	3.670***	3.473***	4.019***
	(0.077)	(0.098)	(0.101)
Observations	29,743	9,360	29,757
R-squared	0.584	0.628	0.586
RMSE	0.234	0.212	0.234
F-stat	6272	465765	4730
Prob>F	0.000	0.000	0.000

Source: Computations from the author.

Notes: (1) The regression includes country-time interaction dummies to control for macroeconomic shocks specific to the country. (2) *Distress* is a dummy variable taking the value of one if the bank is distressed and zero if the bank is safe. (3) All explanatory variables were trimmed at the 1st and 99th percentiles. (4) Robust standard errors in brackets, clustered at the firm level. (4) *significant at 10%; **significant at 5%; ***significant at 1%.

Table 4.7: Fixed effects regressions of average employee pay for distressed banks (with lagged effects)

Dependent variable: Logarithm of average employee pay			
Variable	(1)	(2)	(3)
Interest coverage ratio (t-1)	0.370		
	(0.248)		
Regulatory tier one capital (t-1)		0.072	
		(0.083)	
Liabilities to total assets (t-1)			-0.207***
			(0.068)
Distress	-0.032**	0.012	-0.184
	(0.014)	(0.039)	(0.153)
Distress* Interest coverage ratio (t-1)	-0.270		
	(0.581)		
Distress*Regulatory tier one capital (t-1)		-0.206	
		(0.210)	
Distress*Liabilities to total assets (t-1)			0.163
			(0.164)
Return on average assets (t-1)	-2.821***	-1.025	-3.148***
	(0.710)	(0.994)	(0.815)
Total assets (t-1)	-0.033***	0.007	-0.025***
	(0.008)	(0.023)	(0.008)
Business diversification (t-1)	0.023	-0.029	0.034
	(0.028)	(0.039)	(0.029)
Employee productivity (t-1)	0.030***	0.022***	0.032***
	(0.005)	(0.006)	(0.005)
Constant	4.538***	4.047***	4.616***
	(0.107)	(0.317)	(0.114)
Observations	29,743	9,360	29,757
R-squared	0.368	0.373	0.366
F-stat	865.7	3.680e+06	4365
Prob>F	0.000	0.000	0.000
Banks	3,427	2,495	3,430

Source: Computations from the author.

Notes: (1) The regression includes country-time interaction dummies to control for macroeconomic shocks specific to the country. (2) All explanatory variables were trimmed at the 1st and 99th percentiles. (3) Robust standard errors in brackets, clustered at the firm level. (4) *significant at 10%; **significant at 5%; ***significant at 1%.

4.6. Robustness tests and additional results

In this section, we perform alternative specifications in order to further validate our findings. First, we test the inverse relation between leverage and employee pay for alternative sub-samples. Furthermore, an additional control test was performed with the inclusion of the financial crisis. Second, we reestimate our model, taking into account the non-linear effect of leverage on wages. Third, bearing in mind that the use of lagged values, as suggested by Reed (2015), may not adequately address some potential endogeneity problem, we employ an IV approach.

4.6.1. Subsamples

Considering that our sample presents several types of banks, we have restricted our sample and estimate equation (4.2) for the sub-samples of banks operating in two distinct business models: shareholder-oriented banks and stakeholder-oriented banks. In line with Ferri et al. (2015), organizational form has important implications on financial firms. Besides commercial banks, whose explicit goal is the maximization of profits, which means shareholder value, other banks such as cooperative and savings banks aim to maximize the value for stakeholders.

Concerning commercial banks, we consider, as Ferri et al. (2015), a broad category of commercial banks, which includes commercial and investment banks as well as private banking and asset management companies. In this broader category of commercial banks, we have also included bank holdings and holding (BHH) companies. However, since BHH companies are defined by Bankscope as holding companies of bank groups, which usually have very limited business activities, we have also estimated equation (4.2) for the sub-samples of shareholder-oriented banks, excluding this type of banks.

The results presented in Table 4.8 validate our previous findings; we observe that the results remain almost qualitatively the same, confirming the negative effect of leverage on average employee pay for shareholder-oriented banks. In the case of stakeholder-oriented banks the coefficient of leverage is not statistically significant; suggesting that for these banks leverage has no effect on wages.

We have also considered the occurrence of the financial crisis during our sample period and we have tried to further assess, if the effect of leverage on wages is the same during that period. We have reestimated equation (4.2) including a dummy variable (*Crisis*) for the financial crisis, that is one for 2008 and 2009, and zero for the previous and subsequent years of the sample.

It is observed, from Table 4.9, that the coefficient of liabilities to total assets remains negative and significant, and that this effect is positive in the years during the crisis, 2008 and 2009, as suggested by the coefficient on the interaction term; however, the differential is not statistically significant.

Table 4.8: Fixed effects regressions of average employee pay (sub-samples)

Dependent variable: Logarithm of average employee pay					
	Shareholder-oriented				Stakeholder--oriented
	Bank holdings & holdings companies, commercial and investment banks, and private banking/asset management companies	Bank holdings & holdings companies and commercial banks	Commercial and investment banks, and private banking/asset management companies	Commercial banks	Savings and cooperative banks
Liabilities to total assets (t-1)	-0.274***	-0.242***	-0.240***	-0.243***	-0.287
	(0.088)	(0.090)	(0.085)	(0.089)	(0.221)
Return on average assets (t-1)	-3.772***	-3.806**	-2.673**	-1.988**	-5.087***
	(1.365)	(1.507)	(1.147)	(0.970)	(1.277)
Total assets (t-1)	-0.018	-0.030*	-0.014	-0.020	-0.030***
	(0.016)	(0.018)	(0.015)	(0.018)	(0.009)
Business diversification (t-1)	0.103**	0.117*	0.097**	0.118**	0.011
	(0.051)	(0.064)	(0.038)	(0.047)	(0.027)
Employee productivity (t-1)	0.044***	0.048***	0.028***	0.027***	0.036***
	(0.013)	(0.016)	(0.008)	(0.009)	(0.007)
Constant	4.711***	4.794***	4.681***	4.712***	4.672***
	(0.197)	(0.229)	(0.193)	(0.228)	(0.239)
Observations	5,367	4,338	5,133	4,104	22,648
R-squared	0.351	0.391	0.389	0.414	0.433
F-stat	55.73	17107	224.5	924.3	103.8
Prob>F	0.000	0.000	0.000	0.000	0.000
Banks	796	636	742	582	2,309

Source: Computations from the author.

Notes: (1) The regression includes country-time interaction dummies to control for macroeconomic shocks specific to the country. (2) All explanatory variables were trimmed at the 1st and 99th percentiles. (3) Robust standard errors in brackets, clustered at the firm level. (4) *significant at 10%; **significant at 5%; ***significant at 1%.

Table 4.9: Fixed effects regressions of average employee pay (sub-samples)

Variable	Financial Crisis
Liabilities to total assets (t-1)	-0.249***
	(0.067)
Crisis	-0.214***
	(0.063)
Crisis*Liabilities to total assets (t-1)	0.127**
	(0.063)
Return on average assets (t-1)	-2.488***
	(0.755)
Total assets (t-1)	-0.023***
	(0.008)
Business diversification (t-1)	0.039
	(0.028)
Employee productivity (t-1)	0.031***
	(0.005)
Constant	4.624***
	(0.111)
Observations	29,898
R-squared	0.362
F-stat	136.1
Prob>F	0.000
Banks	3,460

Source: Computations from the author.

Notes: (1) The regression includes country-time interaction dummies to control for macroeconomic shocks specific to the country. (2) Crisis is a dummy variable equal to one for 2008 and 2009, and zero for the previous and subsequent years of the sample. (3) All explanatory variables were trimmed at the 1st and 99th percentiles. (4) Robust standard errors in brackets, clustered at the bank level. (5) *significant at 10%; **significant at 5%; ***significant at 1%.

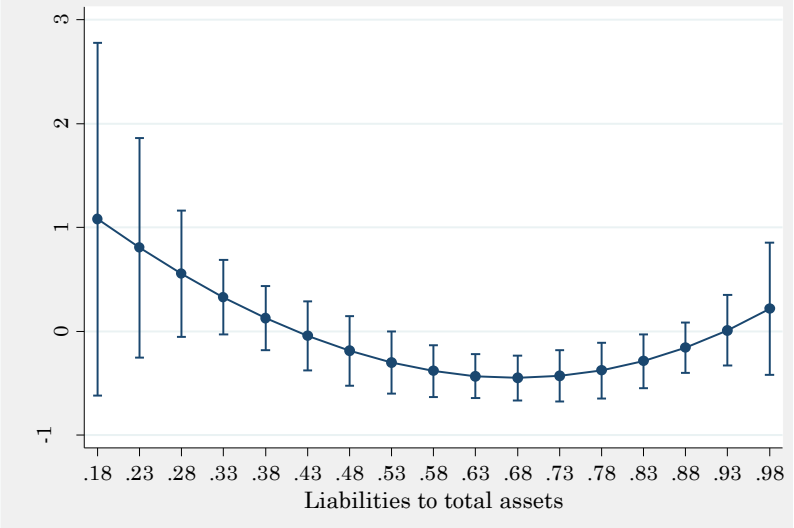
4.6.2. Non-linear relationship between leverage and employee pay

In order to try to account for some potential nonlinear relationship between leverage and employee pay, we apply a polynomial regression model as an extension of our model identified in equation (4.2), thus enabling a more effective and flexible curve fitting procedure.

Considering that a polynomial may provide a good approximation, we estimate a quartic polynomial regression assuming non-linear leverage effects and try to plot the relationship between leverage and employee pay for different levels of leverage.

In seeking to understand how the response varies as leverage changes, we may use our fixed-effects model, regressing average wages on leverage and its non-linear terms, controlling for profitability, size, business diversification, and employee productivity and try to assess for different levels of leverage, how the effect of leverage on wages changes as leverage changes.

Figure 4.1: Average marginal effects of leverage



Source: Computations from the author.
Notes: Average marginal effects calculated with a 95% confidence interval.

The presence of non-linearities in the effect of leverage on wages is observed. Notwithstanding, for lower and higher levels of leverage, the effects on wages are not apparent; the average marginal effects are significant for values of leverage between 53% and 83%. This reflects that a unit change in liabilities to total assets has a different impact according to where this change happens. Therefore, for instance, we may observe that for a ratio of liabilities to total assets of 53%, it is estimated a marginal effect of 0.30%, thus indicating that at this value, a 1 p.p. increase in leverage will decrease wages by 0.30%, but for a ratio of liabilities to total assets of 68% the expected decrease in wages, when leverage increases 1 p.p., will be of 0.45%, as stated in Figure 4.1 for the lower value of the curve.

The relation between leverage and employee pay reveals a threshold effect. This suggests that for certain levels of debt there will be a constraint in wages to competitive levels, thus further increases have no additional effects on wages.

4.6.3. Instrumental variable results

As previously mentioned, we also address the potential endogeneity problem by using the IV2SLS approach. We instrument the first lag of liabilities to total assets, by using the second and third lags of the referred variable. The results from the IV first-stage regression are presented in Table 4.10.

Table 4.10: First-stage regression

Dependent variable: Liabilities to total assets (t-1)	
Excluded Instruments	FE
Liabilities to total assets (t-2)	0.575***
	(0.059)
Liabilities to total assets (t-3)	0.054
	(0.040)
Observations	26,872
Number of banks	2,972
First stage *F*-statistic	100.46***

Source: Computations from the author.

Notes: (1) Robust standard errors in brackets, clustered at the bank level. (2) The table reports only the coefficient estimates for the instruments. (3) *significant at 10%; **significant at 5%; ***significant at 1%.

As expected, these results show that the previous lagged values, namely the second and third lags of liabilities to total assets, are positively related with the instrumented variable, notwithstanding that the third lag is not significant.

As we can see the F-statistic of exogenous instruments is clearly high and goes above the rule of thumb value of 10 for non-weak instruments, thus validating the instruments proposed. Moreover, according to Stock, Wright and Yogo (2002), who developed weak-instrument threshold critical values of *F* for testing that instruments are weak, in the case of two instruments, the suggested critical value is of 11.59, therefore the instruments will be considered weak if the first-stage F-statistic falls below that critical value. Therefore, the results confirm the validity of the instruments proposed.

Table 4.11 presents the results from the second stage of the instrumental variables fixed effects estimation. We are also presenting the results obtained from OLS and fixed effects estimation, which were reported before on Table 4.4 and Table 4.5.

Table 4.11: Instrumental variable regression

Dependent variable: Logarithm of average employee pay			
Variable	OLS	FE	IV-FE
Liabilities to total assets (t-1)	-0.411***	-0.230***	-0.444***
	(0.082)	(0.066)	(0.139)
Return on average assets (t-1)	-6.969***	-2.526***	-3.874***
	(1.153)	(0.758)	(0.912)
Total assets (t-1)	-0.003	-0.024***	0.008
	(0.003)	(0.008)	(0.011)
Business diversification (t-1)	0.485***	0.041	0.059*
	(0.038)	(0.028)	(0.035)
Employee productivity (t-1)	0.133***	0.031***	0.031***
	(0.007)	(0.005)	(0.005)
Constant	3.974***	4.608***	
	(0.102)	(0.111)	
Observations	29,898	29,898	26,872
Number of banks		3,460	2,972
Hansen J			0.159
p-value			0.690

Source: Computations from the author.

Notes: (1) Robust standard errors in brackets, clustered at the bank level. (2) All explanatory variables were trimmed at the 1st and 99th percentiles. (3) OLS and FE regressions include country-time interaction dummies to control for macroeconomic shocks specific to the country. (4) *significant at 10%; **significant at 5%; ***significant at 1%.

In the second stage analysis, banks' leverage is negatively related with average employee pay, consistent with the results from our previous estimations. In this sense, even after accounting for the potential endogeneity of leverage, this variable is significant in the determination of average wages. Moreover, the estimates for the remaining variables are also consistent with our previous findings.

In order to increase the robustness of our results, we have employed an alternative approach to our standard IV method proposed by Lewbel (2012). As previously mentioned, this approach allows us to construct additional instruments as simple functions of the regressors.

One condition for the implementation of this procedure relies on the existence of heteroscedasticity in the data. In order to assess if there is variance in the error term over time, the modified Wald test for groupwise heteroscedasticity was used, rejecting the null of constant variance.

Table 4.12 reports IV estimates using the Lewbel's method. The diagnostic tests suggest that instruments are valid. We observe that the F-test of exogenous instruments and the Hansen overidentifying restriction test confirms the validity of our instruments. Finally, the p-value of the Kleibergen-Paap rk LM statistic rejects the null of model underidentification.

Table 4.12: Lewbel's instrumental variable regression

First stage regression			
Dependent variable: Liabilities to total assets (t-1)			
	Standard IV	Lewbel IV (generated instruments)	Standard and Lewbel IV (standard plus generated instruments)
Variable			
Liabilities to total assets (t-2)	0.575***		0.547***
	(0.059)		(0.055)
Liabilities to total assets (t-3)	0.054		0.016
	(0.040)		(0.041)
Return on average assets (t-1)	-1.100***	-1.706***	-1.036***
	(0.146)	(0.205)	(0.136)
Total assets (t-1)	0.022***	0.036***	0.021***
	(0.002)	(0.003)	(0.002)
Business diversification (t-1)	0.010**	0.101	0.007
	(0.005)	(0.008)	(0.005)
Employee productivity (t-1)	0.001	0.002**	0.0003
	(0.001)	(0.001)	(0.0004)
Second stage regression			
Dependent variable: Logarithm of average employee pay			
Variable			
Liabilities to total assets (t-1)	-0.444***	-0.165	-0.410***
	(0.139)	(0.251)	(0.130)
Return on average assets (t-1)	-3.874***	-3.353***	-3.810***
	(0.912)	(1.146)	(0.934)
Total assets (t-1)	0.008	0.002	0.007
	(0.011)	(0.015)	(0.011)
Business diversification (t-1)	0.059*	0.054	0.058*
	(0.035)	(0.035)	(0.035)
Employee productivity (t-1)	0.031***	0.031***	0.031***
	(0.005)	(0.005)	(0.005)
Observations	27,138	27,138	27,138
Number of banks	3,238	3,238	3,238
First stage *F*-statistic	100.47***	16.29***	55.61***
Underidentification test			
Kleibergen-Paap (χ^2)	51.79	71.19	111.63
p-value	0.000	0.000	0.000
Overidentification test			
Hansen J (χ^2)	0.159	28.774	41.083
p-value	0.690	0.321	0.053

Source: Computations from the author.

Notes: (1) Robust standard errors in brackets, clustered at the bank level. (2) All explanatory variables were trimmed at the 1st and 99th percentiles. (3) The regression includes country-time interaction dummies to control for macroeconomic shocks specific to the country. (4) *significant at 10%; **significant at 5%; ***significant at 1%.

The results show that the Lewbel's IV results are lower in comparison to the standard IV estimates. We have also observed that there are minor differences between the estimates produced by the standard IV and those from the estimation that uses both generated and excluded instruments, thus the combination of instruments presents results that are closer to the estimates from the standard IV.

In addition, one limitation of the Lewbel's IV approach is that the estimation will present larger standard errors than those presented in the standard IV, thus in the presence of valid and strong instruments the standard IV is preferable. However, Lewbel's approach allows us to check the robustness of our standard IV, providing further evidence.

4.7. Conclusion

In this paper, we have analysed the relationship between wages, shareholder value and leverage for a panel of European banks for the 1987-2015 period. We have used data on all banks from 19 countries of the Euro Area, whose information is available on Bankscope.

We have observed that for all the specifications the effect of leverage on average wages differs according to the leverage measure that is used. When we consider as an alternative measure of leverage, the interest coverage ratio and liabilities to total assets, the results suggest a negative effect, thus indicating that banks with more leverage pay lower wages, however with a higher level of significance in the case of the liabilities to total assets. On the contrary, the same effect does not hold for the regulatory tier one capital. For this specification, the results suggest a significant and positive effect of leverage on average wages.

Controlling for both firm and year effects, the results suggest a negative relation between leverage and average wages, which is only statistically significant for the variable liabilities to total assets.

The contradictory effect that is observed when using the interest coverage ratio, may be motivated by the fact that this variable is a flow measure, so it is different in its nature when compared to regulatory tier one capital or to liabilities to total assets. On the other hand, we consider that the specification that uses regulatory tier one capital as leverage measure must be perceived with caution, as the observations that are considered are almost one third of the observations used in other specifications. Furthermore, we consider the liabilities to total assets an adequate measure of leverage.

Our instrumental variable specification validates our baseline results, suggesting that the relationship between leverage and average wages remains significant even after instrumenting a

bank´s leverage, thus we can conclude that the negative relation is not driven by endogeneity bias. In addition, the alternative Lewbel's IV estimation provides additional support to our findings. In this sense, we may say that, as proposed by Perotti and Spier (1993), banks may use their capital structure strategically, thus leveraged banks may renegotiate labour contracts and reduce wages. The substitution of equity by debt will function as a pressure mechanism for workers, as new investment may not occur, thus leading them to accept lower wages.

It may be the case that banks may also pay higher wages to their workers in order to persuade them from forming unions (Berk et al., 2010 and Bronars and Deere, 1991), however our results do not allow us to reach this conclusion, since we do not have information about unionization.

Finally, our paper indicates that for distressed banks, leverage is also statistically significant, when related to average wages, thus confirming the inverse relationship between leverage and average wages. Furthermore, we have not found evidence that the effect of leverage on average wages differs according to the type of bank.

In this sense, we share the same point of view as Chemmanur et al. (2013), based on Perotti and Spier (1993), according to whom, notwithstanding that the disciplining effect of debt on labour may be more evident in distressed firms, the disciplining mechanism can also be present in other firms, namely safe firms.

Moreover, the results validate our previous findings when we consider additional alternative specifications. First, considering that the ownership structure may influence the relation between leverage and average employee pay, our findings suggest that, as expected, the negative effect is prevalent for shareholder-oriented banks and that there is no effect for stakeholder-oriented banks. This may suggest, in accordance to Hanka (1998), that debt may increase shareholder wealth by reducing labour costs. Secondly, when we include the financial crisis, it is observed that the negative effect of leverage remains negative; additionally, the results suggest that the effect of leverage differs during the crisis, however this difference is not statistically significant.

Finally, the non-linear feature of the relationship between leverage and average employee pay seems evident, as we observe that the effects on average wages differ as leverage changes. In this sense, we identify that the negative relation between leverage and employee pay is significant only for values of leverage between 53% and 83%. Following the same line of reasoning presented in Hanka (1998), if this relation is explained by a disciplinary mechanism, the negative relation between leverage and employee pay reveals a threshold effect. Therefore, it suggests that for certain levels of debt there

will be a constraint in wages to competitive levels, thus, further increases have no additional effect on wages.

Our panel data study shows that a bank's capital has a positive effect of on average wages and it establishes a link between finance and the labour market, thus bringing to the forefront questions that need to be taken into account for policy makers. Our results also highlight new questions for further research, such as the determination of leverage thresholds that may harm wages, and it has also contributed by suggesting a novel approach for researchers wishing to deal with endogeneity.

Chapter 5

Leverage decisions and manager characteristics

5.1. Introduction

Excessive leverage has governance implications and encompasses agency problems, in that managers may pursue rent-seeking strategies that are detrimental to the long-term financial stability and profitability of the bank.

Since the seminal work of Modigliani and Miller (1958), several studies have contributed to the development of the literature that explores the determinants of capital structure. The absence of a universal theory of capital structure is reflected in the extent of the empirical literature on this topic (see Frank and Goyal (2008, 2009) for a concise review of this literature). However, three main theoretical strands have emerged: the Trade-Off Theory; the Pecking Order Theory and the Market Timing Theory. According to the Trade-Off Theory (Myers, 1984) firms will balance the costs and benefits of debt in order to achieve an optimal capital structure. Firms should attempt to balance the benefit of debt as tax benefits with the costs associated with increasing levels of debt such as bankruptcy costs and agency costs. The Pecking Order Theory of Myers and Majluf (1984) is based on the existence of information asymmetry, considering that firms follow a financing hierarchy designed to minimize adverse selection costs of security issuance. By doing so, firms show a distinct preference between internal and external funds with investments to be financed first with internal funds, second with secured debt, and finally with equity. The Market Timing Theory (Baker and Wurgler, 2002) argues that firms issue new equity when their share price is perceived to be overvalued and buy back shares when they are undervalued. This fluctuation in the price of shares affects the way how firms finance their investment decisions and the capital structure of the firm.

The focus of most empirical work has been on non-financial firms and, concerning a bank's capital structure, there are clear similarities on the determinants of financing decisions. However, the banking sector is not only different for many reasons to other non-financial firms, but also agency costs may be high in this particular industry. As pointed out by Berger and Patti (2006), notwithstanding the banking sector's activity being restricted by regulation, banks are also subject to

the same type of agency problems and their behaviour is also influenced by the same factors as other industries.

Considering the relation between leverage and the rent- and risk-seeking behaviour of bankers, Avgouleas and Cullen (2015) consider that leverage constitutes a cheap and fast way to increase size, thus the expansion of bank assets will generate an increase in returns (by the increase in the return on equity – ROE), at least in the short term. Thus, as leverage leads to an increase in size and to the maximization of the shareholders' returns, it is expected that managers will pursue this kind of strategy not only to imitate competitor strategies, but also to retain their jobs and career prospects. This behaviour encompasses an agency cost, as their risk seeking behaviour may harm the long-term profitability and financial stability of the bank.

In line with Berger and Patti (2006) the separation of ownership and management is a source of agency costs, so this problem may be overcome with the choice of capital structure. In this sense, debt may serve as a corporate governance tool and a discipline device for managers. Since bankruptcy is costly for managers, a high level of leverage will constrain and motivate managers to act according to the shareholders' interests. The authors state that high leverage may reduce agency costs, as managers perceive the risk they will incur if the firm is liquidated, namely in terms of salary losses and other benefits as well as a bad reputation.

By focusing on the banking industry, we want to consider its specificities. Banks differ in many ways from non-financial firms. However, there are two elements which are central regarding the differences in the corporate governance of banks: the use of excessive leverage and the strong regulated environment in which banks develop their activities (Hagendorff, 2014).

Given the high use of leverage that prevails in the banking sector, it is natural to try to find what factors favour the use of leverage, instead of equity in financing banks. Avgouleas and Cullen (2015: 7) set out four possible drivers: the rent-seeking behaviour of managers, especially in the absence of regulatory controls, that may lead to an increased use of uninsured debt to finance bank assets and a greater risk; bank management may use asset substitution (risk-shifting), in order to substitute investment decisions and select those that are riskier (this behaviour increases as banks increase their leverage and it prevails in financial firms, since the opaque environment in which banks operate hinders the flow of information and the evaluation of the risk of their operations); risk preferences differ between the agents that dominate the decision process, thus it is expected that a high level of risk will be preferred by shareholder dominated banks, followed by manager-dominated banks, and finally, by banks dominated by deposit guarantors; financial innovation and the use of leverage have

led to a rapid expansion of the banking business. In addition, Hegendorff (2014) mentions that a safety net system is also responsible for high leverage. In this sense, the idea that regulators may subsidize bank leverage, constitutes an incentive for banks to issue leverage.

The specificity of banks is also stated in Koudstall and Wijnbergen (2012) which consider their crucial role for the functioning of the economy and their high exposure to risk. The special features of the banking sector give the idea that corporate governance and, to a certain extent, the determinants of capital structure of banks, differ from non-financial firms. Notwithstanding the differences between banks and non-financial firms, it is generally accepted by the empirical research that the factors that influence the capital structure of banks are not so different from the ones that influence firms in general. However, a distinct feature and a common perception in the literature on banking, is that banks are highly leveraged firms.

There is no doubt that capital structure theories may contribute towards explaining the decisions on the banking capital structure, but the role of leverage and its relationship with bank governance and the characteristics of managers, constitutes a topic that deserves further development. A first contribution of our study is towards the literature on corporate governance in banking. Our paper focuses on the banking sector and, therefore, we provide empirical evidence on the significance of managers' characteristics to corporate strategic decisions in banking. The focus on this particular sector, allows us to validate our findings on homogenous firms, and by doing so we complement the literature on capital structure decisions in banking.

Despite the literature that reports that individual managers matter for firm behaviour and their choices of policies (e.g., Bertrand and Schoar, 2003; Custódio and Metzger, 2014; Graham et al., 2013; Malmendier and Tate, 2005 and 2008; Malmendier et al., 2011), the studies in the banking sector are very scarce. For instance, Nguyen et al. (2015) consider observable characteristics and those regarding experience, such as age, education and employment history and they explore the relation between executive characteristics and the market performance of banks. Berger et al. (2014) seek to understand how the manager's team composition in terms of age, gender and education affect portfolio risk. In this paper, we intend to fill the gap in the literature using data for the Euro Area banking industry, focusing on how demographic and managers' personal characteristics affect their leverage choices in this particular industry, considering also the influence of the management team on that choice.

A second contribution of our study is to combine insights from the upper echelons' perspective, with traditional theories in the explanation of the relation between managers and corporate capital

structure decisions. Recent papers have identified that managers' characteristics are determinant for corporate strategic decisions, thus it is well recognized that behavioural finance may contribute for a better explanation of the capital structure decisions (Cronkvist et al., 2012; Hackbarth, 2008; Subrahmanyam, 2007). For instance, Malmendier et al. (2011) consider in their study the role of managerial traits in explaining the variation in capital structure that is not explained by traditional theories based on firm-, industry- and market-level explanations. Their purpose is to identify specific managerial characteristics, establishing a link between those characteristics and financial decisions and quantifying their effects.

In the spirit of Cronqvist et al. (2012), together with the purpose of understanding the determinants of capital structure, our motivation relies on the attempt to show that managerial preferences may influence the firm's strategic decisions, namely leverage levels decisions. Moreover, we aim to provide empirical evidence towards the development of the limited research that establishes a relation between manager personal characteristics and financial leverage decisions in banking. Considering that managers' risk preference or perception may influence the leverage decision process, we investigate if the level of leverage at the manager´s appointment date is determinant for the leverage decision, as we may think that managers' preferences in terms of risk may be determinant for their preferences in terms of leverage.

Finally, we consider that in the presence of moral hazard the self-interest behaviour of managers is reflected in their leverage choices, thus time horizon may be a relevant characteristic to be included. We are aware that the inclusion of the myopic behaviour, bearing in mind the employment contract, time horizon or even contract length, has been made in order to assess the significance of an opportunistic behaviour or its effects on performance, investment or innovation (see, for instance, Antia et al., 2010; Gonzalez-Uribe and Xu, M, 2017; Xu, 2009, 2011; Xu and Cziraki, 2014), however it would also be interesting to consider its effects on leverage levels.

In this sense, we may consider that managers will be more prone to short-term results in order to maximize their preferences when they face a short time horizon. To supplement prior research, this study uses contract time horizon that is measured by the time remaining (to the manager) until the end of the contract. However, as managers are not alone in the decision process, we consider the average contract time horizon for the management team. In this paper, we consider the possibility that horizon problems may be related with the management team's horizon as managers with shorter decision horizons will prefer higher levels of leverage.

The present study uses data that matches information from European banks and managers. We start from a cross sectional regression specification, however as we assume that the effect of the explanatory variables may differ at different points of the conditional distribution, we implement a simultaneous quantile regression model. This is of particular interest, as the quantile regressions confirm the existence of non-linearities. Our general findings suggest that younger and tenured managers, as well as managers with more experience, will be more predisposed to higher levels of leverage. The effect of tenure differs according to the level of leverage at the manager's appointment date and the positive relation between experience and leverage is only observed for highly leveraged banks. We have also observed that a bank's leverage at the manager's appointment date is determinant for the bank's current leverage. In addition, we offer some insights regarding the inclusion of the horizon dimension, in a way that it considers that horizon problems may also be related with the management team's horizon. In this sense, this study shed some light on whether and how the management team's contract time horizon may influence the leverage decision process and how a short-time managerial horizon may reflect on the capital structure.

The rest of the paper proceeds as follows. The next section discusses the theoretical and empirical evidence. Section 5.3 develops hypothesis concerning the relation between manager's characteristics and leverage. Section 5.4 introduces our dataset, presenting some descriptive statistics and the definition of the variables used. This section is followed by the discussion of our empirical methodology. The empirical analysis is presented in Section 5.6 and some additional results and robustness tests are presented in Section 5.7. Finally, Section 5.8 offers some concluding remarks.

5.2. Theoretical background

The agency problem in banks pushes them towards more leverage and this may be explained by the opacity that is inherent to their assets, that hinders the way in which managers can be monitored by outsiders, thus creating a favourable environment for asset substitution (Gropp and Heider, 2010).

Moreover, Gropp and Heider (2010) argue that factors related to individuals, may influence capital structure decisions and mention the research of Bertrand and Schoar (2003) that distinguish firm fixed effects, from manager fixed effects, following managers across different firms. Their study considers that capital structure depends on the managers' preferences, thus differences in capital structure may be related to differences in the quality of the corporate governance. The same line of

reasoning is also present in other studies that consider managers as key elements for understanding corporate leverage, namely Baker and Wurgler (2013), Frank and Goyal (2007) and Cadenillas et al. (2004).

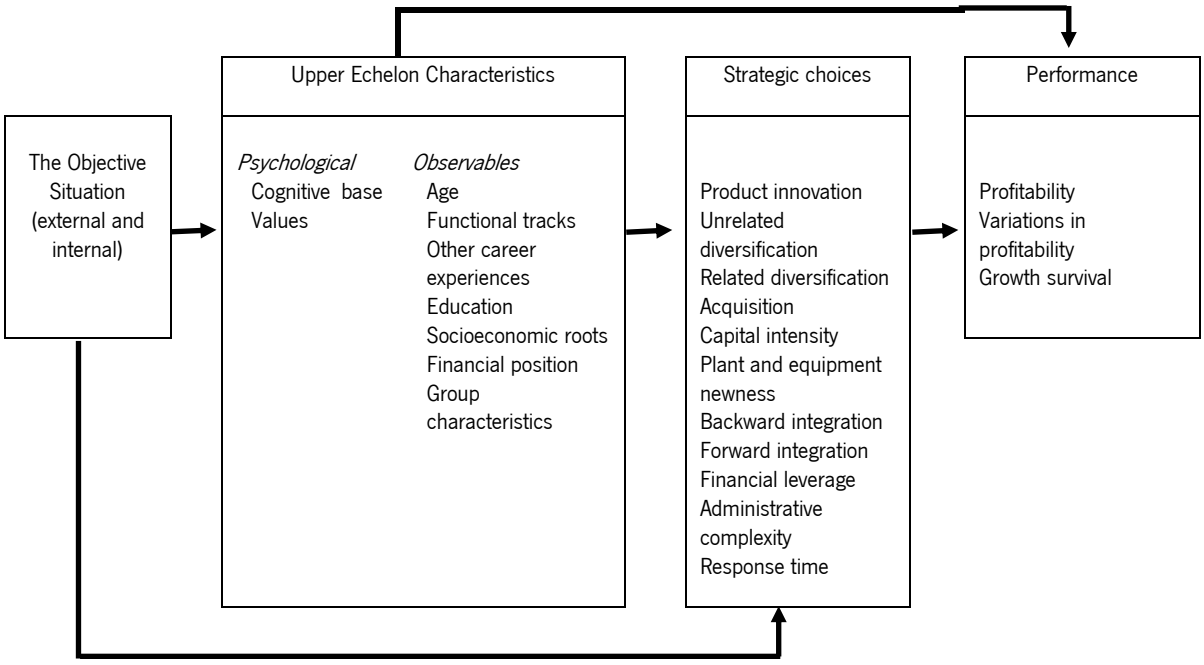
In their study, Bertrand and Schoar (2003) consider that managers are characterized by their own styles and this will have implications on the strategic decisions and corporate practices of the firms they manage. In this sense, it may be of interest to understand manager characteristics and how those characteristics may explain the financing decision.

Besides the idea that the inclusion of manager fixed effects may contribute to the increase of the explanatory power of the leverage regression and that fixed effects may reflect managerial behaviour, Frank and Goyal (2007) also consider that the managers' observable characteristics like age, educational background and employment histories may explain their behaviour and consequently their choices, thus the managers' observable characteristics, may be associated with different leverage levels. For instance, they observe that a longer tenure is related with a lower leverage and that managers holding an MBA or a law degree, or managers who have previously worked at more companies, tend to present a higher leverage.

Several researchers have questioned how similar firms may differ in their corporate decisions. In this sense, it has been recognized that the distinctive features inherent to the managers may explain those differences and the way in which managers may influence leverage decisions. The assertion that corporate decisions reflect the managerial background traits and characteristics, originally presented in Hambrick and Mason (1984) in their Upper-echelon theory, is in accordance with the idea that managers' characteristics such as age, tenure, educational background and career experiences affect their corporate strategic decisions. The theory suggests that the more complex a decision, the more important are the personal characteristics of the decision makers. In this sense, the inclusion of managers' characteristics in studying the determinants of a firm's capital structure has gained attention.

This line of reasoning draws from behavioural finance research as it considers that decisions do not only depend on the firm's environment, but also on the manager's personal characteristics in the way proposed by Hambrick and Mason (1984). Figure 5.1 explains how upper echelon characteristics explain strategic choices, assuming that the environment is not enough to explain the actions and outcomes of organizations.

Figure 5.1: An Upper Echelon Perspective of Organizations



Source: Hambrick and Mason (1984)

Several behavioural finance studies have focused their attention on the characteristics of managers, bearing in mind that managers are central to the organizations, as they influence a firm's policy choices (Bertrand and Schoar, 2003; Custódio and Metzger, 2014; Escribá-Esteve et al., 2009; Graham and Harvey, 2001; Hambrick, 2007; Hambrick and Mason, 1984; Malmendier et al., 2011; Matemilola et al., 2013; Nguyen et al., 2015). In this sense, recent empirical studies suggest that CEO characteristics matter, and evidence on manager's heterogeneity includes demographic characteristics such as age, gender, tenure, education and experience (Berger et al., 1997; Bertrand and Schoar, 2003; Chen et al., 2010; Custódio and Metzger, 2015; Hambrick and Mason, 1984; Hu and Liu, 2015; Ryan and Wang, 2012), while personal traits such as overconfidence, personal risk attitudes or preferences are included (Cronqvist et al., 2012; Graham et al., 2013; Malmendier and Tate, 2005, 2008; Malmendier et al., 2011).

In addition to the empirical literature presented in this paper, it is worth mentioning some theoretical research such as Cadenillas et al. (2004) who develop a theoretical model in which they consider the relation between managerial risk aversion and leverage. Their results are in line with Bertrand and Schoar (2003), who demonstrate that the type of manager and, hence, the observable manager characteristics are associated with financing decisions, concluding that older managers are more conservative in their leverage decisions and that managers holding an MBA are less conservative.

Similarly, Hackbarth (2008) considers managerial characteristics in order to examine the relation between managerial traits, such as growth and risk perception biases, and the firm´s capital structure. His model shows that managers with growth and/or risk perception biases tend to choose higher leverage levels in comparison to unbiased managers.

The theoretical research presented also considers the presence of agency costs. As pointed out by Kuo and Wang (2015), and in line with the agency theory proposed by Jensen and Meckling (1976), the self-interested behaviour of a manager is reflected in corporate capital structure decisions. This behaviour may be more prevalent in the presence of moral hazard, where managers are more prone to short-term results in order to maximize their preferences.

On the other hand, Hackbarth (2008) considers the interaction between agency problems and managerial traits, such as growth and risk perception biases. Managers with growth perception bias will overestimate the growth of future earnings and managers with risk perception bias believe that the firm is less risky than it actually is, thus in both cases the likelihood of financial distress is underestimated. This biasedness can help to reduce the principal-agent problem, in the sense that higher debt levels will constrain the availability of funds, thus managers will enhance firm value. More specifically, according to Hackbarth (2008), the need to balance the benefits of tax benefits, default costs, and self-interest with the need to ensure sufficient efficiency to avoid being replaced, will constrain self-interested managers. However, this value-enhancing behaviour is not evident for the case where extreme managerial biases are observed.

5.3. Hypothesis development

As mentioned above, managers' characteristics may be influential in the leverage decision process. In this section we develop hypothesis concerning those characteristics, which are: (1) age (2) gender (3) tenure (4) experience and (5) leverage at the appointment date.

Age

In line with the upper echelon theory, age may influence leverage decision as older managers are more risk averse and more conservative than younger managers. This conservative attitude is stated by Hambrick and Mason (1984) who posit three reasons why older managers are apparently more conservative. First, older managers may have less mental and physical stamina or may be less able to grasp new ideas and learn new behaviours. Moreover, as the ability to assimilate information diminishes as managers get older, age may be positively related with seeking information behaviour, in order to more accurately assess information and by doing so the decision-making process takes longer. Second, older managers may have a greater commitment to the organizational status quo. Lastly, older managers are at a stage in their lives, where financial and career stability are more important. In this sense, the managers' preference for a quiet life, increases with age (Bertrand and Mullainathan, 2003). Moreover, as Hu and Liu (2015) refer, the costs of failure are more evident to older managers, as they have more difficulty in getting a new job.

Serfling (2014) suggests that the way a manager's age impacts risk-taking behaviour may be not so consistent. In fact, if career concerns dominate there should be a positive relation between age and risk-taking. However, in a managerial signalling model, younger managers attempt to signal to the market that they are talented managers, pursuing riskier and more aggressive investment strategies. In this case, a negative relation between age and risk-taking, may be expected.

H1: Manager's age is negatively related with leverage.

Gender

Another widely used variable that describes the characteristics of a manager is gender. There is a growing literature that recognizes that gender is determinant for corporate choices and considers, among others, differences in risk aversion, overconfidence or in unemployment risk, as referred in Faccio et al. (2016). As men tend to be more confident, comparatively to women, it may also be expected that they will be more prone to riskier strategies and to higher levels of debt (Graham et al.,

2013). This is in line with Chen et al. (2014), who state that firms with male managers give rise to a higher possibility of using debt. Faccio et al. (2016) refer that firms managed by females present lower leverage, less volatile earnings and a higher chance of survival, than firms managed by males.

H2: Manager's (male) gender is positively related to leverage.

Tenure

Tenure also plays an important role in decision making, particularly in the Upper Echelon Theory perspective. Hu and Liu (2015) consider that managers with a longer tenure have less need to establish a reputation, thus becoming more risk averse. As tenure increases, managers are more confident that they will not be replaced, and they will be less receptive to new ideas and changes (Orens and Reheul, 2013). Moreover, a longer tenure will contribute to the increase of the discretionary power of managers. This point of view is in accordance with the human capital hypothesis presented in Chen and Zheng's (2014) work, where longer tenure may suggest a greater managerial power and entrenchment. Therefore, in the same line of reasoning, as presented in Berger et al. (1997) and Ryan and Wiggins (2001), entrenched managers are risk averse, in order to protect their private benefits, thus firm leverage is affected by a manager's entrenchment and managers tend to avoid debt.

H3: Tenure is negatively related to leverage.

Experience

Experience may influence the decision-making processes, in which individuals are involved. In line with Matemilola (2013) and Escribá-Esteve et al. (2009) experience may reflect a manager's cognitive ability, thus managers with more experience would be more capable in a complex decision process, as they have the cognitive ability to make high quality decisions in this type of environment. Moreover, experienced managers are more able to analyse the expected risk and outcome of their strategic choices (Matemilola, 2013). In the same line of reasoning, Ting et al. (2015) analyse the relation between managers' previous experience and a firm's financial policies, considering that top manager's expertise and background is determinant for leverage decisions at the firm level.

Escribá-Esteve et al. (2009) consider that the manager's previous experience, accumulated by working in other firms or industries, will contribute to better and innovative ideas, which stimulate more proactive strategic decisions. We may consider here, as Custódio et al. (2013) and Hu and Liu (2015) that managers who worked for multiple firms have probably acquired more generic skills, in this sense, work experience will contribute towards gathering skills that will be determinant in the

strategic decision-making process. In addition, a more diverse career experience will make managers more prone to exploit external financing (Hu and Liu, 2015).

Furthermore, a manager's previous experience may be more relevant in the case of financial managers. Custódio and Metzger (2014) consider the relation between a firm's financial policy and the financial expertise of the CEO, and they have observed that financial expert CEOs have a more diverse work experience, than nonfinancial experts; moreover, they have concluded that financial experts have more general managerial skills. Their results conclude that a manager's previous work experience, affects a firm's financial policies.

Finally, as Nguyen et al. (2015) suggest, more experienced managers may bring their social ties and networks to the banks, therefore a more diverse career experience may help to accumulate social connections, and by doing so managers will have quicker and better access to information, mitigating information asymmetry and contributing to the search for new business opportunities (Hu and Liu, 2015; Ting et al., 2015).

Looking at this relation, Hu and Liu (2015) find that more experienced managers are more likely to use debt financing, however, when considering that this effect may vary according to the firm's financial constraint, the findings suggest that the positive relationship between manager experience and debt financing is only observable for constrained firms.

H4: Experience is positively related to leverage.

Leverage at the appointment date

Considering that a manager's risk preference may influence the leverage decision process, risk-averse managers will prefer a low leverage and to hold more cash, in order to avoid financial pressure. In line with Cain and McKeon (2016), the manager's utility is affected by changes in firm risk, thus the risk-averse managers will see their utility affected negatively by the increase in firm risk.

Because banks with higher leverage will incur in higher risk, the level of leverage at the appointment date may be determinant for the leverage decision process since, for instance, if managers are risk averse that would give rise to a higher possibility of employing a low leverage level. However, for risk-preference managers the possibility of increasing leverage will be higher (Chen et al., 2014; Graham et al., 2013)

In addition, we may also consider, in line with the model proposed by Hackbarth (2008), that managers with risk perception bias believe the firm is less risky than it actually is, and they tend to choose higher levels of debt. Based on this idea, it is expected, especially for banks with excessive

leverage, that for this type of managers the current level of leverage may be higher in comparison to the appointment date.

H5: Leverage at the appointment date has an uncertain effect on leverage.

5.4. Data, sample and variables definition

5.4.1. Data and Sample

We use a previous prepared dataset on all banks from 19 countries that are members of the Euro Area with data for the 1987-2015 period. Information from income statements and balance sheet information on individual banks is taken from Bankscope. The Bankscope database, provided by Bureau van Dijk, is a unique collection of micro-level banking information for different countries. It comprises information on detailed financials, which are presented in multiple formats, including the universal format to compare banks globally. All data is reported in Euros and adjusted by price consumer index inflation in each respective country.

Data for managers[11] is also provided and it includes, for instance, address, contact numbers and web address, specialisation, various identification codes and managers' details. To derive the final sample, data on managers in 2015 was collected from Bankscope and matched with the original bank dataset. At the time of the data collection it was not possible to improve the information obtained or to increase the years of analysis, as the dataset was no longer available by the end of 2016. As the information on managers was only obtained for one year, we have applied a cross-section regression analysis.

The original database included 61,585 observations, with information on 3,461 banks and 56,761 managers. After checking and clearing for inconsistencies and dropping all banks that are categorized as "Central banks'', "Specialized governmental credit institutions" and "Multi-lateral governmental banks", we have ended up with 58,908 observations, representing 3,362 banks and 54,303 managers.

The summary statistics for the variables used in our analysis are presented in Table 1. Besides mean, standard deviation maximum and minimum, Table 1 provides the value of those variables at different quantiles. We observe that some variables show high dispersion, which may be a concern as OLS estimations may be more affected by these outliers. The presence of outliers is particularly relevant for the variable experience, total assets and growth of total assets. In order to account for

[11] Bankscope considers managers as well as directors, thus reporting "Directors/Managers".

this potential problem in our OLS specification, the explanatory variables were trimmed at the 1st and 99th percentiles. Table 5.1 presents information regarding the original sample and the trimmed sample. The mean and median age for managers is 55 and 54 years, respectively. Average tenure is 5 years while the median tenure is 4 years and about 78% are male managers. The level of leverage at the appointment date is nearly 91% in average, with a median of 93% and the management team has, on average, almost two years until the resignation date.

As referred above, there are some differences among the summary statistics, which is the case for the variable experience that presents an average of 2.52 for the original dataset and 1.25 for the trimmed dataset. With respect to total assets and growth of total assets, they present an average of 126,000 million euros and 3.54%, respectively. For the trimmed sample, the average of these variables is almost 98,000 million euros and 2.85%, respectively.

Table 5.1: Descriptive Statistics

Variable	N	Mean	St. Dev	Min.	Max.	1st percentile	5th percentile	10th percentile	25st percentile	50th percentile	75st percentile	90th percentile	95st percentile	99th percentile
Original Dataset														
Liabilities to total assets (%)	56,381	88.82	14.22	0.00	350.62	12.97	63.30	84.46	89.36	91.82	94.65	95.49	96.54	99.02
Age (years)	36,441	54.59	9.65	22.00	99.00	34.00	39.00	42.00	48.00	54.00	60.00	66.00	70.00	83.00
Gender (1=male;0=female)	56,458	0.78	0.41	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Tenure (years)	32,243	5.23	6.07	0.00	59.00	0.00	0.00	0.00	1.00	4.00	6.00	12.00	17.00	34.00
Experience (# of firms)	58,908	2.52	14.48	1.00	181.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	3.00	14.00
Leverage at the appointment date (%)	22,632	90.52	13.09	0.51	627.11	17.11	75.25	86.18	90.64	93.41	95.49	96.64	97.49	98.82
Management team's horizon (years)	3,909	2.00	0.63	1.00	7.00	1.00	1.00	1.00	2.00	2.00	2.00	2.83	3.20	4.00
Tenure Lag (years)	32,243	-0.04	3.92	-28.05	49.79	-9.35	-5.74	-4.06	-2.01	0.00	2.00	4.33	3.20	11.73
Net income to total assets - ROA (%)	30,418	0.48	1.17	-37.53	44.32	-1.73	-0.14	0.02	0.23	0.48	0.56	1.03	1.64	3.97
Total assets	56,562	1.26e+08	4.27e+08	27.00	7.88e+09	23,951	94,435	175,102	625,798	2,985,555	2.93e+07	3.90e+08	6.70e+08	1.33e+09
Growth of total assets (%)	56,992	3.54	20.37	-99.42	418.57	-33.54	-14.72	-7.33	-0.53	1.96	5.63	11.79	19.82	73.08
Tangibility	55,531	0.01	0.07	0.00	2.83	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.11
Trimmed dataset														
Liabilities to total assets (%)	56,381	88.82	14.22	0.00	350.62	12.97	63.30	84.46	89.36	91.82	94.65	95.49	96.54	99.02
Age (years)	35,815	54.45	8.87	34.00	83.00	36.00	40.00	43.00	48.00	54.00	60.00	66.00	69.00	77.00
Gender (1=male;0=female)	56,458	0.78	0.41	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Tenure (years)	32,230	5.21	6.02	0.00	34.00	0.00	0.00	0.00	1.00	4.00	6.00	12.00	17.00	34.00
Experience (# of firms)	58,347	1.25	0.99	1.00	14.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	6.00
Leverage at the appointment date (%)	22,188	91.21	9.52	17.11	98.82	38.66	78.90	86.50	90.75	93.41	95.49	96.54	97.18	98.54
Management team's horizon (years)	3,883	1.98	0.58	1	4.00	1.00	1.00	1.00	2.00	2.00	2.00	2.53	3.00	4.00
Tenure lag (years)	31,602	-0.05	3.31	-9.35	11.73	-7.63	-5.40	-4.01	-2.01	0.00	0.99	4.00	5.95	10.00
Net income to total assets - ROA (%)	29,823	0.48	0.56	-1.68	3.97	-1.10	-0.09	0.02	0.23	0.48	0.56	1.00	1.47	2.67
Total assets	55,437	9.75e+07	2.13e+08	23,951	1.33e+09	43,994.90	107,513	187,100	633,117	2,985,555	2.80e+07	3.90e+08	5.32e+08	8.42e+08
Growth of total assets (%)	55,734	2.85	10.36	-33.08	73.08	-21.92	-12.38	-6.36	-0.43	1.96	5.63	11.29	17.81	46.71
Tangibility	55,944	0.01	0.01	0.00	0.11	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.03	0.05

Source: Computations from the author based on Bankscope (2015) and Orbis Bank Focus (2016).

5.4.2. Variables

In this subsection, we describe the main variables used in the empirical analysis. The detailed definition of the variables is summarized in Table D.1, from Appendix D.

The dependent variable in this study is liabilities to total assets, measured as total liabilities, divided by total assets. This ratio examines how much of a bank's assets are made of liabilities.

Manager characteristics like age and gender may influence a manager's behaviour. These characteristics are observed and directly obtained from the dataset. Tenure is measured as the length of time between the date when the manager started the position in the bank (appointment date) and the current year 2015 (current date).

Work experience contributes towards gathering skills that are determinant for making strategic decisions; we consider the variable experience as the number of firms for which the manager is working for. We consider, in line with Hu and Liu (2015), that diverse career experiences help to accumulate social connections, thus it may also be related with the manager's network.

The variable leverage at the appointment date is obtained from a preliminary dataset that provides information on banks. We used this dataset to obtain previous year values for some bank variables and matched them with the dataset on managers. By doing this, it was possible to assign to each manager the existing level of leverage on his/her appointment date. The usefulness of this variable is to evaluate if the bank's leverage at the appointment date has a significant effect on the bank's current leverage.

Furthermore, we consider some bank-specific factors that are well established in the capital structure literature (Rajan and Zingales, 1995; Frank and Goal, 2009; and Gropp and Heider, 2010), such as bank profitability, size, growth and tangibility.

Profitability (roa) is measured as the return on average assets. The relation between profitability and leverage may be uncertain. In this sense, a negative effect may be expected, as profitable banks tend to hold more capital since they face a lower cost of increasing equity in the short term, thus, in line with Rajan and Zingales (1995) and Frank and Goal (2009), if debt financing is the dominant source of external financing, then more profitable firms will have less leverage. However, profitability may also be positively related with leverage, as profitable firms may seek tax benefits, or since they face lower expected costs of financial distress, they are more prone to use more debt (Frank and Goal, 2009).

The variable size is measured as the natural logarithm of total assets and its inclusion is justified by the fact that large and diversified firms face lower probability of financial distress. This variable may

also reflect the bank's reputation in debt markets, as well as their superior debt market access with preferable lending conditions, thus it is expected that for larger banks it will be easier to issue more debt.

High growth firms have higher costs of financial distress, free cash problems and debt-related agency problems (Frank and Goal, 2009), thus in accordance with the trade-off theory, high growth firms are more equity financed and therefore growth reduces leverage. However, it is also considered under the pecking order theory, that firms with growth opportunities – holding profitability fixed – will issue more debt, thus leverage and growth opportunities are positively related. As a measure for growth opportunities, we use the growth of total assets.

The literature also finds a positive association between tangible assets and leverage, thus the variable tangibility is also included. As referred by Rajan and Zingales (1995), tangible assets are easy to collateralize and thus reduce the agency costs related to debt. Notwithstanding this positive relation, Frank and Goal (2009) consider that, under the pecking order theory, the predictions are ambiguous as low information asymmetry, associated with tangible assets, makes equity less costly, thus leverage is negatively related with tangibility. However, if adverse selection is about assets in place, tangibility increases adverse selection and firms will incur in higher debt.

5.5. Empirical methodology

For the estimation of the relationship between leverage and manager characteristics, we depart from a cross sectional regression where the model is formulated as a linear specification for the conditional mean of the dependent variable. We estimate the conditional mean regression as

$$E(L_{i,c}|X_{i,c}) = \alpha + \beta_1 x_{1ic} + \cdots + \beta_k x_{kic} + \mu_c + \delta_b \quad (5.1)$$

where $L_{i,c}$ represents the ratio of liabilities to total assets of the bank's manager *i* in country *c*. We include some bank-specific factors that are well established determinants of leverage, as well as variables related to manager characteristics. These variables are described in detail in the previous section. We have also included country and bank specialization dummies, $\mu_c + \delta_b$, respectively.

We start from the simplest specification that provides estimates based on the average effect of the independent variables on the conditional mean of leverage, however standard least squares regression techniques provide an incomplete view of the relationship, as they fail in considering other locations of the leverage distribution. While the optimal properties of standard regression estimators

are not robust to modest departures from normality, quantile regression results are characteristically robust to outliers and heavy tailed distributions.

In our case, a quantile regression model may be preferable, as it allows us to estimate the effects of the explanatory variables at different points in the conditional distribution of the dependent variable. By relaxing the assumption that errors terms are identically distributed at all points of the conditional distribution and considering that slope parameters vary at different quantiles, it may be more reliable as we may obtain a more complete understanding of the relationship, and how it may vary throughout the leverage distribution. For applications on quantile regressions analysis in capital structure studies see, for instance, Fattouh et al. (2005, 2008), Margaritis and Psillaki (2007) and Sánchez-Vidal (2014).

The quantile regression model is defined as

$$Quant_{\theta}(L_i|X_i) = \alpha_{\theta} + \beta_{\theta 1}x_{1i} + \cdots + \beta_{\theta k}x_{ki} + \mu_{\theta c} + \delta_{\theta b} \tag{5.2}$$

where $Quant_{\theta}(L_i|X_i)$ denotes the θ^{th} conditional quantile of L_i given X_i.

As described by Koenker and Basset (1978), the θ^{th} regression quantile, $0 < \theta < 1$, solves the following problem

$$\min_{\beta} \frac{1}{n}\left\{\sum_{i,c:y_{ic}\geq x'_{ic}\beta} \theta|y_{ic} - x'_{ic}\beta| + \sum_{i,c:y_{ic}<x'_{ic}\beta} 1-\theta|y_{ic} - x'_{ic}\beta|\right\} =$$
$$\min_{\beta} \frac{1}{n} \sum_{i=1}^{n} \rho_{\theta}\mu_{\theta ic} \tag{5.3}$$

where $\rho_{\theta}(u)$ is the "check function" defined as

$$\rho_{\theta}(u) = \begin{cases} \theta u & if\ u \geq 0 \\ (\theta - 1) & if\ u < 0 \end{cases} \tag{5.4}$$

The resulting minimization problem in Equation (5.3) can be solved by linear programming methods (Koenker and Basset, 1978).

Due to the advantages of quantile regression estimates over standard least squares regression technique, we consider the conditional quantile regression to model the relationship between leverage and the explanatory variables conditional on the selected quantiles. Thus, quantile regression allows us to assess the association of the predictors, with leverage at different points of the conditional leverage distribution. The quantile $\theta \in (0,1)$ is that L, which splits the data into proportions θ below and $1-\theta$ above. As θ can be specified as any value between 0 and 1, the estimated coefficients

may differ, depending on the particular quantile being estimated. For our analysis, we estimate quantile functions at both tails of the leverage distribution – $\theta(0.10)$ and $\theta(0.90)$ –, the median regression – $\theta(0.50)$ – and interquartile regression – $\theta(0.25)$ and $\theta(0.75)$.

As pointed out by Yang et al. (2012), based on Koenker and Hallock (2001), the interpretation of quantile regression estimation is similar to, but slightly different from, that of ordinary least squares. The standard linear regression summarizes the average relationship between a set of predictors and the dependent variable based on the conditional mean function, thus the coefficient of the specified predictor, *X*, represents the expected change in the dependent variable that is associated with a unit change in *X*. For the quantile regression, the coefficient *X* in the θ^{th} quantile can be interpreted as the marginal change (relative to the value of the θ^{th} quantile of the dependent variable), due to a one unit change in *X*. As a result, the interpretation of quantile regression results needs to specify which quantile of the dependent variable they refer to.

We implement simultaneous quantile regression instead of quantile regression, as it estimates each equation simultaneously and obtains an estimate of the entire variance-covariance matrix of the estimators by bootstrapping. As it produces several values of θ simultaneously, it allows testing for differences between quantile regressions coefficients for different quantiles[12] across the quantiles of leverage, to further confirm the pattern in the relation between leverage and manager characteristics, namely contract time horizon.

[12] For the implementation of this procedure we have used the "sqreg" command in Stata 14 and required the model to perform 100 bootstrap replications.

5.6. Empirical analysis

5.6.1. Baseline results

To test the impact of manager characteristics on leverage, we use the following general cross-sectional regression specification:

$$\begin{aligned} Leverage_i = {} & \beta_1 + \beta_2 Age_i + \beta_3 Gender_i + \beta_4 Tenure_i + \beta_5 Experience_i + \\ & + \beta_6 Leverage\ at\ the\ appointment\ date_i + \beta_7 Tenure\ lag_i + \\ & + \beta_7 Tenure * Leverage\ at\ the\ appointment\ date_i + \beta_8 ROA_i + \\ & + \beta_9 Size_i + \beta_{10} Tangibility_i + \beta_{11} Growth\ opportunity_i + \\ & + Country_c + Bank\ specialization_b + \mu_i \end{aligned} \quad (5.5)$$

where $Leverage_{ic}$ is the ratio of liabilities to total assets of the manager´s bank. For manager characteristics we consider Age and $Gender$. Gender represents a dummy variable taking value one if male. We also consider $Tenure$ as the number of years between current date (2015) and resignation date. $Experience$ measures the number of banks for which manager works. A bank's leverage at the manager's appointment date is represented by leverage at the appointment date. $Tenure\ lag$ measures the distance in years between a management team's tenure and a manager's tenure. We have also included the interaction of the $Tenure$ variable, with $Leverage\ at\ the\ appointment\ date$. ROA is the return on assets; $Size$ is measured as the natural logarithm of total assets; $Tangibility$ is computed as the ratio of fixed assets to total assets. To measure $Growth\ opportunity$, we use annual percentage change of total assets. As already mentioned we have also included country and bank specialization dummies.

Table 5.2 presents the estimation results from the baseline specification of equation (5.1). As previously mentioned, we have included variables related with manager characteristics, as well as some bank determinants of leverage.

Table 5.2: Ordinary Least Square regressions of liabilities to total assets

Dependent variable: Liabilities to total assets					
Variable	(1)	(2)	(3)	(4)	(5)
Age	-0.052***	-0.052***	-0.019***	-0.018***	-0.016***
	(0.008)	(0.008)	(0.004)	(0.004)	(0.004)
Male	0.141	0.137	-0.037	-0.035	-0.020
	(0.136)	(0.136)	(0.063)	(0.064)	(0.061)
Tenure	0.019**	0.019**	-0.000	0.050**	3.253***
	(0.008)	(0.008)	(0.012)	(0.024)	(0.532)
Experience		0.061	0.315***	0.321***	0.285***
		(0.077)	(0.071)	(0.072)	(0.069)
Leverage at the appointment date			0.497***	0.496***	0.649***
			(0.034)	(0.034)	(0.044)
Tenure Lag				-0.061***	-0.027
				(0.024)	(0.019)
Tenure*Leverage at the appointment date					-0.035***
					(0.006)
Return on assets	-283.947***	-285.051***	-160.638***	-163.095***	-151.023***
	(16.388)	(16.397)	(9.860)	(10.017)	(10.306)
Size	1.277***	1.277***	0.526***	0.534***	0.487***
	(0.061)	(0.060)	(0.033)	(0.033)	(0.036)
Tangibility	-78.797***	-78.870***	-64.100***	-65.233***	-60.045***
	(10.067)	(10.100)	(6.668)	(6.758)	(6.217)
Growth opportunity	4.511***	4.562***	4.212***	4.312***	4.461***
	(0.715)	(0.713)	(0.559)	(0.564)	(0.530)
Constant	72.872***	72.797***	38.124***	37.659***	24.650***
	(1.222)	(1.241)	(2.805)	(2.800)	(3.730)
Country dummies	Yes	Yes	Yes	Yes	Yes
Bank specialization dummies	Yes	Yes	Yes	Yes	Yes
Observations	11,779	11,770	9,382	9,253	9,253
R-squared	0.321	0.322	0.656	0.658	0.687
RMSE	5.219	5.219	2.920	2.929	2.802
F-stat	3802	3691	210.5	205.7	23963
Prob>F	0.000	0.000	0.000	0.000	0.000

Source: Computation from the author.

Notes: (1) All explanatory variables were trimmed at the 1st and 99th percentiles. (2) Robust standard errors in brackets. (3) *significant at 10%; **significant at 5%; ***significant at 1%.

Consistent with the literature, the OLS results suggest that profitability and tangibility are associated with a lower leverage, while size and growth opportunity, as expected, affect the bank's leverage positively.

The inclusion of variables related to managerial characteristics and personal traits suggests that younger managers are less risk averse and less conservative in their leverage decisions. This behaviour is acceptable as we may consider, besides other arguments, that older managers may prefer a quiet life and career stability (Bertrand and Mullainathan, 2003; Hu and Liu, 2015). Moreover, as suggested by Serfling (2014) age may exert a negative effect on leverage, as younger managers may desire to signal that they are talented managers, by pursuing riskier and more aggressive strategic decisions.

Despite the common perception that gender differences may be determinant for the choice of capital structure, and that firms managed by males present a higher use of debt, the results do not confirm this, as the variable gender is not statistically significant. As suggested by Faccio et al. (2016) managers present some specificities and special skills, therefore for top managers there may not be a difference between males and females; this may suggest the existence of a self-selection mechanism, as women who choose to be managers are considerably different from all the rest.

Controlling for some personal traits, namely tenure, the results depict a positive relationship between leverage and a manager's tenure. In this case, we do not find empirical evidence that confirms a negative relationship between tenure and leverage. We may say that our findings are inconsistent with an entrenchment argument; however, they seem to be consistent with the idea presented in Korkeamäki et al. (2017) and based on Cronqvist et al. (2012), according to whom individual preferences towards financial risk, may be determinant to capital structure. Therefore, managers with a longer tenure will be more able to increase leverage, as they can bring their personal preferences. However, this effect differs according to the level of leverage at the manager's appointment date, thus suggesting that a manager's power is constrained.

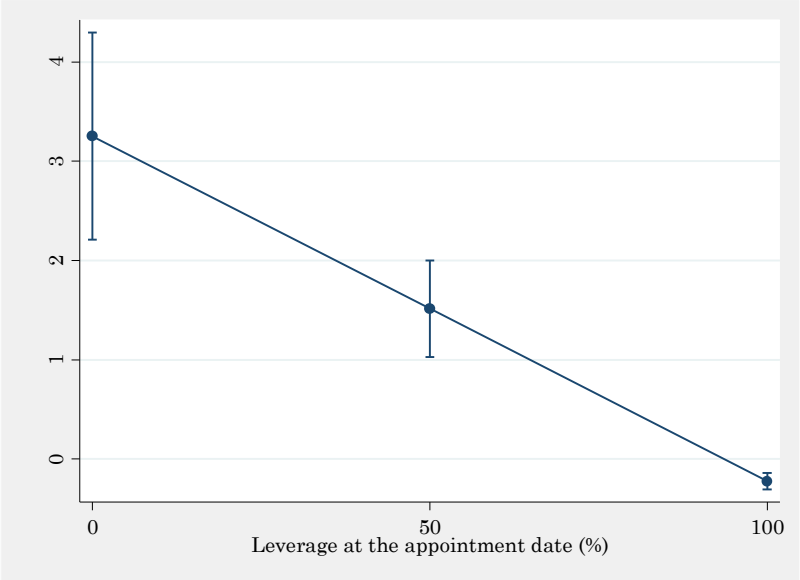
With regards to a manager's experience, we observe a positive effect on leverage. Hence, as suggested by Escribá-Esteve et al. (2009), Custódio et al. (2013) and Hu and Liu (2015), the results suggest that a more diverse career experience will contribute towards enhancing a manager's expertise and the gathering of skills that are determinant in strategic decision-making and this may explain why managers will be more prone to exploit external financing. Moreover, we may consider that the accumulated experience, will be accompanied by the creation of social ties and networks, thus managers will have quicker and better access to debt financing (Nguyen et al., 2015; Hu and Liu, 2015; Ting et al., 2015). Additionally, we may expect that managers that belong to several boards can reduce their personal risk exposure.

The inclusion of leverage at the appointment date, confirms a statistically strong positive relation between the bank´s leverage at the manager's appointment date and the current level of leverage. In this sense, the initial bank´s leverage that the manager will face when he/she starts the appointment, exerts influence on the leverage decision process in which the managers will take part. This may suggest that managers that are less risk-averse will prefer higher levels of leverage or, in the presence of risk perception bias, like Hackbarth (2008) suggests, managers will choose higher levels of leverage assuming that banks are less risky than they really are.

We observe that the inclusion, in our regression, of the variable leverage at the appointment date does not alter the expected sign and magnitude of the coefficients, the only exception is for the variable tenure, which for this specification turns insignificant. Considering that, as previously referred, the variable tenure may signal that managers with a longer tenure are more willing to imprint their leverage preferences in the leverage decisions in which they participate, and that managers that are less risk-averse will prefer higher levels of leverage – something that was already discussed with the inclusion of the variable leverage at the appointment date –, we may consider, in line with Berger et al. (2014), that the effect of managers can be counterbalanced by other executives, thus we need to account for that constraint. We, therefore, consider the effect of tenure lag. The results suggest a negative effect of the distance between a management team's tenure and a manager's tenure on leverage. The logic behind this may be explained by the fact that managers that present a higher lag in comparison with the bank's management team, will be more constrained and, as suggested by Berger et al. (2014), in line with the ideas presented in Adams and Ferreira (2010), in the decision-making processes individuals tend to be riskier than groups, whose decisions will result in rejection of projects which are too risky.

As previously observed, there is a positive relationship between leverage and a manager's tenure, however, despite the influence of individual preferences towards financial risk on capital structure, this effect varies according with the bank's risk exposure. In order to explore the tenure variable in more detail, we include its interaction with the leverage at the appointment date. It is observed that the coefficient of leverage at the appointment date remains positive and the positive effect of the variable tenure increases in a considerable way; however, the interaction coefficient suggests a negative effect. Figure 5.2 depicts a clearer picture of this effect. For managers that observed a lower leverage at their appointment date, the effect of tenure on a bank's leverage will be positive, however for managers whose banks present higher values of leverage at their appointment date, there is a negative effect of tenure on leverage, thus not rejecting the hypothesis of a negative relation between tenure and leverage, but only for higher values of leverage at the manager's appointment date. This suggests that tenured managers may exert more influence on leverage, when their bank risk is lower, that is to say, for lower levels of leverage at the manager's appointment date.

Figure 5.2: Average marginal effects of tenure on leverage at different levels of leverage at the appointment date



Source: Computation from the author.

Notes: Average marginal effects calculated with a 95% confidence interval.

5.6.2. Quantile regression results

As already mentioned, the OLS, by focusing on the central tendency of the distribution, does not consider that the effect of the explanatory variables may differ at different points of the conditional distribution. Table 5.3 reports the results of estimating equation (5.2) for different values of θ using liabilities to total assets as the dependent variable. As previously reported, we estimate the coefficients at the 10th, 25th, 50th, 75th and 90th using the same list of explanatory variables. The conditional quantiles estimates reported in Table 5.3 show that we may expect different effects of the explanatory variables at the different quantiles of the distribution.

As expected, profitability enters with a negative and significant coefficient, thus supporting the fact that an increase in internal funds is related with a decrease in leverage, therefore banks tend to hold more capital. Size also presents a positive and a significant coefficient, that is higher for lower and moderate levels of leverage and decreases in magnitude for higher levels of leverage. As suggested, large banks may benefit from preferable lending conditions and better access to debt, however as banks become highly leveraged, they might not be able to borrow at preferable conditions.

The tangibility coefficient, as reported by the OLS estimates, suggests a negative and significant effect. As previously discussed, the effect of this variable on leverage may be ambiguous. We may think, in line with Frank and Goal (2008), that for lower levels of leverage, the low information asymmetry associated with tangible assets makes equity less costly, however as banks become more

leveraged and if there is adverse selection about firm value, firms will prefer debt. Similarly, for growth opportunity, we observe a significant positive effect on leverage, which validates the idea that growing firms will issue more debt.

Taking into consideration some manager's characteristics as age, gender and tenure, we observe that, as reported in Table 5.2, age may exert a negative effect on leverage, however this effect is slightly more manifest for low values of leverage (10th quantile) and not significant for higher levels of leverage (90th quantile). This may confirm that younger managers may desire to signal that they are talented managers by pursuing riskier and more aggressive leverage choices, however this behaviour will be constrained as banks become more leveraged. It is observed that gender is not significant for any quantile. Finally, the results suggest that tenure is not significant for the 10th quantile, but it turns out to be significant for the other quantiles and its effect is increasing and becoming stronger, in comparison to our OLS estimates, as we move to higher levels of leverage.

Focusing on the variables that attempt to assess the influence of a manager's personal behaviour on leverage, we find that experience enters with a significant positive coefficient that is only observable for the highest quantile. This outcome confirms the relation between experience and leverage that was identified in our OLS specification, thus suggesting that experience, which is reflected by a manager's expertise and his/her accumulated experience that increases social ties and networks, is central for high leverage banks, which require better access to debt financing.

The results for our central measure of manager's characteristics allows us to assess that the predicted linear effect is lower in comparison to what is observed for the OLS estimates. In fact, a significant and strong effect is observed, which suggests that a bank´s leverage level at the manager's appointment date will be determinant for the level of leverage; however, a slightly lower but still clear effect for the 90th percentile is observed. Although this may signal that managers are more risk-prone, this effect may cease to be valid for higher levels of leverage, as firms get financial constraints.

The negative effect of the interaction coefficient suggested on Table 5.2 remains. Moreover, the simultaneous quantile regressions not only show that this effect increases as we move up across quantiles, but they also indicate that for low quantiles (10th and 25th) the negative effect is not as strong as the one reported by the OLS estimates and for the intermediate and high quantiles (50th, 75th and 90th) the effect is stronger.

Table 5.3: Simultaneous quantile regressions of liabilities to total assets

Dependent variable: Liabilities to total assets					
Variable	q10	q25	q50	q75	q90
Age	-0.016***	-0.003*	-0.006***	-0.005**	-0.000
	(0.004)	(0.002)	(0.002)	(0.003)	(0.002)
Male	-0.043	-0.015	-0.022	0.005	0.011
	(0.040)	(0.012)	(0.022)	(0.013)	(0.028)
Tenure	0.636	2.379***	5.172***	6.710***	6.146***
	(0.839)	(0.486)	(0.365)	(0.633)	(1.075)
Experience	-0.019	0.008	0.012	0.051	0.294**
	(0.036)	(0.035)	(0.018)	(0.071)	(0.129)
Leverage at the appointment date	0.963***	0.957***	0.936***	0.919***	0.723***
	(0.016)	(0.015)	(0.010)	(0.017)	(0.089)
Tenure Lag	0.008	-0.005	0.002	0.002	-0.028
	(0.006)	(0.005)	(0.008)	(0.008)	(0.021)
Tenure*Leverage at the appointment date	-0.009	-0.027***	-0.056***	-0.071***	-0.064***
	(0.009)	(0.005)	(0.004)	(0.007)	(0.011)
Return on assets	-109.316***	-91.224***	-81.241***	-60.920***	-79.468***
	(8.617)	(7.853)	(8.148)	(8.867)	(20.348)
Size	0.282***	0.215***	0.112***	0.113***	0.169***
	(0.032)	(0.016)	(0.015)	(0.014)	(0.047)
Tangibility	-23.917***	-12.082***	-11.338***	-6.449*	-7.272***
	(8.211)	(3.592)	(4.341)	(3.882)	(2.068)
Growth opportunity	0.686***	0.506***	0.799***	0.398*	0.745***
	(0.098)	(0.174)	(0.202)	(0.221)	(0.289)
Constant	-1.912	-0.103	4.022***	5.714***	23.471***
	(1.740)	(1.288)	(0.844)	(1.456)	(7.636)
Country dummies	Yes	Yes	Yes	Yes	Yes
Bank specialization dummies	Yes	Yes	Yes	Yes	Yes
Observations	10,041	10,041	10,041	10,041	10,041

Source: Computation from the author.

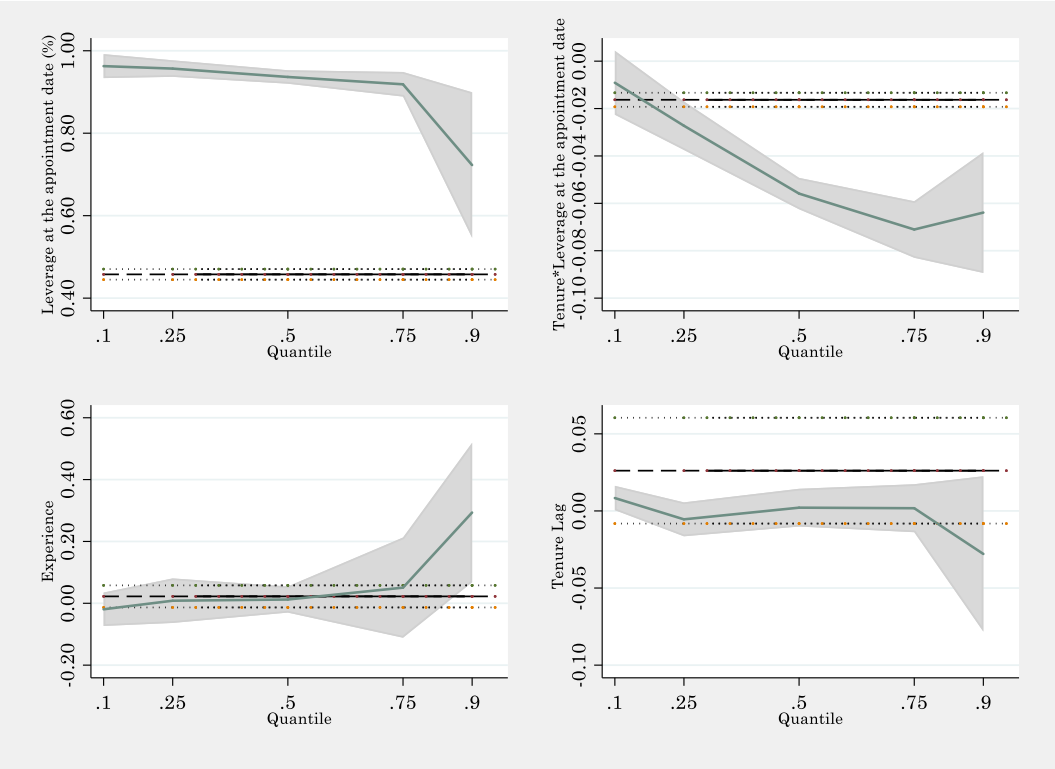
Notes: (1) Bootstrapped standard errors in parentheses. The bootstrap standard errors were obtained using 100 bootstrap replications. (2) *significant at 10%; **significant at 5%; ***significant at 1%.

The results presented in Table 5.3 are complemented by Figure 5.3 that depicts the estimated coefficients for the variables of interest. In order to verify statistical variation of coefficients along leverage conditional distribution, we plot the estimated coefficients of interest against the various quantiles and show the 95% confidence interval, constructed using the percentile method, with 100 bootstrap replications. Figure 5.3 depicts the quantile regression coefficients that are presented as lines, varying across the quantiles, together with their confidence intervals. The OLS coefficients are plotted as a horizontal dashed line, with the confidence interval as two horizontal dashed lines around the coefficient line.

It is clear that the effect of the explanatory variables on leverage is different at different quantiles of the distribution, so the OLS estimates gives us an incomplete picture as it does not allow for the possibility of non-linear effects. As can be seen, if the quantile coefficient is outside the OLS confidence interval, then we have significant differences between the quantile and the OLS estimates. For quantile

regression we need to distinguish between two types of significance, as quantile coefficients may be significantly different from zero, but quantile coefficients can also be significantly different from the OLS coefficients (outside the OLS confidence interval).

Figure 5.3: Quantile regression coefficients and confidence intervals



Source: Computation from the author.

Notes: (1) quantile regression coefficients are presented as lines varying across the quantiles, together with their confidence intervals. The OLS coefficients are plotted as a horizontal dashed line, with the confidence interval as two horizontal dashed lines around the coefficient line. (2) Coefficients are plotted against the various quantiles and show the 95% confidence interval, constructed using the percentile method, with 100 bootstrap replications. (3) For the implementation of this procedure we have used the "sqreg" command in Stata 15.

The simultaneous quantile regression allows us to obtain several values of θ simultaneously, allowing for differences between quantile regression's coefficients to be tested. The bootstrap procedure is extended to construct a joint distribution that produces *F*-statistics to test for the equality of the estimated coefficients across different pairs of quantiles. The *F*-tests and the associated p-values presented on Table 5.4. According to the tests, the estimates clearly reject equality of coefficients between all pairs of quantiles, indicating that the impact of the explanatory variables differs across the distribution of leverage.

Table 5.4: *F*-tests for equality of coefficients across pairs of quantiles

	10th	25th	50th	75th
10th				
25th	*F*-test=39.07 *p*-val=0.00			
50th	*F*-test=113.49 *p*-val=0.00	*F*-test=84.86 *p*-val=0.00		
75th	*F*-test=278.39 *p*-val=0.00	*F*-test=284.58 *p*-val=0.00	*F*-test=119.60 *p*-val=0.03	
90th	*F*-test=185.01 *p*-val=0.00	*F*-test=162.35 *p*-val=0.00	*F*-test=76.52 *p*-val=0.00	*F*-test=21.33 *p*-val=0.00

Source: Computation from the author.
Notes: *F*-tests based on the bootstrap method with 100 bootstrap replications.

5.7. Additional results and robustness checks

In this section, we investigate whether the results are robust to alternative specifications. First, we use liabilities to total equity as an alternative definition for our dependent variable. Second, we examine if the results are confirmed when sub-sampling, excluding high leverage banks. We also include an additional explanatory variable that tries to account for the horizon of the management team.

5.7.1. Alternative definition of the dependent variable

To test the robustness of the results, we consider an alternative definition of the dependent variable, where leverage is measured as the ratio of liabilities to total equity. In Table 5.5, we regress the liabilities to total equity on the same set of explanatory variables as in Table 5.3. We observe that the expected signs obtained prevail, however, the variable tenure loses its significance at the 75th and 90th quantiles, and tangibility at the lower and median values of leverage. The most remarkable changes are the change of sign for the highest quantiles for the interaction variable, between tenure and leverage at the appointment date, although only significant at the 10% level; and that the variable tenure lag is now significant, except for the 10th quantile, and it changes its sign for the highest quantile. In spite of these changes, the results for other variables are similar and the main results prevail, namely, the positive effect of leverage at the appointment date.

Table 5.5: Simultaneous quantile regressions of liabilities to total equity (alternative dependent variable)

Dependent variable: Liabilities to total equity					
Variable	q10	q25	q50	q75	q90
Age	-0.000	-0.003	0.000	-0.017***	-0.003
	(0.002)	(0.003)	(0.001)	(0.007)	(0.002)
Male	-0.064	-0.131**	0.000	-0.006	0.005
	(0.043)	(0.063)	(0.013)	(0.050)	(0.006)
Tenure	0.662	2.506***	2.519***	1.250	-0.496
	(0.489)	(0.673)	(0.676)	(0.814)	(0.442)
Experience	-0.054	0.020	0.069	0.109	0.261
	(0.042)	(0.049)	(0.070)	(0.221)	(0.306)
Leverage at the appointment date	0.500***	0.588***	0.501***	0.437***	0.109***
	(0.116)	(0.106)	(0.089)	(0.090)	(0.017)
Tenure Lag	0.002	0.026***	0.064***	0.268***	-0.348***
	(0.013)	(0.007)	(0.006)	(0.076)	(0.034)
Tenure*Leverage at the appointment date	-0.008	-0.028***	-0.028***	-0.016*	0.009*
	(0.006)	(0.007)	(0.007)	(0.009)	(0.005)
Return on assets	-102.872***	-117.796***	-113.788***	-190.925***	-209.265***
	(10.475)	(10.307)	(13.161)	(35.241)	(30.973)
Size	1.008***	0.949***	0.864***	0.855***	1.096***
	(0.107)	(0.107)	(0.064)	(0.062)	(0.091)
Tangibility	-1.989	-4.799	-9.065	-9.122*	-13.574***
	(5.545)	(3.906)	(5.625)	(5.006)	(5.247)
Growth opportunity	2.013***	2.367***	3.852***	3.782***	3.793***
	(0.207)	(0.223)	(0.656)	(1.127)	(0.492)
Constant	-52.966***	-59.106***	-49.903***	-40.557***	-10.830***
	(8.156)	(7.876)	(7.099)	(7.727)	(2.034)
Country dummies	Yes	Yes	Yes	Yes	Yes
Bank specialization dummies	Yes	Yes	Yes	Yes	Yes
Observations	10,041	10,041	10,041	10,041	10,041

Source: Computation from the author.

Notes: (1) Bootstrapped standard errors in parentheses. The bootstrap standard errors were obtained using 100 bootstrap replications. (2) *significant at 10%; **significant at 5%; ***significant at 1%.

5.7.2. Sub-sampling

As we presented in Section 5.2, one central element in banking corporate governance is the use of excessive leverage. In this sense, as excessive leverage has governance implications and encompasses agency problems that push banks towards more leverage, it may be the case that the results may be influenced by this behaviour. Therefore, we investigate whether the outcomes are confirmed, when we exclude banks with high leverage levels.

We define high leverage banks as those that present values for liabilities to total assets above the median value of that variable (0.918249). This criterion reduces the sample from 10,041 observations

to 3,447 observations. We also use as a cut-off value of leverage the 75th percentile (0.9465431), which also reduces our sample to 7,082 observations.

Table 5.6 presents the results for the estimations that exclude high leverage banks. We observe that the main results of Table 5.3 remain almost qualitatively the same. In general, the variables keep the same sign, except for the variable tenure lag that turns out to be significant and positive, but only marginally, for the highest quantile in sample (sample A); the same occurs in sample B for the 75th and 90th quantile, however it is observed that for low levels of leverage (10th quantile) there is a negative effect. We also observe that it is only significant in sample B for the 10th quantile. With respect to the variable leverage at the appointment date, the results depict a situation in which the variable keeps the same sign and almost the same effect as reported in Table 5.3. The only remarkable comment is that for high quantiles (90th) of both samples it is not so strong.

Table 5.6: Simultaneous quantile regressions of liabilities to total assets (high leverage banks excluded)

Dependent variable: Liabilities to total assets	Sample A – Banks above the median excluded					Sample B – Banks above the 75th percentile excluded				
Variable	q10	q25	q50	q75	q90	q10	q25	q50	q75	q90
Age	-0.002	-0.000	-0.000	0.000	0.000	-0.016***	-0.001	0.000	0.000	0.005*
	(0.003)	(0.003)	(0.001)	(0.002)	(0.001)	(0.006)	(0.002)	(0.000)	(0.000)	(0.003)
Male	-0.029	-0.036	0.000	0.010	-0.000	-0.177**	-0.011	-0.000	-0.000	0.014
	(0.057)	(0.051)	(0.023)	(0.035)	(0.018)	(0.078)	(0.027)	(0.011)	(0.004)	(0.016)
Tenure	1.116	4.273***	6.696***	7.671***	2.300*	0.717	2.993***	5.218***	6.649***	2.629*
	(1.032)	(1.149)	(0.949)	(0.668)	(1.276)	(0.937)	(0.522)	(0.373)	(0.503)	(1.419)
Experience	-0.710	-0.131	-0.006	0.002	0.029	-0.120	-0.062	0.014	0.010	0.157
	(0.476)	(0.112)	(0.014)	(0.044)	(0.106)	(0.122)	(0.054)	(0.017)	(0.023)	(0.177)
Leverage at the appointment date	0.978***	1.006***	0.916***	0.792***	0.239**	0.976***	0.964***	0.884***	0.788***	0.321***
	(0.011)	(0.041)	(0.023)	(0.054)	(0.115)	(0.014)	(0.023)	(0.016)	(0.042)	(0.121)
Tenure Lag	-0.027	0.038	-0.019	-0.011	0.031*	-0.021**	0.012	-0.000	0.021***	0.030***
	(0.048)	(0.039)	(0.023)	(0.016)	(0.017)	(0.010)	(0.008)	(0.003)	(0.004)	(0.006)
Tenure*Leverage at the appointment date	-0.016	-0.050***	-0.075***	-0.084***	-0.025*	-0.011	-0.034***	-0.057***	-0.072***	-0.028*
	(0.011)	(0.013)	(0.010)	(0.007)	(0.014)	(0.010)	(0.006)	(0.004)	(0.005)	(0.015)
Return on assets	-111.737***	-65.111***	-46.835***	-28.626***	10.229	-91.978***	-89.235***	-72.616***	-49.148***	-51.495***
	(13.396)	(12.532)	(6.910)	(8.767)	(10.537)	(14.391)	(7.479)	(8.640)	(7.539)	(6.645)
Size	0.842***	0.267***	0.126***	0.103***	-0.027	0.240***	0.191***	0.121***	0.030**	0.060**
	(0.079)	(0.060)	(0.026)	(0.027)	(0.041)	(0.045)	(0.019)	(0.013)	(0.014)	(0.028)
Tangibility	0.649	-0.910	-0.036	-1.322**	-2.379***	-9.900	-11.401***	-2.468	-4.860***	-6.186***
	(3.947)	(3.434)	(1.730)	(0.551)	(0.404)	(11.312)	(3.871)	(3.095)	(0.754)	(0.889)
Growth opportunity	8.780***	6.372***	4.413***	2.382***	0.667	3.754***	2.987***	2.442***	2.319***	1.822***
	(1.271)	(1.019)	(0.714)	(0.672)	(1.311)	(0.540)	(0.347)	(0.310)	(0.331)	(0.287)
Constant	-16.654***	-10.209***	4.392**	17.089***	69.817***	-1.522	0.347	8.871***	20.348***	64.272***
	(2.058)	(3.290)	(2.130)	(4.833)	(11.004)	(1.879)	(2.148)	(1.351)	(3.801)	(11.057)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank specialization dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,447	3,447	3,447	3,447	3,447	7,082	7,082	7,082	7,082	7,082

Source: Computation from the author.

Notes: (1) Sample A: high leverage banks are defined as those that present values for liabilities to total assets above the median value (0.918249). Sample B: high leverage banks are defined as those that present values for liabilities to total assets above the 75th percentile (0.9465431). (2) Bootstrapped standard errors in parentheses. The bootstrap standard errors were obtained using 100 bootstrap replications. (3) *significant at 10%; **significant at 5%; ***significant at 1%.

5.7.3. Management team's contract time horizon

The management team's contract time horizon may influence the leverage decision process, as managers with short time horizons may not make decisions that are in the firms' best interest on a long-term basis. In line with Antia et al., (2010), Gonzalez-Uribe and Xu (2017), Xu (2009, 2011), and Xu and Cziraki (2014), who examine the relevance of the contract horizon and its relation to performance, investment and innovation, we consider that a short-term managerial horizon may harm firm value, enhancing the self-interested behaviour of the manager and its reflection on corporate capital structure decisions.

Antia et al. (2010) documented that a shorter decision horizon is associated with significant agency costs, thus in accordance to Berger et al. (1997) we adopt the view that managers will prefer higher levels of leverage. For example, Cronqvist el al. (2009) and Berger et al. (1997) refer that leverage may be used as a bargaining tool to keep wages lower, which may signal, as Antia et al. (2010) suggest, that a short-term focus could boost short-term profits by cutting costs, however it is clearly not a value enhancing strategy. In this sense, we may consider that managers will be more prone to short term results in order to maximize their preferences when they face a short time horizon. Thus, we expect that the management team's contract time horizon is negatively related to leverage.

The variable management team's contract time horizon is computed as the difference between the resignation date and the current year 2015 (current date). From the dataset we obtain information about the resignation date of managers. Following Gonzalez-Uribe and Xu (2017), Xu (2009, 2011), and Xu and Cziraki (2014), we obtain the variable contract time horizon as the number of years remaining on the manager's contract, but in our case, it will be computed as the average contract time horizon for each bank's management team. The inclusion of this variable allows us to assess, for instance, if leverage increases in a short contract horizon or not and how a bank's leverage behaves according to the positioning of the management team in their contract time horizon.

Table 5.7: Simultaneous quantile regressions of liabilities to total assets (additional explanatory variable – Management team's contract time horizon)

Dependent variable: Liabilities to total assets					
Variable	q10	q25	q50	q75	q90
Age	0.000	0.000	0.000*	0.000	0.000
	(0.001)	(0.001)	(0.000)	(0.000)	(0.003)
Male	0.000	0.000	0.000	0.000	0.000
	(0.021)	(0.001)	(0.000)	(0.000)	(0.008)
Tenure	6.703***	6.556***	5.142***	0.683	-0.615
	(0.854)	(0.694)	(1.937)	(0.934)	(0.896)
Experience	-0.350**	-0.292*	0.000	0.209	0.190
	(0.164)	(0.169)	(0.084)	(0.132)	(0.220)
Leverage at the appointment date	0.760***	0.757***	0.592***	0.224*	0.102
	(0.048)	(0.070)	(0.219)	(0.117)	(0.126)
Tenure Lag	0.205***	0.115	0.104	0.109	0.053
	(0.051)	(0.080)	(0.090)	(0.092)	(0.164)
Tenure*Leverage at the appointment date	-0.074***	-0.071***	-0.056***	-0.008	0.006
	(0.009)	(0.008)	(0.021)	(0.010)	(0.009)
Management team's horizon	-0.713***	-0.755**	-1.949**	-3.549***	-3.011***
	(0.249)	(0.368)	(0.974)	(0.754)	(0.767)
Return on assets	-114.107***	-119.862***	-111.464***	-106.621***	-132.896***
	(10.782)	(12.688)	(11.431)	(9.640)	(22.541)
Size	0.084	0.405**	0.403*	0.419***	0.296**
	(0.103)	(0.160)	(0.239)	(0.130)	(0.128)
Tangibility	-52.907***	-37.466***	36.869	64.741	-22.958
	(11.889)	(12.605)	(38.802)	(40.976)	(35.672)
Growth opportunity	0.673**	0.327	2.184**	2.489**	1.091
	(0.266)	(0.585)	(0.898)	(1.028)	(2.014)
Constant	10.477	18.483*	34.697*	71.835***	84.057***
	(8.658)	(10.085)	(18.931)	(11.421)	(12.649)
Country dummies	Yes	Yes	Yes	Yes	Yes
Bank specialization dummies	Yes	Yes	Yes	Yes	Yes
Observations	2,004	2,004	2,004	2,004	2,004

Source: Computation from the author.

Notes: (1) Bootstrapped standard errors in parentheses. The bootstrap standard errors were obtained using 100 bootstrap replications. (2) *significant at 10%; **significant at 5%; ***significant at 1%.

Moreover, we also implement *F*-tests to test for the equality of the five quantile coefficients on liabilities to total assets and management team's contract time horizon. As observed in Table 5.8, the null hypothesis of coefficient equality is rejected.

Table 5.8: *F*-tests for equality of coefficients across different quantiles

Leverage at the appointment date	
	F (4, 2004) = 12.97
	Prob > F = 0.0000
Management team's contract time horizon	
	F (4, 2004) = 5.15
	Prob > F = 0.0004

Source: Computation from the author.

Notes: *F*-tests based on the bootstrap method with 100 bootstrap replications.

Consistent with the premise that contract time horizon may influence the leverage decision process and a short-time managerial horizon may have reflections on capital structure decision (Antia et al., 2010; Berger et al., 1997), we find that the management team's contract time horizon has a negative influence on leverage. It is important to recall that we measure contract time horizon as the average contract time horizon for the management team of each bank. These findings are consistent with the idea that contract time horizon may influence the leverage decision process and a short-time managerial horizon may have reflections on capital structure decision. However, we observe that the effect differs considerably, having a significant and strong effect at higher quantiles. Thus, managers with a shorter decision horizon will prefer higher levels of leverage, especially for highly leveraged banks.

From Table 5.7, we observe some changes in our estimates. It turns out that some variables become insignificant, especially those related with manager characteristics, especially for levels of leverage above the median. These results may suggest, as referred by Cronqvist et al. (2012) based on Frank and Goyal (2009), that some observable managerial characteristics may not exert influence on leverage choices, and other variables that capture a manager's preferences may be preferable in explaining leverage. However, it is important to note that the inclusion of the management team's contract time horizon reduces the sample size to one fifth; therefore, these interpretations should be made with some caution.

We observe also some noticeable differences regarding the variable experience, which changes its sign for the 10th and 25th percentile, although only 5% and 10% significant, respectively. It is important to point out the loss of significance of the variable leverage at the appointment date at higher quantiles. This variable is only significant at 10% level at the 75th quantile and insignificant at the 90th quantile.

5.8. Concluding remarks

One of the main objectives of this study was to raise the question how manager's characteristics and traits may contribute towards explaining leverage decisions. For our purpose, we combined data from European banks and managers, using data on all banks from 19 countries of the Euro Area from Bankscope.

The results provide evidence that younger managers are less risk averse and less conservative in their leverage choices, thus suggesting that they are not as concerned with career stability as older managers, but they desire to signal their talent following aggressive and riskier strategies. Nevertheless, this behaviour is constrained as banks become more leveraged. On assessing the effects of gender on capital structure, we observed that gender differences are not determinant, thus it may be the case that for management this characteristic is not determinant, as special skills are required.

The tenure variable presents an interesting behaviour. Our departure hypothesis considered that tenure and leverage were negatively related, however we have found a positive relationship. The effect of tenure increases and becomes stronger, as leverage increases. This suggests that managers with a longer tenure will be more prone to increase leverage, however in spite of the influence of individual preferences towards financial risk, the positive effect of tenure on leverage varies according with the bank's risk exposure. Thus, the lower the level of leverage at the manager's appointment date, the more tenured managers will increase leverage.

Manager's experience has a positive influence on leverage, but it is only significant for higher levels. Results also suggest that bank's leverage at the manager's appointment date has an important and significant effect on leverage. Moreover, we observe that for alternative specifications, the main results remain similar, especially for the variable leverage at the appointment date, which remains significant and positive. The inclusion of the management team´s contract time horizon confirms a negative influence of this variable on leverage, which suggests that managers with shorter decision horizons will prefer more leverage, especially in highly leveraged banks. It is important to note, however, that the inclusion of this variable reduces the sample size.

Our findings bring some important insights. First, it is clear that the bank's leverage at the manager's appointment date exerts a strong and positive influence on the current level of leverage, suggesting that managers are risk-prone; moreover the tenure variable exerts an important effect together with the leverage at the appointment date as tenured managers exert more influence on leverage when they present lower levels of leverage at the appointment date. However, the more the

manager distances from the appointment date, the less will be the effect of the leverage at the appointment date on the current level of leverage. It is also interesting to observe that the manager's behaviour is constrained by higher levels of leverage, which may signal that debt may serve as a corporate governance tool and a disciplining device for managers, thus reducing agency costs.

In terms of research design, our findings present important conclusions, since we have demonstrated that the effect of explanatory variables is not constant across the leverage distribution. It is clear that quantile regression techniques give us a more complete picture, allowing for the possibility of non-linear effects.

Finally, the attempt to bring into this topic of discussion the relevance of the decision horizon expressed as the management team's contract time horizon and its relationship with capital structure, has revealed some interesting paths for future research. When considering this dimension, it turns out that some observable characteristics become insignificant, which may suggest that other variables relating to a manager's preferences or traits, will be preferable for explaining the leverage decision process.

Chapter 6

Conclusion

This thesis addressed the banking behaviour on labour market focusing on the use of mechanisms of restructuring based on M&A and capital structure. The objective of this dissertation was to contribute for the explanation of the influence of consolidation processes and the strategic use of capital structure on banking wages. The results reveal that there is still much to be done and that European banking represents a fertile territory for investigation.

The present study tries to develop a comprehensive framework that combines insights from several strands of literature that are organized in three independent papers. In chapter 2, the use of a rich Portuguese matched employer-employee panel dataset permits us to assess the impacts of ownership change on wages. The longitudinal nature of the data used enables us to analyse the impact of M&A on employees' wages and consider the time dimension of those effects.

When controlling for unobserved individual and firm heterogeneity, our results suggest a positive effect of M&A of nearly 2% and 4%, according to the specification adopted. We observe also that for workers that have been acquired, the impacts differ in a slightly way, it seems to appear that M&A has a lower positive effect on wages for individuals of acquired firms as it is observed that spite of the positive effect that can be expected from a M&A, this effect will depend on the type of workers. In this case, for workers of acquired banks the positive impact will be lower.

The results may vary according with the period we are considering as the impacts of M&A may not be observed at the moment of the acquisition but in subsequent periods, thus the inclusion of a time dimension seems to confirm that even though the positive effect in the first year of the acquisition, for subsequent years this positive effect is reduced and this reduction is more pronounced in the third year after the M&A.

For workers of acquired banks, the positive effects of M&A are reduced, thus suggesting that the acquisition process has a detrimental effect, even though it is observed a small positive effect for highly qualified workers using our fixed effects specification. These results seems to demonstrate that it may be important to assess with more detail the effects of acquisitions on highly skilled workers for whom we obtain an overall positive effect in comparison to other levels. If we consider that highly skilled workers are represented by top and intermediary executives it is word to mention that it is

possible that the impact on wages will depend on the type of workers we are considering. Thus, if M&A can be used as a mechanism to renege on implicit contracts, this mechanism does not have the same effect on workers or maybe it is directed to some type of workers.

Additionally, in order to consider the increase in cross-border M&A and the relation between foreign ownership and wages, we disentangle the effects of these operations according with the type of acquisition. The results suggest that the type of acquisition influence the wage differentials as domestic acquisitions tend to have a positive effect on worker's wages, moreover the results does not confirm the existence of a foreign wage premium.

The strategic use of leverage as a disciplinary mechanism and as a bargaining tool may bring some insights on the relationship between capital structure and wages in banking. In chapter 3, we analyse how average wages are affected by leverage, focusing on the strategic use of bank's capital structure. The results seems to confirm that higher values of leverage will be reflected on a decrease in wages, thus suggesting that the substitution of equity by debt may serve as a renegotiation mechanism that exerts influence on workers putting pressure on them in order to accept lower wages.

Assuming that the effects of leverage on wages may differ according with the distress situation in which the bank incurs, we consider that the effects may diverge for safe banks comparing to distressed banks. Thus using a widely used measure of individual bank risk – Z-score – it is observed that, in spite of the inverse relationship between leverage and average wages, we do not find evidence that the effect differs according with the type of bank. Additional results validate our previous findings. First, we consider alternative sub-samples as well as we have also considered the occurrence of the financial crisis. Second, we try to deal with a nonlinear relation between leverage and employee pay. Finally, considering that leverage may be endogenous we apply fixed effects estimation with two-stages least squares (IV2SLS) and an alternative identification strategy proposed by Lewbel (2012). The results seem to demonstrate that the negative relationship of leverage and wages prevails, especially for shareholder-oriented banks where the maximization of value is more prominent. When considering the effect of the financial crisis, it is observed that leverage still continue to exert a negative effect on wages; however it seems that the effect differs during the crisis period; but this difference is not statistically significant.

An interesting finding is observed when analysing the nonlinear behaviour of the relation between leverage and wages. The results suggest a threshold effect that is only significant for values of leverage between 53% and 83% levels, reflecting that a unit change of leverage as a different impact according to where this change occurs. That means that for a leverage ratio of 53%, the estimated marginal

effect is about 0.30% indicating that, at this value, an increase in leverage by one percentage point will decrease wages by 0.30%. The higher decrease in wages is observed for a 68% level of leverage ratio, which means that, at this value, an increase in leverage by one percentage point will decrease wages by 0.45%. Finally, the instrumental variable results help us to validate our previous findings, confirming the negative effect of leverage on wages and absence of endogeneity in that relation. Moreover, the Lewel's IV estimation, in spite of being less preferable in comparison to traditional instrumental variables regression, constitutes a methodological novelty in this study.

Many factors determine the banks' capital structure. It is well known that factors inherent to banks as assets, profitability, risk, growth, industry conditions, among others are determinant in the capital structure decisions, however managers exert influence and factors related to individuals may influence leverage decisions. The starting point in Chapter 4, was to identify specific managers' characteristics that may exert influence on leverage and attempt to show that managerial preferences in terms of risk may influence leverage decision, considering also that managers' short-termism may be determinant on the leverage decision process. When it relates to manager's observable characteristics like age and gender, it is observed that younger managers are risk-prone and less conservative in leverage decisions. The general perception that gender differences persist on the choice of capital structure is not validated by our results. In fact, for management positions, special skills are more important thus it seems reasonable that differences between male and females do not exist. As women that are in management positions may have some distinctive functions in comparison from all the rest, it may be the case that a self-selection mechanism is manifest.

More experienced and tenured managers tend to increase leverage. In this sense, the manager's expertise and the skills gathered during his career are determinant for leverage decisions. Moreover, a more diverse career experience and accumulated experience will also contribute to the creation of social ties and networks facilitating access to debt financing. Notwithstanding the positive effect of experience on leverage, it is only significant for higher levels of leverage which may occur as high leveraged banks require better access to debt financing. A longer tenure may influence managers to bring their personal preferences to leverage decisions, by doing so, managers with a longer tenure will be more prone to increase leverage, however when we consider the level of a bank's risk exposure in term of the level of leverage at the manager's appointment date, the results suggest that managers are constrained in their behaviour. This means that the lower the level of leverage at the manager's appointment date, the more tenured managers will increase leverage. Focusing on the main managers' characteristics of our analysis, it is observed that leverage at the appointment date exerts

a positive effect on bank's leverage. This may suggest that managers are risk-prone or their risk perception is biased as they choose higher levels of leverage assuming that banks are less risky than they really are. However this positive effect is reduced as long as we move on the leverage distribution and even more when considering the managerial horizon. This behaviour suggest that managers' behaviour is constrained by higher levels of leverage, which may suggest that debt may serve as a disciplining device for managers in order to reduce agency costs.

The quantile regression estimation technique implemented in this study has permitted us to have a more complete view, allowing for the effect of explanatory variables to change across the leverage distribution. Finally the inclusion of managerial horizon and its relation with capital structure has revealed some interest paths for future research.

The overall conclusions hereby presented and the results provided permit us to stablish a comprehensive framework on the banking behaviour and the attention that is needed in some areas. For instance, the analysis on the consolidation processes may bring some insights in order to understand the effects of those operations not only on wages but also on the employment effects in terms of mobility for highly skilled workers for whom we obtain a positive effect in comparison to others.

Having in mind the specificities of banking, especially on what concerns information asymmetry and agency problems, and focusing on managers' behaviour and their influence on leverage decisions, it would be interesting to consider for further research how managers may use leverage as a mechanism to determine wages and what managers' characteristics are determinant.

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Appendix A

Data

This appendix describes the data sources used in each paper and the methodology used for the construction of the datasets.

A.1. The "Quadros de Pessoal" and "Associação Portuguesa de Bancos" Datasets

The first data set, *Quadros de Pessoal*, is an annual mandatory survey conducted by the Portuguese Ministry of Labour, Solidarity and Social Security since 1982 which gathers information on all firms located in Portugal with wage-earners. Its mandatory nature, as well as the fact that the information is provided by the employer and is made available to every worker in a public space of the establishment, reduces measurement errors and contributes to the reliability of the data.

This longitudinal database provides information at the firm (such as location, industry, sales, legal setting, year of constitution, share of the firm's equity owned by foreign parties, number of establishments and number of employees) and at the establishment level (such as location, industry and number of workers, among others). The set of workers characteristics includes age, education, tenure, wages and hours worked.

In our analysis, we use information for the 1985 to 2007 period with the exception of 1990 and 2001, because data was not collected in those years. The dataset is restricted to 2007 as the Financial Crisis took place in 2008. The existence of unique (time-invariant) identifiers allows for matching firms and workers in each year and for following them over time. The dataset contains information on the industry in which firms operate and on a worker's occupation, so it is possible to identify the banking entities and the workers of those firms.

The entities in our sample were restricted to those operating on "other monetary intermediation" (code 65120), according to the Portuguese Classification of Economic Activities – CAE–rev 2.1 (1995

version) and they include all monetary institutions, excluding the Central Bank[13]. Three revisions of CAE have occurred between 1985 and 2007. The methodology for CAE uniformization and the entities included in "other monetary intermediation" is described as follows: According to the *Instituto Nacional de Estatística* (INE) the category "other monetary intermediation" refers to those institutions that are principally engaged in receiving deposits and/or close substitutes for deposits and, on their own account, in granting loans and/or investing in securities. This group in Portugal is made up of the Bank of Portugal, all other banks, savings banks and agricultural mutual credit funds (including the central mutual agricultural fund).

Table A.1.1: CAE 651 rev.2 (Monetary Intermediation, excluding Central Bank)

Code	Descriptive
6512	Other Monetary Intermediation:
65121	– Banking Institutions
65122	– Savings Banks
65123	– Agricultural Mutual Credit Funds
65124	– Other Monetary Intermediation

Source: Instituto Nacional de Estatística.

In the period under analysis there were three revisions in CAE (from CAE–rev.1 to CAE–rev.2 and to CAE–rev.2.1[14] and then to CAE–rev.3), thus the dataset was manipulated in order to transform the classification under CAE–rev.1 on the 2007 classification – CAE–rev.3 –, which requires the use of correspondence tables. These tables catalogue the CAE codes and their equivalent on the new categorization and they were obtained from INE and. Table A.1.2 presents the transformations occurred since CAE–rev.1 to CAE–rev.3.

[13] Three revisions of CAE have occurred between 1985 and 2007. The methodology for CAE uniformization and the entities included on "other monetary intermediation" are described in the Appendix (Tables A.1.1 and A1.2).
[14] The transformations from CAE–rev.2 to CAE–rev.2.1 were not significant in comparison to others.

Table A.1.2: Correspondence tables for CAE-rev.2, CAE rev.2.1 and CAE rev.3

CAE - rev.1 (original code)	CAE - rev.2 (revised code)	CAE - rev.2 (original code)	CAE - rev.2.1 (revised code)	CAE - rev.2.1 (original code)	CAE - rev.3 (revised code)
8101.1.0	65110	65110	65110	65110	64110
8101.2.0	65121	65121	65120	65120	64190
8101.3.0	65121	65122	65120	65210	64910
8101.4.0	65121	65123	65120	65221	64923
8102.1.0	65121	65124	65120	65222	64991
	65122	65210	65210	65223	64922
8102.2.0	65123	65221	65221	65224	64921
8102.3.0	65124	65222	65222		64923
8102.4.1	65230	65223	65223	65230	64201
8102.4.9	65210	65224	65224		64300
	65222	65230	65230		64992
	65223				
	65224				
	65230				
8102.5.0	65230				
8102.6.0	65221				
	65224				
	65230				
8102.9.0	65124				
	65224				
	65230				
8103.1.0	67110				
	67120				
	67130				
8103.2.0	67130				
8103.3.0	67130				
8103.9.0	67130				

Source*: Instituto Nacional de Estatística.*

Note: Adapted from *INE's Tabelas de Correspondência* restricted to "Financial Intermediation" (code 65), according to the two digits sector classification of the Portuguese Classification of Economic Activities - CAE (1995 version).

Extensive checks were made to guarantee the correspondence, assuming for those cases where the correspondence was not possible and for those where inconsistencies were detected that the prevailing classification was that which was reported more frequently.

In this process, a new variable was first created– *caemp_2* – with the purpose of creating a unique CAE for all the years under analysis (1985 – 2006), but the inclusion in a later stage of 2007,

forced us to consider the revision operated in that year. According to the new classification, the entities operating in "Financial Intermediation" correspond to code 64 and those classified as "other monetary intermediation" are registered as 64190. At this stage, the variable *caenew* was created, which corresponds to the mode of the variable *caemp_2*. Taking into account that the inclusion of 2007 would originate missing values that result from the fact that *caemp_2* only exists until 2006, the variable *caenew* was recoded using the classification of rev3 and transforming these on the corresponding classification of rev2.1. This procedure was important to continue the CAE standardization. Finally, it was possible to create the variable – *caenew3* – which originated from *caenew,* but it is defined in terms of the new codes created (CAE–rev.3). As was done before, we have used the correspondence tables to guarantee the harmonization of CAE, but for the purpose of the analysis and when considering the period 1985 – 2007 we needed to use not just the CAE 65120, but also the CAE 64190 (the CAE 65120 is equivalent under rev3 to CAE 64190), however, as was previously mentioned, for some entities that just appeared in 2007 we also needed to consider this classification.

After de creation of the main dataset it was important to identify all domestic acquisitions. The identification of domestic acquisitions was possible using data collected on an annual basis by the *Associação Portuguesa de Bancos* (APB) in their *Boletins Informativos.* This dataset contains information on all banks in Portugal and reports the transformations occurred in the banking sector. Besides accounting information, the dataset reveals information on firms (such as age, ownership, size, number of employees and branches and localization) and employees characteristics (qualifications, type of activity and occupation in each bank). Another important fact is that, every year, the *Boletim Informativo* presents a synthesis of the evolution in the banking sector in comparison to the previous year, mentioning which banks entered or exited in the banking sector or which were involved in the process of M&As, so it allows us to find those entities in *Quadros de Pessoal,* by matching some information with that obtained from the APB. We have also identified all the entities that were not engaged in those processes. Table 3.1 highlights the major transformations occurred in the banking sector of the banks listed in *Boletins Informativos*, between 1993 and 2006. The year 2007 was not considered, since no important transformations were reported for our analysis in that year. The remaining banks that were not subject to M&A transformations are presented in Appendix B (Table B.1).

The *Boletins Informativos* present information on share capital (*capital social*) as well as *Quadros de Pessoal*, thus it was possible to match the information and identify the entities. Notwithstanding

that the information provided from the APB is only available since 1993; it was possible to compare the evolution of this variable in *Quadros de Pessoal* and in the *Boletins Informativos* throughout the period under analysis. The existing information allowed us to identify the entities and in those cases where the comparison was uncertain, a third source of information was used. The information contained in the "Information Disclosure System" of the *Comissão do Mercado de Valores Mobiliários (CMVM)* was valuable, since it was possible to find information on the registries of the entities and institutions completed since the second quarter of the year 2000. In a low number of cases it was necessary to use this source of information.

A.2. The Bankscope Dataset

The second dataset, the Bankscope database, provided by the Bureau van Dijk (BvD), is a unique collection of micro-level banking information for different countries. This database contains financial information on banks worldwide. Content includes balance sheet data, income and expenses, ratios and other annual financial data years. Information on global and country-specific rankings (by total assets) is also available and ownership information as well.

The descriptive information includes addresses, contact numbers and web addresses, directors and managers, banks' specialisation, world and country rankings, auditor and auditor's qualification of the statement, various identification numbers as well as the history of the bank. The financial data is collected for a rolling period thus when a new year of data is added, the oldest data is dropped, which means that only the most recent data for each company is available. In our analysis we use information for the period 1987 to 2015.

Regarding its content, it offers a global coverage providing standardized variables for comparing banks across countries and regions. Thus, it comprises information on detailed financials which are presented in multiple formats, including the universal format to compare banks globally. This standardisation is the result of the development of the Fitch Universal Format with the adoption of the IFRS (International Financial Reporting Standards) by the majority of European banks as well as many Asian and Central American banks.

The third dataset was based on the previous dataset that we have prepared with data collected from Bankscope. As previously mentioned, the bank's descriptive information includes its address, contact numbers and web address, directors and managers, the bank's specialisation, world and country rankings, auditor and auditor's qualification of the statement, various identification numbers

as well as the history of the bank. Thus, data on managers is also provided and it includes, for instance, address, contact numbers and web address, specialisation, various identification numbers and the manager's details.

Since only the most recent data for each company is available, it was only possible to obtain data on managers regarding the last year, which in this case was 2015. As each bank has an identification number, and since for each manager, it was possible to obtain his/her bank's identification number, it was possible to match the managers' dataset with the original banks' dataset. At the time of the data collection it was not possible to improve the information obtained or to increase the years of analysis, as the dataset was no longer available by the end of 2016, since Bankscope's publisher, the Bureau van Dijk, was not be able to provide this data.

Appendix B

Appendices to chapter 3

B.1. Banks not involved in M&A

Table B.1: Banks listed in *Boletins Informativos* (APB) that were not engaged in M&A

Credit institution
ABN AMRO, Bank N.V. (sucursal) *
Banco Invest, S.A. (previous Banco Alves Ribeiro, S.A.)
Banco de Negócios Argentaria *
Banco Espírito Santo dos Açores, S.A.
Banco Africano de Investimentos, S.A.R.L (Sucursal) *
Banco Mais, S.A.
Banif – Banco de Investimento, S.A. *
Banco Internacional do Funchal, S.A.
Barclays Bank PLC (Sucursal)
Banco do Brasil, S.A.
Banco Comercial dos Açores, S.A.
Banco Espírito Santo de Investimento, S.A. (previous Banco ESSI)
BEST – Banco Electrónico de Serviço Total, S.A.
Banco de Investimento Global, S.A.
Banco de Investimento Imobiliário
Banco Nacional de Investimento, S.A.*
Banque Nationale de Paris (Sucursal) *
BANKBOSTON Latinoamericano S.A.
Banco Português de Gestão, S.A.
Banco Português de Negócios – SGPS, S.A.
Banco Privado Português*
Banco Santander de Negócios Portugal, S.A.
Caixa Galicia – Caja de Ahorros de Galícia (Sucursal) *
Caixa Vigo – Caixa de Aforros de Vigo, Ourense e Pontevedra (Sucursal) *
The Bank of Tokyo - Mitsubishi, Ltd (Sucursal) *
Caixa Central de Crédito Agrícola Mútuo *
Central – Banco de Investimento, S.A.*
Banco Cetelem, S.A. *
Caixa – Banco de Investimento, S.A. (previous Banco Chemical Finance, S.A. and Banco Totta e Sottomayor de Investimento, S.A.)
BCP Investimento – Banco Comercial Português de Investimento (previous CISF – Banco de Investimento and BCPA – Banco de Investimento, S.A.)
Citibank Portugal, S.A.
Credifin – Banco de Crédito ao Consumo, S.A.*

Continued on next page

Table B.1 – continued from previous page

Deutsche Bank (Portugal), S.A.
Banco Efisa, S.A.
Banco Finantia, S.A.*
Finibanco, S.A.
Fortis Bank – sucursal (previous Generale Bank – sucursal)
SanPaolo IMI BANK (Internacional), S.A.*
Interbanco, S.A.
Banco Itaú Europa, S.A.
Banco Madesant Sociedade Unipessoal, S.A.*
Banco ACTIVOBANK (Portugal), S.A. (previous Banco Mello de Investimentos, S.A.)
Banco Central Hispano Portugal, S.A. *
Caixa Económica – Montepio Geral
Banco Rural Europa, S.A.
Banco Sabadell, S.A.*

Source: *Associação Portuguesa de Bancos.*

Note: * These banks could not be found in *Quadros de Pessoal*, so it was not possible to proceed with the match process.

B.2. Wage impact of M&A (by qualification levels) – Estimation results for the sample, including individuals with a "Non-defined" level of qualification

Table B.2: Wage impact of M&A (by qualification levels)

	FE estimation	Spell estimation
M&A	.026***	.040***
	(.002)	(.005)
QUAL-L	-.030***	-.016***
	(.005)	(.005)
QUAL-M	-0.16***	-.010***
	(.002)	(.002)
QUAL-H	.005*	-.018***
	(.003)	(.003)
Non-defined	.027***	.028***
	(.003)	(.003)
Year effects	Yes	Yes
Firm effects	Yes	Yes
Observations	741408	741408
Groups	117580	150695

Notes: (1) M&A is a dummy variable equal to one if the worker experiences a M&A and 0 if the worker did not participate in a M&A operation. (2) Qualifications levels: QUAL-L: Semi-skilled and unskilled workers, and apprentices; QUAL-M: Supervisors and highly skilled and skilled professionals; QUAL-H: Top executives and intermediary executives. (3) Individuals regarding whom information about qualification is not available are included. (4)*significant at 10%; **significant at 5%; ***significant at 1%

B.3. Definition of variables

Table B.3: Definitions of variables in the model

Variables	Definition
Real total wage	Logarithm of the real total wage, computed as the monthly wage plus other payments received on a regular and irregular basis. The real total wage was deflated using the Consumer Price Index (CPI) and is expressed in the 1993 prices.
After	1 if the worker was employed in an acquired firm (after the M&A), 0 if the worker was in a period before the M&A or not subject to the M&A.
M&A	M_{it} is a dummy variable equal to one if the worker experiences a M&A, 0 if the worker did not participate in a M&A operation
Effect at t=1	1 if one year after M&A, 0 otherwise.
Effect at t=2	1 if two years after M&A, 0 otherwise.
Effect at t=3	1 if three years after M&A, 0 otherwise.
Number of workers	Logarithm of total employment.
Male	1 if male, 0 if female.
Education	Years of schooling
Education level	
No education	1 if the worker has less than primary school, 0 otherwise.
Primary education	1 if the worker has primary school, 0 otherwise.
Preparatory education	1 if the worker has preparatory school, 0 otherwise.
Lower secondary	1 if the worker has lower secondary school, 0 otherwise.
Secondary	1 if the worker has secondary school, 0 otherwise.
Upper secondary	1 if the worker has upper secondary school, 0 otherwise.
College	1 if the worker has college, 0 otherwise.
Tenure	The number of years that the worker is employed in the current firm.
Experience	Computed as age minus years of schooling minus six.
Experience^2/100	Quadratic of experience divided by 100.
Qualification level	
Top executive	1 if the worker is a top executive, 0 otherwise.
Intermediary executive	1 if the worker is an intermediary executive, 0 otherwise.
Supervisor	1 if the worker is a supervisor, 0 otherwise.
Highly skilled and skilled	1 if the worker is a highly skilled and skilled professional, 0 otherwise.
Semi-skilled and unskilled	1 if the worker is a semi-skilled and unskilled professional, 0 otherwise.
Apprentice	1 if the worker is an apprentice, 0 otherwise.
Non-defined	1 if the worker has a non-defined qualification, 0 otherwise.
High	1 if top executives and intermediary executives, 0 otherwise.
Medium	1 if supervisors and highly skilled and skilled professionals, 0 otherwise.
Low	1 if semi-skilled and unskilled workers and apprentices, 0 otherwise

Appendix C

Appendices to chapter 4

C.1. Definition of variables

Table C.1: Variables definition

Variables	Definition
Average employee pay	Logarithm of average employee pay, computed as the natural logarithm of total labour expenses. Labour expenses include: wages, salaries, social security costs, pension costs and other staff costs, including expensing of staff stock options.
Regulatory tier one capital	This measure of capital adequacy measures Tier 1 capital. It comprises regulatory tier 1 capital divided by risk weighted assets. It seeks to measure whether the pool of permanent funds available to the bank is sufficient to neutralize the risks. This figure should be at least 4%.
Interest coverage ratio (ICR)	Ratio of earnings before interest and taxes (EBIT) to interest expense. It represents the capacity of the firm to pay interest on debt. In terms of profitability, a high ICR indicates that the firm will be capable of paying interest on debt even in difficult times.
Liabilities to total assets	It corresponds to liabilities divided to total assets. This ratio examines how much of a firm's assets are made of liabilities. Banks with higher liabilities to total assets ratios should have higher financing and debt service costs, than banks with lower ratios.
Profitability	Return on average assets (ROAA), computed as net income divided by average total assets. This ratio compares the efficiency and operational performance of banks as it looks at the returns generated from the bank's assets.
Size	Natural logarithm of total assets.
Business diversification	Non-interest income divided by gross revenue. This ratio indicates de amount of fees, trading and asset sale income to total revenues, which also includes net interest income.
Employee productivity	Net income divided by the number of employees. This ratio shows the participation of a company's employees in its financial figures such as profits.
Distressed	Dummy variable taking value one if the bank is distressed and zero if the bank is safe. We define distressed banks as those with z-scores that fall in the lowest 10 percent of the distribution.
Crisis	Dummy variable taking value one if year=2008 and year=2009, and zero for the previous and subsequent years of the sample.

C.2. Bank specialization

Table C.2: Bank specialization

Bankscope Classification	
Commercial banks	Mainly active in a combination of retail banking (Individuals, SMEs), Wholesale Banking (large corporates) and Private banking (not belonging to groups of savings banks, cooperative banks).
Savings banks	Mainly active in Retail Banking (Individuals, SMEs) and usually belonging to a group of savings banks.
Cooperative banks	Cooperative banks have a cooperative ownership structure and are mainly active in Retail Banking (Individuals, SMEs).
Real Estate & Mortgage banks	Mainly active in Mortgage Financing and Project Development.
Investment banks	Mainly active in Corporate Finance, Debt/Equity Issues, Mergers & Acquisitions, Securities Trading and usually in Private Banking.
Other non-banking credit institutions	Institutions providing guarantees, money transfer companies, companies providing banking and non-banking financial services to groups of financial institutions.
Specialized governmental credit institutions	Institutions providing National Development Finance, Sectoral Finance or Export/Import Finance. This specialisation category includes Public Institutions acting on privileged or protected segments or benefiting from Governmental guarantee or sponsoring.
Bank holdings & Holding companies	Holding companies of bank groups, which usually have very limited business activities.
Central banks	Supervising national banking systems.
Multi-lateral governmental banks	Active in multi-lateral development finance.
Micro-financing institutions	Providing micro finance to individuals and very small companies.
Securities firms	Mainly active in Securities Trading/Arbitrage activities/ Securities Brokerage/Derivatives.
Private banking/Asset management companies	Banks mainly active in private banking and asset management.
Investment & Trust corporations	Investment Corporations/Investment Trust Companies and Private Equity Companies/Property Developers and Covered Bond Issuers investing in various assets.
Finance companies	Consumer Finance Companies, Credit Card Companies, Factoring Companies, Leasing Companies, Trade Finance Companies
Clearing & Custody institutions	Institutions providing clearing and custody services.
Group finance companies	Companies mainly active in attracting funding for and lending on behalf of the group.

Source: Bankscope (2015).

Appendix D

Appendices to chapter 5

D.1. Definition of variables

Table D.1: Variables definition

Variables	Definition
Liabilities to total assets	It corresponds to liabilities divided to total assets. This ratio examines how much of a firm's assets are made of liabilities. Banks with higher liabilities to total assets ratios, should have higher financing and debt service costs, than banks with lower ratios.
Liabilities to total equity	It corresponds to liabilities divided to total equity. This ratio examines the amount of financial debt as a percentage of equity. Banks with higher liabilities to total equity ratios, should have higher financing and debt service costs, than banks with lower ratios.
Profitability	Return on average assets (ROAA), computed as net income, divided by average total assets. This ratio compares the efficiency and operational performance of banks, as it looks at the returns generated from the bank's assets.
Size	Natural logarithm of total assets.
Tangibility	Fixed assets to total assets.
Growth opportunity	Annual percentage change of total assets.
Age	A manager's age.
Gender	Dummy variable taking value one if male and zero otherwise.
Tenure	Number of years between appointment date and current date (2015).
Experience	Number of banks for which the manager is working.
Leverage at the appointment date	Bank's leverage (liabilities to total assets) at the manager's appointment date.
Tenure (Lag)	Distance (years) between the team's tenure and manager's tenure.
Management team's contract time horizon	Average (years) the management team's contract time horizon. It corresponds to the difference between the resignation date and the current year 2015 (current date), computed as the average contract time horizon for each bank's management team.

D.2. Bank specialization

Table D.2: Bank specialization

Bankscope Classification	
Commercial banks	Mainly active in a combination of retail banking (Individuals, SMEs), Wholesale Banking (large corporates) and Private banking (not belonging to groups of savings banks, cooperative banks).
Savings banks	Mainly active in Retail Banking (Individuals, SMEs) and usually belonging to a group of savings banks.
Cooperative banks	Cooperative banks have a cooperative ownership structure and are mainly active in Retail Banking (Individuals, SMEs).
Real Estate & Mortgage banks	Mainly active in Mortgage Financing and Project Development.
Investment banks	Mainly active in Corporate Finance, Debt/Equity Issues, Mergers & Acquisitions, Securities Trading and usually in Private Banking.
Other non-banking credit institutions	Institutions providing guarantees, money transfer companies, companies providing banking and non-banking financial services to groups of financial institutions.
Specialized governmental credit institutions	Institutions providing National Development Finance, Sectoral Finance or Export/Import Finance. This specialisation category includes Public Institutions acting on privileged or protected segments, or those benefiting from Governmental guarantee or sponsoring.
Bank holdings & Holding companies	Holding companies of bank groups, which usually have very limited business activities.
Central banks	Supervising national banking systems.
Multi-lateral governmental banks	Active in multi-lateral development finance.
Micro-financing institutions	Providing micro finance to individuals and very small companies.
Securities firms	Mainly active in Securities Trading/Arbitrage activities/ Securities Brokerage/Derivatives.
Private banking/Asset management companies	Banks mainly active in private banking and asset management.
Investment & Trust corporations	Investment Corporations/Investment Trust Companies and Private Equity Companies/Property Developers and Covered Bond Issuers investing in various assets.
Finance companies	Consumer Finance Companies, Credit Card Companies, Factoring Companies, Leasing Companies, Trade Finance Companies
Clearing & Custody institutions	Institutions providing clearing and custody services.
Group finance companies	Companies mainly active in attracting funding for and lending on behalf of the group.

Source: Bankscope (2015).